BOARD OF TRUSTEES

Board of Trustees Meeting Agenda

March 4, 2026
4:00 P – 5:00 P

Virtual via Microsoft Teams

Dial in: 1-863-225-2351 | Conference ID: 448 666 145#

BOARD MEMBERS

Beth Kigel, Chair
Dr. Sidney Theis
Eliot Peace
Rob Kincart
Jeff Beelaert
Jesse Panuccio, Vice Chair
Ilya Shapiro
Sam Neelam
Jack Harrell, III
Patrick Hagen
Colby Manrodt
Dr. Edwar Romero
Dr. Christie Bassett

MEETING AGENDA

I.	Call to Order	Beth Kigel, Chair
II.	Roll Call	Kristen Wharton, Corporate Secretary
III.	Public Comment	Beth Kigel
IV.	Bachelor of Science in Biomedical Sciences Degree Program Proposal ***Action Required***	Dr. Brad Thiessen, VP and Provost; Dr. Ian Bentley, Chair and Professor Chemistry/Physics
V.	Authorization to Form a Direct Support Organization (DSO) to Support the CMU/NREC Affiliate Initiative ***Action Required***	Cole Allen, VP and CIO
VI.	Closing Remarks & Adjournment	Beth Kigel

AGENDA ITEM: IV.

Florida Polytechnic University

Board of Trustees

March 4, 2026

Subject: Bachelor of Science in Biomedical Sciences Degree Program Proposal

Proposed Board Action

Approve Florida Polytechnic University's proposal to launch the Bachelor of Science in Biomedical Sciences degree program in Fall 2026.

Background Information

Priority 1, Initiative 3.3 of Florida Polytechnic University's Strategic Plan calls for the University to "expand academic programming to include four new, industry-responsive undergraduate STEM programs… to meet state workforce needs." Based on a detailed analysis of market demand, employer demand, mission-fit, competitive intensity, and projected impact on state performance metrics – and resulting from the discussion at the Board retreat in November – Florida Poly proposes launching a B.S. in Biomedical Sciences degree program in Fall 2026.

The development of this program spans ten months:

May 2025: The Board of Trustees approves Biomedical Sciences (B.S.) to be listed as a degree program the University wishes to implement in 2026-27. Florida Poly and the Orlando College of Osteopathic Medicine (OCOM) sign an MOU to guarantee qualified Florida Poly graduates an admissions interview at OCOM. During the visit, OCOM representatives express an interest in a 6-year BS/DO program.

July 2025: Florida Poly and OCOM sign an MOU to develop and offer a 6-year BS/DO program. Immediately after publishing the press release, Florida Poly receives inquiries from interested prospective students. Student demand leads to the development of a pre-proposal for a 4-year B.S. in Biomedical Sciences degree program.

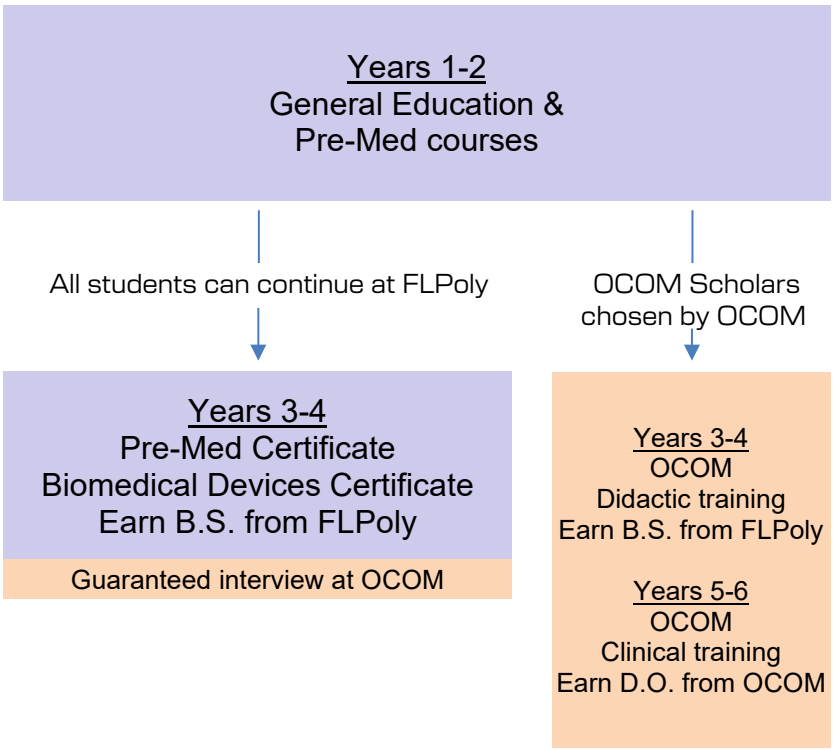
Sept. 2025: Florida Poly presents the Biomedical Sciences pre-proposal document to the State University System Council of Academic Vice Presidents Academic Program Coordination (SUS CAVP ACG) group. No concerns were raised from the other SUS schools.

Dec. 2025: Florida Poly submits a substantive change notification to SACSCOC to offer the B.S. in Biomedical Sciences program beginning Fall 2026.

Feb. 2026: Florida Poly and OCOM meet to finalize details on the 6-year BS/DO pathway.

If approved, Florida Poly will submit this program proposal to Board of Governors staff for final review. Once approved, Florida Poly will immediately begin admitting students in preparation for a Fall 2026 launch.

This diagram summarizes student pathways through the program:



Supporting Documentation: B.S. in Biomedical Sciences Proposal

Prepared by: Ian Bentley, Chair, and Chemistry/Physics faculty; Dr. Tom Dvorske, Vice Provost; Andrew Konapelsky, Registrar; Dr. Brad Thiessen, Provost & VP, Academic Affairs

STATE UNIVERSITY SYSTEM OF FLORIDA

Request to Offer a New Degree Program

In accordance with Board of Governors Regulation 8.011,
Academic Degree Program Coordination and Approval

Florida Polytechnic University **Institution Submitting Proposal**	**Fall 2026** **Proposed Implementation Term**
N/A **Name of College(s) or School(s)**	**Physics, Chemistry, Biomedical Sci.** **Name of Department(s)/Division(s)**
Biomedical Sciences **Academic Specialty or Field**	**B.S. in Biomedical Sciences** **Complete Name of Degree**
26.0102 (Biomedical Sciences, General) **Proposed CIP Code (2020 CIP)**	

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met before the program's initiation.

Date Approved by the University Board of Trustees	**President's Signature** **Date**
Board of Trustees Chair's Signature **Date**	**Provost's Signature** **Date**

STATE UNIVERSITY SYSTEM OF FLORIDA

I. Overview

A. Briefly describe the proposed program in the following table.

Purpose	This program prepares graduates for health-related professional pathways and biomedical technology careers through a rigorous, applied curriculum integrating biomedical sciences, quantitative reasoning, engineering principles, and emerging technologies. It provides two pathways: (1) preparation for healthcare & professional schools, and (2) preparation for careers in biomedical devices & related industries.
Degree Level(s):	Baccalaureate
Majors, Concentrations, Tracks, or Specializations	This program has three elective tracks/pathways: (1) A 6-year BS/DO degree program with the Orlando College of Osteopathic Medicine (OCOM), in which students complete two years at Florida Poly before transferring to OCOM. (2) A Biomedical Devices certificate (3) A Pre-Health Certificate Students completing the B.S. in Biomedical Sciences program may complete the degree and both certificate programs within 120 total credit hours.
Total Number of Credit Hours	120
Program Type	☒ **E&G Program** ☐ **Market Tuition Rate Program*** ☐ **Self-Supporting Program*** *Refer to Board Regulation 8.002, Self Supporting and Market Tuition Rate Program and Course Offerings, for additional details.
Possible Career Outcomes	Admission into professional programs, such as medical, dental, physician assistant, pharmacy, physical therapy, or biomedical graduate programs. Direct employment as biomedical or laboratory technicians, clinical research coordinators, medical device specialists, quality and regulatory associates, research assistants, healthcare data or analytics support professionals, and roles within biotechnology, pharmaceutical, and biomedical device companies.

B. Does the proposed program qualify as a Program of Strategic Emphasis, as described in the Florida Board of Governors 2025 System Strategic Plan? Programs of Strategic Emphasis List

☒ Yes, it does qualify as a Program of Strategic Emphasis.
☐ No, it does not qualify as a Program of Strategic Emphasis.

C. Does the program fall under one of the CIP codes listed below that qualifies for the Programs of Strategic Emphasis Waiver? *(for baccalaureate programs only)*

CIP CODE	CIP TITLE
11.0101	Computer and Information Sciences
11.0103	Information Technology
13.1001	Special Education and Teaching
13.1202	Elementary Education and Teaching
14.0801	Civil Engineering
14.0901	Computer Engineering
14.1001	Electrical and Electronics Engineering
14.1901	Mechanical Engineering
27.0101	Mathematics
52.0301	Accounting
52.0801	Finance
52.1201	Management Information Systems

☐ Yes. If yes, students in the program will be eligible for the Programs of Strategic Emphasis waiver. Refer to Board Regulation 7.008 and the Programs of Strategic Emphasis Waiver Guidance.

☒ No

☐ Not Applicable

II. Institutional and State-Level Accountability

A. Describe how the proposed program directly or indirectly supports the following.

1. The State University System's Strategic Plan goals.
2. The institution's strategic plan and goals the program will directly advance.
3. The university's mission.
4. The benefit to the university, the local community, and the state.

The B.S. in Biomedical Sciences degree program supports Florida Polytechnic University's mission by advancing applied, technology-driven STEM education that integrates scientific rigor with real-world problem solving. The program combines foundational biomedical science with engineering concepts, artificial intelligence, laboratory research, and a required capstone experience, preparing graduates for high-demand careers and advanced study while contributing to innovation, workforce development, and economic impact in Florida's health and biomedical sectors.

The program will strengthen the pipeline of well-prepared students entering health professions, biomedical research, and medical technology fields. By providing a rigorous pre-health curriculum aligned with professional school preparation, this program helps address Florida's growing shortage of physicians, allied health professionals, and healthcare-related specialists. In addition, the program supports Florida's biomedical and life sciences economy by producing graduates with applied laboratory, data, and technology skills who can contribute to healthcare delivery, medical device innovation, and research-driven economic development across the state.

This program advances SUS 2030 metrics by improving on-time degree completion and ROI, increasing participation in Programs of Strategic Emphasis, producing workforce- and graduate-school-ready STEM talent, embedding experiential learning and undergraduate research, and supporting Florida's biomedical, healthcare, and technology-driven economic sectors. This program also encourages collaboration, as we intend to extend our collaboration beyond the Orlando College of Osteopathic Medicine to include medical schools within the SUS and the state of Florida.

B. Provide the date the pre-proposal was presented to the Council of Academic Vice Presidents Academic Program Coordination (CAVP ACG). Specify any concerns raised and provide a narrative explaining how each has been addressed in this proposal or will be addressed before the proposed program is implemented.

No concerns were raised when this program was presented to the CAVP ACG on September 3, 2025.

STATE UNIVERSITY SYSTEM OF FLORIDA

III. Student and Workforce Demand

If the proposed program is a baccalaureate or master's degree on the Programs of Strategic Emphasis list, skip III-A.

A. Describe the Florida and national workforce demand for the proposed program. The response should, at a minimum, include the current state workforce data from Florida's Department of Commerce and national workforce data from the U.S. Department of Labor's Bureau of Labor Statistics. Additional documentation for workforce needs may include letters of program support by employers and job postings for program graduates, as well as a description of any specific needs for research and service that the program would fulfill.

Complete the table below using data from the Search by CIP or SOC Employment Projections Data Tool in the Academic Review Tracking System.

Labor Market Demand, CIP Code XX.XXXX

Occupations	Percent Change in Job Openings		Annual Average Job Openings		Total # of New Jobs		Education Level Needed for Entry
	FL XXXX-XX	U.S. XXXX-XX	FL XXXX-XX	U.S. XXXX-XX	FL XXXX-XX	U.S. XXXX-XX	

This is a baccalaureate degree on the Programs of Strategic Emphasis list.

Sources:
Date Retrieved: XX/XX/XXXX
U.S. Bureau of Labor Statistics - https://data.bls.gov/projections/occupationProj
Florida Department of Economic Opportunity - http://www.floridajobs.org/labor-market-information/data-center/statistical-programs/employment-projections

B. If the occupations do not currently appear in the most recent version of the Search by CIP or SOC Employment Projections Data Tool provided by Board staff, provide occupational linkages or jobs graduates will be qualified to perform based on the training provided to students in the proposed program in the table below. Contact the institutional representative working with you on the degree proposal for more information about possible occupations.

Occupational Linkages for the Proposed Program

SOC Code (XX-XXXX)	Occupation Title	Source / Reason for Inclusion

Occupations do appear in the most recent version of the Search by CIP or SOC Employment Projections Data Tool.

C. Describe the student demand for the proposed program. The response should, at a minimum, include the following.

1. Projected headcount for Year 1 through Year 5.
2. Data that supports student interest or demand for the proposed program. Include questions asked, results, and other communications with prospective students.

In our pre-proposal, we projected the following headcount enrollment numbers:
Year 1 = 35
Year 2 = 80
Year 3 = 125
Year 4 = 180
Year 5 = 225

Since announcing an initial MOU Florida Poly signed with the Orlando College of Osteopathic Medicine (OCOM) – an MOU that guarantees Florida Poly graduates from any degree program interviews for acceptance into OCOM's DO program – prospective student interest has increased significantly. We currently have more than 200 prospective students who have indicated that they wish to complete a B.S. in Biomedical Sciences program at Florida Poly.

IV. Duplication of Existing Programs

A. If the program duplicates another degree program at a private or public state university in Florida with a substantially similar curriculum, provide evidence that the university has investigated the potential impact on the existing program, has discussed opportunities for collaboration with the affected university, and can justify the need for duplication. Additionally, summarize the outcome(s) of communication with appropriate personnel (e.g., department chairs, program coordinators, deans) at the affected institutions regarding the potential impact on enrollment and any opportunities for collaboration in the areas of instruction and research.

Five SUS schools currently award degrees under the 26.0102 CIP:

Degrees Granted

Institution	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Grand Total
FAU					11	11
UCF	438	515	498	441	401	2293
UNF				18	38	56
USF	639	750	747	800	744	3680
UWF	73	89	74	68	76	380
Grand Total	**2300**	**2708**	**2638**	**2654**	**2540**	**12840**

We discussed potential duplication, overlap, and opportunities for collaboration during the pre-proposal presentation on September 5, 2025. From that meeting, no concerns were raised about duplication.

Florida Poly's proposed B.S. in Biomedical Sciences program is unique in its focus on biomedical devices (incorporating Florida Poly's expertise in engineering and emerging technologies), our requirement that students complete our signature, interdisciplinary capstone experience, and our 6-year BS/DO pathway with the Orlando College of Osteopathic Medicine.

B. If the proposed program curriculum substantially duplicates an existing program at Florida Agricultural and Mechanical University, provide evidence that the proposed program would not affect enrollment in Florida Agricultural and Mechanical University's program.

This proposed program does not duplicate an existing program at FAMU.

V. Curriculum

A. If the program is a bachelor's degree, please identify if the university is seeking any of the following statuses for the program.

☐ Not Applicable

Status	Yes	No	If yes, complete the following
Common Prerequisites		√	Appendix C
Exception to 120 Credits		√	Appendix D
Specialized Admissions		√	Appendix E

B. Describe the admissions criteria and graduation requirements for the program.

The admissions criteria and graduation requirements for this program mirror those of our other baccalaureate degree programs. The graduation requirements successful completion of:

a. Program degree requirements (listed in table V-C)
b. 120 credit hours with a cumulative GPA of at least 2.0
c. 36 credit hour General Education program, including 6 credit hours of English Composition coursework and 6 credit hours of mathematics
d. 6 credit hours of courses designated as writing intensive
e. 48 credit hours of courses numbered 3000 or above
f. The foreign language admissions requirement
g. Florida's Civic Literacy requirement
h. At least 25% of coursework (including 30 of the final 60 credit hours) earned at Florida Polytechnic University

C. If the proposed program is an AS-to-BS capstone, provide evidence that it adheres to the guidelines for such programs, as outlined in State Board of Education Rule 6A-10.024. List any prerequisites and identify the specific AS degrees that may transfer into the proposed program.

☒ Not applicable to this program because it is not an AS-to-BS Capstone.

D. Describe the curricular framework for the proposed program in the table below.

Course Prefix & Number	Course Title	Required or Elective	Credit Hours	Course Description
ISC 1000	Frontiers of Science	Required	1	This course introduces applications at the frontiers of science to be explored by science majors in their first year. Concepts and applications in astronomy, biology, chemistry, and physics will be covered. In this course, each new topic is introduced along with the relevant computational tools and a discussion of pertinent problem-solving techniques. This course will also contain presentations by guest lecturers and discussions of relevant scientific literature.
BSC 2010	Biology 1	Required	3	This is the first course in a two-semester introductory biology sequence intended for life science majors. This course covers topics including the chemistry of life, cell structure and function.
BSC 2010L	Biology 1 Lab	Required	1	This is the first lab in a two-semester introductory biology sequence intended for life science majors. This lab covers topics including the chemistry of life, cell structure and function.
BSC 2011	Biology 2	Required	3	This is the second course in a two-semester introductory biology sequence intended for life science majors. This course covers topics including genetics, the tree of life, form and function of plants and animals, and ecology.
BSC 2011L	Biology 2 Lab	Required	1	This is the second lab in a two-semester introductory biology sequence intended for life science majors. This lab covers topics including genetics, the tree of life, form and function of plants and animals, and ecology.
APK 2100	Human Anatomy	Required	3	This is the first course in a two-semester anatomy and physiology sequence intended for life science majors. This course covers topics including the general anatomy of the human body. Anatomical terminology, structures and locations of body structure are a primary focus.
APK 2100L	Human Anatomy Lab	Required	1	This is the laboratory for the first course in a two-semester anatomy and physiology sequence intended for life science majors.
APK 2105	Human Physiology	Required	3	This is the second course in a two-semester anatomy and physiology sequence intended for life science majors. This course covers topics including human physiology. Cells, tissue and organs of the integumentary, skeletal, muscular, nervous, circulatory, respiratory, digestive, urinary and reproductive systems are discussed.
APK 2105L	Human Physiology Lab	Required	1	This is the laboratory for the second course in a two-semester anatomy and physiology sequence intended for life science majors.
PCB 3023	Molecular Cell Biology	Required	3	This course covers topics including the structure and function of eukaryotic cells. Topics including bioenergetics, protein structure and function,

				chromosome structure, DNA repair and recombination, membrane structure and transport and the organization and functions of the cytoskeleton and extracellular matrix will be discussed.
PCB 3843	Neuroscience	Required	3	This course covers topics including cellular and molecular approaches to neuroscience. Brain function and invertebrate model systems will be discussed.
PCB 3063	Genetics	Required	3	This course covers topics including fundamental concepts in genetics. The role of genetic material organization, transmission, expression, recombination and function are studied. Inheritance in eukaryotic organisms with emphasis on implications in humans will be discussed.
BME 4503C	Biomedical Devices	Required	3	This design course discusses the fundamental principles needed to acquire, measure, and process signals. Topics include operational amplifier circuits for signal conditioning, amplification, and spectral filtering, and studies of biosensors and bioelectrodes used in biomedical applications. The course also includes digital systems and Boolean logic to enable prototyping of clinical devices.
BSC 4892C	AI in Biology	Required	3	This is the second design course which applies Artificial Intelligence (AI) methods applied to diverse areas of Biology and Medicine. Focuses on machine learning approaches as well as deep learning methods, including transformers. Covers machine learning methods for tabular data, computer vision, transfer learning, natural language processing, and transformer-based architecture. The course ends with discussions around understanding the neural basis of natural intelligence and the connections to AI.
CHM 2045	Chemistry 1	Required	3	This course introduces the principles of chemistry and their applications based upon the study of physical and chemical properties of the elements. Topics covered in this class includes: stoichiometry, atomic and molecular structure, the states of matter, chemical bonding, thermochemistry, and gas laws.
CHM 2045L	Chemistry 1 Laboratory	Required	1	Students will participate in laboratory experiments designed to reflect the topics presented in CHM 2045 - Chemistry 1 . This course meets communication/writing-intensive requirements.
CHM 2046	Chemistry 2	Required	3	This course introduces the principles and applications of chemistry including solutions, chemical thermodynamics, kinetics, equilibria, aqueous chemistry, electrochemistry and nuclear chemistry.
CHM 2046L	Chemistry 2 Laboratory	Required	1	Students will participate in laboratory experiments designed to reflect the topics presented in CHM 2046 - Chemistry 2.
CHM 2210	Organic	Required	3	The first half of the CHM 2210-2211 sequence,

	Chemistry 1			intended for bioscience majors and pre-professional students. A study of the structures, syntheses, and reactions of organic compounds.
CHM 2210L	Organic Chemistry 1 Laboratory	Required	2	Organic laboratory experiments designed to accompany CHM 2210. Fundamental organic chemistry principles. Structure, nomenclature, properties, preparation, reactions of hydrocarbons, alkyl halides, alcohol, phenols, ethers, sulfur analogs, and other compounds.
CHM 2211	Organic Chemistry 2	Required	3	The second half of the CHM 2210/2211 sequence, intended for bioscience majors and preprofessional students. This class will continue coverage of fundamental concepts of organic chemistry, including infrared (IR) and nuclear magnetic resonance (NMR) spectroscopy, the structure, nomenclature, and reactivity of organometallic compounds, aldehydes, ketones, carboxylic acids and their derivatives, enolate anions and enamines, conjugated systems, aromatic compounds and amines.
CHM 2211L	Organic Chemistry 2 Laboratory	Required	2	Organic laboratory experiments designed to accompany CHM 2211. Emphasizing the oxygen and nitrogen-containing functional groups of both the aliphatic and aromatic series, with spectroscopy as an analytical method throughout the course.
BCH 3053	General Biochemistry	Required	3	Topics include chemistry and functions of constituents of cells and tissues and the chemical and physical-chemical basis for the structures of nucleic acids, proteins, and carbohydrates. Basic enzymology and biochemical reaction mechanisms involved in macromolecular synthesis and degradation, signaling, transport, and movement and the general metabolism of carbohydrates, fats, and nitrogen-containing materials such as amino acids, proteins, and related compounds are also discussed.
BCH 4XXX	Biomedical Sciences Capstone 1	Required	3	Projects in experimental, theoretical or computational Biomedical Sciences conducted in collaboration with Science faculty. This course requires an oral and written research report by the student.
BCH 4XXX	Biomedical Sciences Capstone 2	Required	3	The primary purpose of this course is to provide students with an opportunity for firsthand, supervised research in Biomedical Science. Projects may involve inquiry, design, investigation, scholarship, discovery or application in Biomedical Science.
Certificate Electives:				
BME 3201	Biomechanics	Elective	3	Biomechanics combines the principles of mechanics with the study of living organisms. It examines how forces and motion affect the structure and function of living systems, from the cellular to the systems level. Biomechanics applies the laws of physics and engineering to

				analyze and understand the biological systems, their movements, and the stresses that affect them.
BME 3891	Fundamentals of Rehabilitation Engineering	Elective	3	Overview of rehabilitation engineering with emphasis on engineering principles and science involved in developing devices and technological solutions to assist individuals with disabilities and impairments.
CHM 3065	Analytical Chemistry	Elective	3	This course aims to introduce the basics of analytical chemistry and techniques used in the analytical laboratory to make quantitative measurements. Both classic and modern techniques will be discussed, with a focus on the application of theory in the real world. An introduction to statistical analysis and data interpretation will be discussed.
BME 3101	Biomedical Materials	Elective	3	The main objective of this course is to understand biomaterials and their potential role in various advanced biomedical applications. This course is designed to explore engineering biomaterials to achieve specific properties required for the development of advanced biomedical devices. The topics of this course are focused on covering principles of biomaterials, cell-biomaterials interaction, molecular-biomaterials interaction, degradation of biomaterials, and several advanced biomedical applications, including implants, tissue engineering, drug delivery, biosensors, etc.
BME 4311	Biomolecular Engineering	Elective	3	This course aims to introduce fundamental biological principles for a better understanding of biomedical systems. This course will serve as a platform where students can connect the role of cellular and molecular science to understanding various biomedical engineering applications. This course is specifically designed for students who are on the biomedical sciences track and want to learn about biomedical devices, state-of-the-art knowledge of cells, tissues, and organs. The content of this course includes biomolecules (DNA, RNA, enzymes, proteins) structure along with their function, cellular structure along with function, gene editing, and various bioanalytical tools (like ELISA, PCR, etc.).
CHS 3501	Forensic Chemistry	Elective	3	This course aims to use chemistry to uncover information from physical evidence. The chemical aspects of forensic science will be explored as they relate to crime scene investigation and crime lab analysis. The scientific method and the major laws of chemistry will be applied. A variety of case studies and video clips will provide the context for exercises in basic chemistry, critical thinking, and collaborative problem solving.
PHA 3003	Principles of Pharmacology	Elective	3	This course provides an introduction to pharmacology with a focus on the scientific principles of drug action and the therapeutic

				application of major drug classes. Topics include pharmacokinetics, pharmacodynamics, autonomic pharmacology, cardiovascular agents, central nervous system pharmacology, endocrine drugs, chemotherapy, and toxicology. Emphasis is placed on the clinical use of drugs, mechanisms of action, side effects, and case-based problem solving.
PHC 4030	Introduction to Epidemiology	Elective	3	This course provides an introduction to epidemiology, i.e., to the study of the description and determinants of disease frequency in human populations. The course focuses on "how we know what we know" about the causes of disease in human populations.
MCB 2000	Microbiology	Elective	3	This course covers topics including the principles and techniques of microbiology, including implications from genetics, taxonomy, biochemistry, and ecology of microorganisms.
MAN 4093	Healthcare System Management	Elective	3	This course provides a broad orientation and overview to healthcare management with a combination of lecture and the application of data and analysis used to interpret and make decisions in the healthcare industry.
HUN 2201	Fundamentals of Human Nutrition	Elective	3	This introductory course provides an overview of the principles of nutritional science. Subject matter includes description and functions of nutrients, digestion and absorption, effects of nutrient deficiencies and toxicities, requirements, food sources, nutrient interactions, dietary guidelines, and the role of nutrition in health and disease.

E. Does an industry or employer advisory council exist to provide input regarding curriculum development, student assessment, and academic workforce alignment?

☐ Yes

☒ No. Describe any plans to develop one or other plans to ensure academic workforce alignment.

A Curriculum Advisory Board (CAB) will be established as soon as the program is approved. We already have experts who have offered to serve the CAB, including working professionals from the Orlando College of Osteopathic Medicine, Lakeland Regional Health, and Orlando Health.

F. Explain how employer-driven or industry-driven competencies were identified and incorporated into the curriculum. Has a strategy been established for assessing student learning and reviewing academic workforce alignment to modify the curriculum as needed?

Employer- and industry-driven competencies were identified through alignment with established workforce expectations in healthcare, biomedical research, and medical technology fields (as well as a careful review of O*NET) and were intentionally incorporated into the curriculum through applied, skills-focused coursework. Core competencies such as quantitative reasoning, laboratory and experimental design, data analysis, technology integration, teamwork, and professional communication are embedded throughout required science and laboratory sequences. Upper-division courses in Biomedical Devices and AI in Biology explicitly reflect industry needs for graduates who can work with medical instrumentation, data-driven diagnostics, and emerging technologies, while the required two-semester capstone emphasizes real-world problem solving, research practices, and collaboration. Optional certificates in Biomedical Devices and Pre-Health further allow students to align coursework with employer expectations and professional pathways, ensuring the curriculum remains responsive to workforce demand while maintaining academic rigor.

This program will adhere to institutional assessment, program review, and curriculum revision processes, which includes assessment of an industry-sponsored culminating capstone project.

G. Does the proposed curriculum align with Section 1001.706 (5)(a), Florida Statutes?

☒ Yes
☐ No

H. For degree programs in medicine, nursing, and/or allied health sciences, identify the courses with the competencies necessary to meet the requirements in Section 1004.08, Florida Statutes.

For teacher preparation programs, identify the courses with the competencies required in Section 1004.04, Florida Statutes.

☒ Not applicable to this program because the program is not a medicine, nursing, allied health sciences, or teacher preparation program.

This program is allied health-adjacent and includes the following courses with the competencies necessary to meet Statutory requirements:
- BME 4503C: Biomedical Devices
- BME 3891: Fundamentals of Rehabilitation Engineering
- APK 2100: Human Anatomy
- APK 2105: Human Physiology
- Capstone

I. Select the anticipated mode of delivery for the proposed program.

☒ Face-to-Face
☐ Hybrid
☐ Distance Learning

If the method(s) of delivery will require specialized services or additional financial support, describe the projected costs below.

The method of delivery will not require specialized services or additional financial support.

J. Describe any potential impact on related academic programs or departments, such as an increased need for general education or common prerequisite courses or an increased need for required or elective courses outside of the proposed academic program. If the proposed program is a collaborative effort with another academic department(s), college(s), or school(s) within the institution, provide a letter(s) of support or MOU(s) from each department, college, or school in Appendix B.

This program will increase enrollment in our current general education courses and chemistry courses. In alignment with our Strategic Plan, we are hiring faculty in these areas to meet this increased student demand.

K. Describe any currently available sites for internship and/or practicum experiences and any plans to seek additional sites in the next five years.

☐ Not applicable to this program because students are not expected to seek internship or practicum opportunities as a required curriculum component.

All Florida Poly students are required to complete an internship. We will use our existing pool of internship sites and continue to foster industry partnerships to ensure all Florida Poly students have access to high-quality internship experiences.

Potential partners for internships include: Arthrex, BD Biosciences, ConMed, Johnson and Johnson, Medtronic, Pfizer, and Stryker. For the pre-health programs local hospitals like Lakeland Regional Health (Lakeland), Advent Health (Lakeland and Celebration), and BayCare (in Winter Haven and Bartow) will ideal partners for shadowing, scribing, internships, and clinicals. These will also be great sources of feedback through the CAB and less formally through connections through these institutions.

L. Identify any established or planned educational sites where the program will be offered or administered. Provide a rationale if the proposed program will only be offered or administered at a site(s) other than the main campus.

This program will be offered only at our main campus.

M. If the institution has conducted recent program reviews, received feedback from accreditation bodies, or received input from other entities that affect the proposed program, describe the institution's progress in implementing the recommendations. If the proposed program is a doctoral-level program, include the external consultant's report and the institution's responses to the report as Appendix A.

Florida Poly has earned successful programmatic reaffirmation decisions from ABET and institutional accreditation from SACSCOC. No feedback or recommendations would affect this proposed program.

VI. Faculty

A. Identify existing and anticipated full-time faculty who will participate in the proposed program through Year 5, excluding visiting or adjunct faculty in the table below. Additionally, provide the curriculum vitae for each identified faculty member.

Faculty Code*	Faculty Name or "New Hire" Highest Degree Held Academic Discipline	Rank	Contract Status	Initial Date for Participation in Program
A	Ian Bentley, Ph.D. Physics	Professor	Non-Tenure	Fall 2026
A	Susan LeFrancois, Ph.D. Pharmacology/Physiology	Associate Professor	Non-Tenure	Fall 2026
A	Ajeet Kaushik, Ph.D. Chemistry	Associate Professor	Non-Tenure	Fall 2026
A	Pedro Manrique, Ph.D. Physics	Assistant Professor	Non-Tenure	Fall 2026
A	Hyeyoung Cho, Ph.D. Chemical Engineering	Assistant Professor	Non-Tenure	Fall 2026
A	Tracy Olin, Ph.D. Chemistry	Distinguished Instructor	Non-Tenure	Fall 2026
A	Vijaya Sista, M.S. Chemistry	Senior Instructor	Non-Tenure	Fall 2026
C	Bert Rivera, Ph.D. Biology	Professor	Non-Tenure	Fall 2026
C	New Hire, Ph.D. Biochemistry		Non-Tenure	Fall 2026
C	New Hire, Ph.D. Biology		Non-Tenure	Fall 2026
C	New Hire, Ph.D. Biology		Non-Tenure	Fall 2027
C	New Hire, Ph.D. Biology		Non-Tenure	Fall 2028

*Faculty Code	Code Description	Source of Funding
A	Existing faculty on a regular line	Current Education & General Revenue
B	New faculty to be hired on a vacant line	Current Education & General Revenue
C	New faculty to be hired on a new line	New Education & General Revenue
D	Existing faculty hired on contracts/grants	Contracts/Grants
E	New faculty to be hired on contracts/grants	Contracts/Grants
F	Existing faculty on endowed lines	Philanthropy & Endowments
G	New faculty on endowed lines	Philanthropy & Endowments
H	Existing or new faculty teaching overload in addition to assigned course load	Enterprise Auxiliary Funds

B. Provide specific evidence demonstrating that the academic unit(s) associated with the proposed program has been productive in teaching, research, and service. Such evidence may include trends over time for average course load, student headcount in major or service courses, degrees granted, external funding attracted, and other

For the past two and a half years approximately 500 students at Florida Poly have completed CHM 2045: Chemistry 1 each year. Student credit hours generated have increased at a pace equal to the overall growth of the institution.

Chemistry faculty are highly productive in research. One faculty member, Ajeet Kaushik, has been recognized on a listing from Stanford University as being in the top 2% of researchers in the nation based on the number of articles published and the citations the articles receive.

Across their careers, the Chemistry faculty have mentored over 17 graduate students and approximately the same number of undergraduate students.

VII. Estimate of Investment

A. Provide the tuition rate for the proposed program for resident and non-resident students.

Resident/Credit Hour	Non-Resident/Credit Hour
Standard tuition rate: Tuition: $105.07 Fees: $ 59.58	Standard tuition rate: Tuition: $105.07 Fees: $595.08

If the proposed program will operate as self-supporting, market tuition rate, or establish differentiated graduate-level tuition, per Board of Governors Regulation 8.002, complete Appendix F, Self-Supporting & Market Rate Tuition.

B. Complete the summary table below.

1. Provide funding sources for Years 1 and 5 of program operation.
2. Provide headcount (HC) estimates of student enrollment for Years 1 through 5.

Implementation Timeframe	HC	E&G Funds	Contract & Grants Funds	Auxiliary/ Philanthropy Funds	Total Cost
Year 1	35	$1.0M	$0	$0	
Year 2	80				
Year 3	125				
Year 4	180				
Year 5	225	$2.0M	$250,000	$0	

C. Is the infrastructure in place to meet the new degree program requirements, such as hiring faculty and staff, curriculum development, facilities, and funding, before enrollment of students to the program?

☒ Yes

☐ No. If not, is there a plan to establish the infrastructure to support the program? Please describe.

VIII. Institutional Resources

A. Describe any additional library resources needed to implement and/or sustain the program through Year 5.

☒ Not applicable to this program because no additional library resources are needed to implement or sustain the proposed program.

B. Describe any specialized equipment and space currently available to implement and/or sustain the proposed program through Year 5.

Florida Poly will allocate existing classroom and lab space to the B.S. in Biomedical Sciences program. Existing equipment and lab renovation funds will be used to retrofit labs for Biomedical Science needs.

C. Describe any additional specialized equipment or space needed to implement and/or sustain the program through Year 5. Include any projected Instruction and Research (I&R) costs of additional space. Costs for new construction should be provided in response to Section VIII.D. below.

☐ Not applicable to this program because no new I&R costs are needed to implement or sustain the program through Year 5.

Florida Poly plans to spend up to $1M across FY26 and FY27 to purchase necessary equipment and outfit classrooms and labs for advanced chemistry and biology. Faculty have created a comprehensive list of equipment and materials to purchase prior to the launch of the program (and funding to cover these expenses has been earmarked for this purpose).

D. If a new capital expenditure for instructional or research space is required, indicate where this item appears on the university's fixed capital outlay priority list. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase due to the program, describe and estimate those expenses below. High enrollment programs, in particular, are expected to necessitate increased costs in non-I&R activities.

☒ Not applicable to this program because no new capital expenditures are needed to implement or sustain the program through Year 5.

E. Describe any additional special categories of resources needed to operate the proposed program through Year 5, such as access to proprietary research facilities, specialized services, or extended travel.

☒ Not applicable to this program because no additional special categories of resources are needed to implement or sustain the program through Year 5.

F. Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5.

☒ Not applicable to this program because no fellowships, scholarships, and/or graduate assistantships will be allocated to the proposed program through Year 5.

IX. Required Appendices

Table 1 outlines the required appendices by degree level. Institutions may provide additional appendices to supplement the information provided in the proposal and list them in Table 2 below.

Table 1. Appendices

	Appendix Title	Degree Level	Required for Specific Programs	Included Yes/No
A	Consultant's Report and Institutional Response	Doctoral or Professional		No
B	Letters of Support or MOUs from Other Academic Units	Any new program	Only for programs offered in collaboration with other academic unit(s) within the institution	No (not applicable)
C	Common Prerequisite Request Form	Bachelor's		Yes
D	Request for Exception to the 120 Credit Hour Requirement	Bachelor's	Requesting approval to exceed the 120 credit hour requirement	No
E	Request for Specialized Admissions Status	Bachelor's	Requesting approval for specialized admissions status	No
F	Self-Supporting & Market Rate Tuition Programs	Graduate programs	Only for self-supporting or market tuition rate programs	No
G	Faculty Curriculum Vitae	Any new program		Yes

Table 2. Additional Appendices

Appendix	Appendix Title	Description

STATE UNIVERSITY SYSTEM OF FLORIDA

Appendix G
Faculty Curriculum Vitae

Instructions:

Provide the curriculum vitae for each identified faculty member who will participate in the proposed program from Year 1 through Year 5, excluding visiting or adjunct faculty.

Ian J. Bentley
ibentley@floridapoly.edu

ACADEMIC POSITIONS

Department Chair Biology, Chemistry, Chemical Engineering **2025-present**
Department Chair Physics **2023-present**
Professor of Physics **2023-present**
Florida Polytechnic University (Lakeland, FL)

- Led the university to establish a bachelor's degree in Physics which began in the fall of 2025.
- Assessed and revised the Engineering Physics curriculum to better prepare students in our program for graduate school and industry by adding the requirement of traditional physics core courses and by introducing design approaches to intermediate-level physics labs.
- Advised adjustments to the introductory physics courses which improved the consistency in course material delivery, communications with students, and exam grading.
- Advised adjustments in introductory physics labs to introduce error analysis techniques, improve lab grading rigor, and demystify how laboratory equipment determines certain measurements.
- Supervised four undergraduates in computational nuclear physics research.

Dual Degree Engineering Program Director **2022-2023**
Physics Program Director **2018-2022**
Associate Professor of Physics **2018-2023**
Chemistry and Physics Co-Department Chair **2017,2018**
Assistant Professor of Physics **2012-2018**
Saint Mary's College (Notre Dame, IN)

- Principal duties include teaching approximately half of the undergraduate physics curriculum, advising physics majors and minors, and actively participating in college governance.
- Led the college to establish bachelor's degrees in Physics, Physics and Applied Mathematics, and a minor in Physics all of which began in the fall of 2016.
- Developed, assessed, and revised curriculum for the physics program.
- Supervised the growth of the physics program resulting in the classes of 2020, and 2021, graduating more bachelor's degrees awarded to women than any other college or university in the state of Indiana (top 6%, nationally, among primarily undergraduate institutions).
- Principal Investigator for approximately $1.1 million in external funding including the first major (more than $500,000) NSF research grant awarded to Saint Mary's College.
- Served as academic adviser or co-adviser for a total of 48 undergraduate physics students and approximately 80 undergraduates in the dual degree engineering program with the University of Notre Dame.
- Supervised 22 undergraduate students in various computational research projects on topics including image and video analysis, nuclear physics, quantum mechanics, and astrophysics.
- Supervised 22 undergraduate senior comprehensive theses for students majoring in physics, mathematics, and chemistry, and served as a reader for three additional senior theses in mathematics, and biology.
- Supervised eight undergraduates in independent studies covering supplemental coursework in thermodynamics, classical mechanics, and astronomy.

Adjunct Associate Professor of Physics **2018-2023**
Adjunct Assistant Professor of Physics **2012-2018**
Postdoctoral Research Associate **2010-2011**
University of Notre Dame (Notre Dame, IN)

- Taught calculus-based physics for life sciences courses to a primarily pre-med audience.
- Collaborated on research projects in nuclear structure and nuclear astrophysics.

Visiting Assistant Professor of Physics **2011-2012**
Marquette University (Milwaukee, WI)

Adjunct Assistant Professor of Physics **2010-2011**
Indiana University South Bend (South Bend, IN)

EDUCATION

Ph.D. in Nuclear Physics **2004-2010**
University of Notre Dame (Notre Dame, IN)
M.S. in Physics **2004-2008**
University of Notre Dame (Notre Dame, IN)
B.S. in Physics, Astrophysics Option with Honors **2000-2004**
New Mexico Institute of Mining and Technology (Socorro, NM)
Minors: History and Mathematics

AFFILIATIONS

Honor Societies
Pi Mu Epsilon,
Sigma Pi Sigma, and
Sigma Xi

Professional Memberships
American Association of Physics Teachers,
American Astronomical Society,
American Physical Society,
Institute of Electrical and Electronics Engineers, and
Society for Integrative and Comparative Biology

EXTERNAL GRANTS

Women in STEM Program: Professorship in Physics **2022**
Claire Boothe Luce Foundation
Grant awarded to support the first five years of a new tenure track faculty line in physics at Saint Mary's College (*approx. $500,000, role: PI*).

Automated Bat Counting Software Project **2021-2025**
U.S. Department of the Interior, Department of Fish and Wildlife
Developed user interface to facilitate measurements of the number of bats moving into and out of user-defined regions on thermal videos (*approx. $55,000, role: Co-PI*).

Intuitive Video and Image Analysis Software Development **2019-2023**
National Science Foundation (Award Number 1916850)

Developed software for video and image analysis for use in biology. The software allows users to sample length, area, angle, and color on digital images. Additionally, developed new tracking algorithms allow users to more accurately determine the count of objects, and properties of motion in digital videos (*approx. $600,000, role: PI*).

Travel Grant **2008-2009**

Japan-U.S. Theory Institute for Physics with Exotic Nuclei

Collaborated with researchers at RIKEN to discuss approximate pairing calculations and at University of Tokyo to discuss fermionic to bosonic mapping.

INTERNAL AWARDS AND GRANTS

Computational Physics Laboratory Equipment **2022**

IT Capital Request, Saint Mary's College

Optimized four high-powered workstations for neural network calculations to be used in both teaching and research (*approx. $50,000, role: PI*).

Investigation of Nuclear Shell Evolution Grant **2021**

Marjorie Neuhoff Summer Science Research Communities, Saint Mary's College

Worked with two students to model shell structure by adjusting Nilsson coefficients in an attempt to reproduce low lying transition probabilities and energy levels (*approx. $15,000, role: PI*).

Computational Physics Course Development Grant **2019**

Center for Academic Innovation, Saint Mary's College

Developed scaffolded computational research projects in astrophysics, nuclear physics, quantum mechanics, and video and image analysis.

Image Analysis of Paper Analytical Devices Grant **2018**

Marjorie Neuhoff Summer Science Research Communities, Saint Mary's College

Worked with three students and other faculty to test and validate existing image analysis codes, improve feedback provided to the user and determine the success rates of colorimetric comparisons (*approx. $20,000, role: PI*).

Paper Analytical Devices and Genomics Grant **2014**

Marjorie Neuhoff Summer Science Research Communities, Saint Mary's College

Advised two student researchers in the development of various prototype programs allowing for color sampling on regions of interest in digital photographs and the creation of color catalogs for future use (*approx. $35,000, role: Co-PI*).

Women's Voices Course Development Grant **2013**

Center for Academic Innovation, Saint Mary's College

Modified the standard narrative in a modern physics course to include research projects focused on contributions from women scientists in the era.

Research and Dissertation Award **2010**

Department of Physics, University of Notre Dame

Awarded in recognition of outstanding thesis and defense.

Outstanding Teaching Assistant Award **2006**

American Association of Physics Teachers and Kaneb Center, University of Notre Dame

Awarded in recognition of exceptional work as a Teaching Assistant in introductory physics laboratories.

SUPPLEMENTAL RESEARCH SUPPORT

Biologically Inspired Approaches by Active Sensors Grant **2016-2019**
Promising Basic Research, Office of Naval Research

Assisted bat flight research by prototyping video analysis software allowing for the quantification of movement (*role: Research Scientist for 1 month support*).

Assessing the Quality of Pharmaceuticals and Water Grant **2016-2019**
International Research Experiences for Students, National Science Foundation (Award Number 1559496)

Performed secondary validation of pharmaceutical sampling tests by developing image analysis software (*role: Research Scientist for 1 month support*).

Nepal Paper Analytical Devices **2015-2017**
Mathile Family Foundation

Developed pharmaceutical sampling and feedback system with a student researcher and software engineer for deployment in Nepal (*role: Research Scientist for 2 months support*).

Nuclear Props. at Extreme Density, Temp., Spin, and Isospin **2010-2013**
Department of Energy (Award Number DE-FG02-95ER4093)

Provided pairing and rotational energy determinations based on experimental data and performed complementary pairing calculations (*role: Research Scientist for 1 month support*).

COURSES INSTRUCTED

Title	Level	Institution (Number of Sections)
Astronomy	100	IUSB (2), SMC (6)
Frontiers of Physics	100	FPU (1)
Introductory Engineering	100	FPU (1)
College Physics 1	100-200	MU (1), SMC (1)
College Physics 2	100-200	IUSB (1), MU (1), SMC (1)
Introductory Physics Labs.	100-200	IUSB (7), SMC (20)
University Physics 1	100-300	FPU (3), MU (2), ND (9), SMC (13)
University Physics 2	100-300	FPU (2), MU (1), ND (7), SMC (10)
Computational Physics Lab.	200	SMC (1)
Nuclear Science	200	SMC (2)
Wave Mechanics Lab.	200	SMC (1)
Stellar Astrophysics	200-400	FPU(1), SMC (1)
Classical Mechanics	300	SMC (3)
Mathematical Methods	300	SMC (1)
Thermal and Statistical Physics	300	SMC (2)
Nuclear and Subatomic Physics	400	MU (1)
Quantum Mechanics	400-500	MU (1), SMC (4)

COLLEGE AND UNIVERSITY SERVICE

Committee	Role	Institution (Years)
Collective Bargaining	Provost Representative	FPU (2024-present)
Academic Policies and Procedures	Chair Representative	FPU (2024-present)
University Appeals	Chair Representative	FPU (2024-present)
Academic Integrity Hearing	Chair Representative	FPU (2023-present)
University Evaluation	Committee Member	FPU (2023-present)
Department Evaluation	Chair	FPU (2023-present)
Departmental Hiring	Chair Member	FPU (2023-present) SMC (2020-2022) SMC (2013,2016)
President's Cabinet	Faculty Representative	SMC (2022-2023)
Academic Leadership Council	Executive Committee	SMC (2022-2023)
Maker-Space Advisory Committee	Engineering Representative	SMC (2022)
External Relations and Admission	Faculty Representative	SMC (2021-2023)
Academic Effectiveness	Committee Member	SMC (2020-2022)
Rank and Tenure	Committee Member	SMC (2020-2021)
Student Designed Major	Committee Member	SMC (2020)
College Relations	Faculty Representative	SMC (2017-2018)
Faculty Compensation	Member (Chair 2016-2017)	SMC (2015-2018)
Finance and Budget	Committee Representative	SMC (2015-2017)
Admission and Scholarship	Faculty Representative	SMC (2014-2017)
Nominating	Committee Member	SMC (2014-2016)
Student Life	Committee Representative	SMC (2014-2015)
Science Hall Renovation	Department Representative	SMC (2012-2014)

PEER REVIEWED PUBLICATIONS AND EDITED WORKS

23. M. Gebran, I. Bentley. The Use of Conditional Variational Autoencoders in Generating Stellar Spectra. *Astronomy*, Vol. 4, Issue 13, 1-14 (2025).

22. I. Bentley, J. Tedder*, M. Gebran, and A. Paul. Further exploration of binding energy residuals using machine learning and the development of a composite ensemble model. *Phys. Rev. C* **112**, 014324 (2025)

21. I. Bentley, J. Tedder*, M. Gebran, and A. Paul. High precision binding energies from physical-feature-instructed machine learning. *Phys. Rev. C* **111**, 034305 (2025).

20. I. Bentley, and M. Gebran. Neural Networks in the Physical Sciences. *American Chemical Society*, **ACS In Focus** (2025).

19. M. Gebran, I. Bentley, R. Brienza*, F. Paletou. Deep learning application for stellar parameter determination: III-denoising procedure. *Open Astronomy Journal*, Vol. 34, Issue 1, 1-9 (2025).

18. A. Weesner, I. Bentley, J. Fullerton*, L. Kloepper. Interaction rules guiding collective behavior in echolocating bats. *J. Anim. Behav.* **206**, 91 (2023).

17. I. Bentley, V. Kuczynska, V. Eddington, M. Armstrong, L. Kloepper. BatCount: a software program to count moving animals. *PLoS ONE* 18(3): e0278012 (2023).

16. M. Gebran, F. Paletou, I. Bentley, K. Connick*, R. Brienza*. Deep learning application for stellar parameters determination: II- application to observed spectra of AFGK stars. *Open Astronomy Journal*, Vol. 32, Issue 1, 1-15 (2023).

15. M. Gebran, K. Connick*, H. Farhat, F. Paletou, I. Bentley. Deep learning application for stellar parameters determination: I- constraining the hyperparameters. *Open Astronomy Journal*, Vol. 31, Issue 1, 38-57 (2022).

14. C. Probst*, J. Ralston, and I. Bentley. Effects of climate on bill morphology within and across Toxostoma thrashers. Journal of Avian Biology. e02871 (2021).

13. K. Neergård and I. Bentley. Role of pair-vibrational correlations in forming the odd-even mass difference. *Phys. Rev. C* **99**, 054315 (2019) and Erratum: Role of pair-vibrational correlations in forming the odd-even mass difference. *Phys. Rev. C* **100**, 019902 (2019).

12. L. Kloepper, and I. Bentley. Stereotypy of group flight in Brazilian free-tailed bats. *J. Anim. Behav.* **131**, 123 (2017).

11. I. Bentley, Y. Colón Rodríguez*, S. Cunningham*, and A. Aprahamian. Shell structure from nuclear observables. *Phys. Rev. C* **93**, 044337 (2016).

10. I. Bentley, Particle-hole symmetry numbers for nuclei. *Indian J. Phys.* **90**, Issue 9, 1069 (2016).

9. B. Bucher, H. Mach, A. Aprahamian, G.S. Simpson, J. Rissanen, D.G. Ghiţă, B. Olaizola, W. Kurcewicz, J. Äystö, I. Bentley, T. Eronen, L.M. Fraile, A. Jokinen, P. Karvonen, I.D. Moore, H. Penttilä, M. Reponen, E. Ruchowska, A. Saastamoinen, M.K. Smith, and C. Weber, New lifetime measurements in ^{109}Pd and the onset of deformation at N=60. *Phys. Rev. C* **92**, 064312 (2015).

8. I. Bentley, K. Neergård and S. Frauendorf. Nuclear masses near N = Z from Nilsson-Strutinsky calculations with pairing corrections beyond BCS from an isospin conserving pairing force. *Phys. Rev. C* **89**, 034302 (2014) and Erratum: Nuclear masses near N=Z from Nilsson-Strutinsky calculations with pairing corrections beyond BCS from an isospin-conserving pairing force. *Phys. Rev. C* **89**, 049901 (2014).

7. A. Aprahamian, I. Bentley, M. Mumpower, and R. Surman. Sensitivity studies for the main r process: nuclear masses. *AIP Advances* **4**, 041101 (2014).

6. I. Bentley and S. Frauendorf. Relation Between Wigner Energy and Proton-Neutron Pairing. *Phys. Rev. C* **88**, 014322 (2013).

5. S. Brett*, I. Bentley, N. Paul*, R. Surman and A. Aprahamian. Sensitivity of the r-process to nuclear masses. *Eur. Phys. J. A* **48**: 184 (2012).

4. I. Bentley and S. Frauendorf. Microscopic Calculation of IBM Parameters by Potential Energy Surface Mapping. *Phys. Rev. C* **83**, 064322 (2011).

3. I. Bentley, S. Brant, F. Dönau, S. Frauendorf, B. Kämpfer, R. Schwengner and S. Zhang. Instantaneous Shape Sampling - a model for the gamma-absorption cross section of transitional nuclei. *Phys. Rev. C* **83**, 014317 (2011).

2. S.A. Colgate, H. Beckley, J. Si, J. Martinic, D. Westpfahl, J. Slutz, C. Westrom, B. Klein, P. Schendel, C. Scharle, T. McKinney*, R. Ginanni*, I. Bentley*, T.

Mickey*, R. Ferrel, H. Li, V. Pariev, and J. Finn. High Magnetic Shear Gain in a Liquid Sodium Stable Couette Flow Experiment; A Prelude to an Alpha-Omega Dynamo. *Phys. Rev. Lett.* **106**, 175003 (2011).

1. S.Q. Zhang, I. Bentley, S. Brant, F. Dönau, S. Frauendorf, B. Kämpfer, R. Schwengner, and A. Wagner. Instantaneous-Shape Sampling for Calculation of the Electromagnetic Dipole Strength in Transitional Nuclei. *Phys. Rev. C* **80(2)**, 021307(R) (2009).

*Denotes undergraduate student researchers.

CONFERENCE PROCEEDINGS AND OTHER MANUSCRIPTS

13. B. Bowman, Z. Zheng, N. Dalhy, B. Geary, I. Bentley, B. Karaman, Improving Object Counting Accuracy with Adaptive CNN Models and Meta-Level Routing.*2025 IEEE World AI IoT Congress (AIIoT)*, pp. 0084-0092 (2025).

12. I. Bentley, M. Gebran, S. Vorderer*, J. Ralston, L. Kloepper. Utilizing Neural Networks to Resolve Individual Bats and Improve Automated Counts. *2023 IEEE World AI IoT Congress (AIIoT)*, pp. 0112-0119 (2023).

11. K. Obert*, M. Schudt*, and I. Bentley. Color Saturation: Upper and Lower Percentage Histogram Manipulation. *Am. J. Undergrad. Res.* **20**, Issue 1, 59 (2023).

10. I. Bentley, J. Ralston, S. Garman*, O. Hershberger*, C.M. Probst*, and C. Washer*. Introducing the Scientific Image Analysis Application: A Free and User Friendly Program for Extracting Bioinformatics From Digital Images. *2023 IEEE 13th Annual Computing and Communication Workshop and Conference (CCWC)*, pp. 0778-0787 (2023).

9. I. Bentley, L. Kloepper, J. Ralston, C. Probst*, M. Becker, and A. Weesner. The Scientific Image Analysis (SIA) Application Version One Manual for Length, Angle, Area and Color Measurements on Digital Images. Users Manual (2021).

8. K. Neergård, and I. Bentley. Role of pair-vibrational correlations in forming the odd-even mass difference. *Il Nuovo Cimento C* (2019).

7. I. Bentley, K. Neergård, and S. Frauendorf. Comment on "No-core configuration interaction model for the isospin- and angular-momentum-projected states" by Satula, Baczyk, Dobaczewski, and Konieczka *arXiv:1608.08615v2* (2017).

6. J. Wilson*, T. Ricketts*, I. Bentley, and E. Misiolek. Four-Square Fiducial Markers Used in the Analysis of Paper Analytical Devices. *Am. J. Undergrad. Res.* **13**, Issue 2, 15 (2016).

5. A.I. Georgieva, A. Aprahamian, I. Bentley, A. Teymurazyan, and A. Nystrom. Systematic Evaluation of the Nuclear Binding Energies in the Valence Shells. *Bulg. J. Phys.* **42**, 544 (2015).

4. R. Surman, M. Mumpower, J. Cass*, I. Bentley, A. Aprahamian, and G.C. McLaughlin. Sensitivity studies for r-process nucleosynthesis in three astrophysical scenarios. The 25th International Nuclear Physics Conference. *EPJ Web of Conf.* **66**, 07024 (2014).

3. S. Frauendorf and I. Bentley. Wigner term generated by isovector p-n pairing. Heavy Ion Accelerator Symposium. *EPJ Web of Conf.* **63**, 01003 (2013).

2. I. Bentley and S. Frauendorf. Wigner X Resolved and Photo-Reaction Cross-Section Predictions: Improvements for Astrophysical Calculations. Dissertation, University of Notre Dame (2010).

1. S. Q. Zhang, I. Bentley, S. Brant, F. Dönau, S. Frauendorf, B. Kämpfer, R. Schwengner and A. Wagner. Instantaneous Shape Sampling for Calculating the Electromagnetic Dipole Strength in Transitional Nuclei. *AIP Conf. Proc.* **1090**, 194 (2009).

*Denotes undergraduate student researchers.

PRESENTATIONS, POSTERS, AND PANELS

37. "Machine Learning Based Determinations of Binding Energies" **session contribution**, I. Bentley, Nuclear Masses in Astrophysics for the Next 25 Years Workshop, GSI-Darmstadt (August 2025).

36. "The Power of Operations Research and Artificial Intelligence: Success Stories and Emerging Trends" **panelist**, I. Bentley, A. El Kamel, E. Gutiérrez-Franco, T. Jones, C. Mejía, A. Senol, V. Tercero, S. Thirumalai, J. Trujillo, and Hayder Zghair. 10th North American Conference on Industrial Engineering and Operations Management (June 2025).

35. "Utilizing Machine Learning Techniques to Predict Binding Energies." **session contribution**, I. Bentley, M. Gebran, and J. Tedder*. American Physical Society, Global Physics Summit (March 2025).

34. "Machine Learning for Nuclear Physics Datasets." **math and physics seminar**, I. Bentley, and J. Tedder. Florida Polytechnic University (February 2025).

33. "Improving Population Counts Using Neural Networks" I. Bentley, and M. Gebran. **session contribution**, Society of Integrative and Comparative Biology (January 2025).

32. "Determining and Modeling the Shapes of Atomic Nuclei." **math and physics seminar**, I. Bentley, A. Bodoh*, and M. Gebran. Florida Polytechnic University (April 2024).

31. "Network Based Fermionic to Bosonic Potential Energy Surface Mapping." **session contribution**, I. Bentley, M. Gebran, A. Bodoh*, and B. Halsey*. American Physical Society, April Meeting (April 2024).

30. "Utilizing Neural Networks to Resolve Individual Bats and Improve Automated Counts."**paper presentation (*awarded best presentation in session*)**, I. Bentley, M. Gebran, S. Vorderer*, J. Ralston, and L. Kloepper. 2023 IEEE Artificial Intelligence Internet of Things Congress (June 2023).

29. "Introducing the Scientific Image Analysis Application" I. Bentley, J. Ralston, S. Garman*, O. Hershberger*, C.M. Probst*, and C. Washer*, **paper presentation (*awarded best presentation in session*)**, 2023 IEEE 13th Annual Computing and Communication Workshop and Conference (March 2023).

28. "Tracking and Counting Bats Across the United States using Neural Networks" I. Bentley, M. Gebran, L. Kloepper, and S. Vorderer*, **session contribution**, Society of Integrative and Comparative Biology (January 2023).

27. "Neural Networks and Counting Bats" I. Bentley, **research presentation**, Florida Polytechnic University (November 2022).

26. "Using Artificial Intelligence to Count Bats" I. Bentley, **invited seminar**, University of Central Oklahoma (October 2022).

25. "Thermal Bat Tracking Software Demo", I. Bentley, L. Kloepper, and V. Kuczynska, **session contribution**, Ozarks Karst and Bat Conservation Meeting (November 2021).

24. "Computational Physics Summer 2021 Research," I. Bentley, **session contribution**, Board of Trustees Dinner, Saint Mary's College (October 2021).

23. "Automated Analysis of Swarming Bat Flight," I. Bentley and L. Kloeppler, **session contribution**, Faculty Technology Showcase, Saint Mary's College (April 2016).

22. "Nuclear shell evolution," I. Bentley, **session contribution**, American Physical Society April Meeting, Salt Lake City (April 2016).

21. "Nuclear observables indicating the evolution of shell structure," I. Bentley, **poster**, American Physical Society Prairie Meeting, University of Notre Dame (November 2015).

20. "Nuclear shells, sub-shells and shell evolution," I. Bentley, **poster**, American Physical Society April Meeting, Baltimore Hilton (April 2015).

19. "Particle-hole symmetry in nuclei and empirical fits to the 4/2 ratio and binding energies," I. Bentley, **session contribution**, 7th Workshop on Shape-Phase Transitions and Critical Point Phenomena in Nuclei, Universidad de Sevilla (March 2014).

18. "Differences in observables as signatures for shape phase transitions," I. Bentley, **session contribution**, 7th Workshop on Shape-Phase Transitions and Critical Point Phenomena in Nuclei, Universidad de Sevilla (March 2014).

17. "Evolution of Nuclear Shells and Consequences for Binding Energy Fits," I. Bentley, Y. Colon*, and A. Aprahamian, **poster**, National Science Foundation Site Visit, University of Notre Dame (February 2014).

16. "Modeling Basic Shell Structure in Nuclei," I. Bentley, **poster**, SciMixer 2, Saint Mary's College (February 2014).

15. "Shell Structure," I. Bentley, **science colloquium**, Saint Mary's College (November 2013).

14. "Exact and Approximate Pairing Models Applied to the Wigner Energy," I. Bentley, **session contribution**, 26th Annual Midwest Theory Get-Together, Argonne National Laboratory (September 2013).

13. "Calculation of Nuclear Transitions by Potential Energy Surface Mapping," I. Bentley, **poster**, SciMixer, Saint Mary's College (February 2013).

12. "A Simple Pairing Approach on the Linear Symmetry Energy Near N=Z," I. Bentley, and S. Frauendorf, **session contribution**, 3rd International Symposium on Nuclear Symmetry Energy, Michigan State University (July 2013).

11. "Nucleosynthesis," I. Bentley, **physics colloquium**, Marquette University (May 2012).

10. "The Role of Deformation and Isovector Pairing on the Nuclear Symmetry Energy," I. Bentley, and S. Frauendorf, **nuclear astrophysics seminar**, Texas A&M University-Commerce (March 2011).

9. "Investigations of the Nuclear Symmetry Energy (Wigner Energy) and Mapping of Fermionic to Bosonic Deformation Energy Surfaces," I. Bentley, and S. Frauendorf, **theory seminar**, Argonne National Laboratory (December 2010).

8. "Microscopic Calculation of Low Lying Levels by Potential Energy Surface Mapping," I. Bentley, and S. Frauendorf, **session contribution**, 23rd Annual Midwest Theory Get-Together, Argonne National Laboratory (September 2010).

7. "Binding Energies in Nuclei Near N=Z: Wigner X Resolved," I. Bentley, and S. Frauendorf, **nuclear seminar**, University of Notre Dame (April 2010).

6. "Beyond BCS Pairing Applied to Symmetry Energy," I. Bentley, and S. Frauendorf, **nuclear theory seminar**, RIKEN Wako Institute (February 2009).

5. "Beyond BCS Pairing Applied to Symmetry Energy," I. Bentley, and S. Frauendorf, **nuclear theory seminar**, Tokyo University (January 2009).

4. "Wigner Energy," I. Bentley, and S. Frauendorf, **session contribution**, 21st Annual Midwest Theory Get-Together, Argonne National Laboratory (October 2008).

3. "Wigner Energy," I. Bentley, and S. Frauendorf, **session contribution**, JINA Special School on Nuclear Mass Models, Argonne National Laboratory (May 2007).

2. "Isospin and the Wigner Energy," I. Bentley, and S. Frauendorf, **session contribution**, 20th Annual Midwest Theory Get-Together, Argonne National Laboratory (October 2007).

1. "Wigner X," I. Bentley, and S. Frauendorf, **session contribution**, 19th Annual Midwest Theory Get-Together, Argonne National Laboratory (October 2006).

*Denotes undergraduate student researchers.

POSTERS AND PRESENTATIONS BY COLLABORATORS

19. "Interacting Boson Model Mapping," I. Alonso*, A. Bodoh*, A. Fiorito*, I. Bentley, and M. Gebran. **poster**, Florida Polytechnic University Research Showcase (April 2025).

18. "Using Machine Learning for Nuclear Binding Energies at High Precision," J. Tedder*, and I. Bentley, **poster**, Florida Polytechnic University Research Showcase (April 2025).

17. "Out of the bat lab and into the field: Sensorimotor strategies of bats at high-speed flight," L. Kloepper, I. Bentley, C. Harding, C. Brighton, M. Izadi, R. Stevenson, and G. Taylor, **session contribution**, The Acoustical Society of America (March 2023).

16. "Free Software For Automated Counting of Bats", L. Kloepper, V. Kuczynska, M. Armstrong, and I. Bentley, **session contribution**, Midwest Bat Working Group (April 2022).

15. "Perception at the extreme: Adaptive vocal-motor behavior of bats at high speed flight and in groups," L. Kloepper, A. Weesner, and I. Bentley. **session contribution**, The Acoustical Society of America (April 2022).

14. "Investigating Rules of Wingbeat Synchrony in Group Flight", A. Weesner, J. Fullerton*, I. Bentley, and L. Kloepper, **poster**, Society of Integrative and Comparative Biology (January 2022).

13. "Neural Networks Applied to Nuclear Shell Structure and Automated Counts," S. Vorderer*, B. Dewey*, and I. Bentley, **poster**, Saint Mary's College, Fall Poster Day (September 2021).

12. "A Comparison of Color Correction Techniques," K. Obert*, M. Schmudt*, and I. Bentley, **poster**, Saint Mary's College, Fall Poster Day (September 2021).

11. "The effect of climate on bill morphology divergence in Toxostoma thrashers," C.M. Probst*, J. Ralston, I. Bentley, **poster**, Society of Integrative and Comparative Biology 61, E718-E719 (January 2021).

10. "What is it like to be a bat: the physics of flight during highspeed roost re-entry in the Mexican free-tailed bat (Tadarida brasiliensis)," L.N. Kloepper, I. Bentley, C. Harding*, G.K. Taylor*, **poster**, Society of Integrative and Comparative Biology 61, E471-E472 (January 2021).

9. "Wingbeat synchronization in Mexican free-tailed bats (Tadarida brasiliensis)," J.A. Fullerton*, A.T. Weesner, I. Bentley, L.N. Kloepper, **poster**, Society of Integrative and Comparative Biology 61, E282-E282 (January 2021).

8. "A Morphed Tracking Algorithm Applied to Bats," A. Weesner, L. Kloepper, and I. Bentley, **poster**, Society of Industrial and Applied Mathematics IS20 (July 2020).

7. "Cataloging Images of Paper Analytical Devices," A. Houser*, K. Koller*, K. Novack*, T. Barstis and I. Bentley, **poster**, Summer Undergraduate Research Symposium, University of Notre Dame (August 2018).

6. "Developing Automated Analysis Codes for Paper Analytical Devices," C. Vajiac*, and I. Bentley, **poster**, Joint Mathematics Meetings: MAA Undergraduate Poster Session (January 2017) and Summer Undergraduate Research Symposium, University of Notre Dame (August 2016).

5. "The Use of Fiducial Markers in Image Analysis," J. Wilson*, T. Ricketts*, and I. Bentley, **poster**, Summer Undergraduate Research Symposium, University of Notre Dame (August 2014).

4. "Qualitative Computational Analysis of Paper Analytical Devices, T. Ricketts*, J. Wilson*, E. Barstis, T.L.O. Barstis, and I. Bentley, **poster**, Summer Undergraduate Research Symposium, University of Notre Dame (August 2014).

3. "Prediction of Nuclear Masses as a function of F-spin," A. Nystrom, I. Bentley, A. Teymurazyan, A. Georgieva, and A. Aprahamian, **poster**, National Science Foundation Site Visit, University of Notre Dame (February 2014).

2. "Microscopic calculation of the IBM parameters by potential energy surface mapping," I. Bentley and S. Frauendorf, **poster**, Nuclear Structure 2010, University of California Berkeley (August 2010).

1. "A Liquid Sodium α ω Dynamo Experiment," S. Colgate, H. Beckley, H. Li, R. Sonnenfield, D. Westpfahl, I. Bentley*, R. Ginanni, T. McKinney*, and V. Pariev. **session contribution**, American Physical Society, 46th Annual Meeting of the Division of Plasma Physics (November 2004).

*Denotes undergraduate student researchers. The presenter's names are underlined.

SCHOLARLY SERVICE

Journal Referee	Acta Physica Polonica B, Advances in High Energy Physics, American Institute of Physics Advances, Asian Journal of Research in Computer Science, Asian Journal of Research and Reviews in Physics, Indian Journal of Physics, International Astronomy and Astrophysics Research, International Journal of Modern Physics E, Modern Physics Letters A, Open Biomedical Engineering Journal, Physical Review C, Physical Review D, Physical Review Letters, and Physical Science International Journal
Session Chair	APS Global Physics Summit 2025 IEEE AIIoT 2023
Conference Referee	IEEE AIIoT 2025, 2024 & 2023 IEEE CCWC 2026, 2025 & 2024 IEEE IEMCON 2025 & 2024 IEEE UEMCON 2025 & 2024

Susan LeFrancois, PhD

Lakeland, Florida 33803, 863-398-4672

Diligent, adaptable, and creative professional with proven knowledge of data analytics techniques, statistics, research, and quality assurance. Aiming to leverage my abilities to successfully fill multiple roles on your team.

Interests: Data science in clinical pharmacology, Health Equity, Drug Development and Education

Research, Teaching, and Industry Experience

- **Assistant Professor in the College of Data Science and Business Analytics** August 2014 to Present
  Florida Polytechnic University, Lakeland, Florida
  - **Program Director for the Advanced Technology/Data Analytics Department** (April 2017-January 2018)
  - **Interim Director of the Institute for Health Informatics** (January 2015- December 2016)
  - **Educational Outreach**
  - **Developed Curriculum for the Science and Technology Management Program (August 2013-July 2014**
  - Courses taught: (* indicates a course that was designed and developed ** indicates graduate courses)

BSC 1010	Biology 1*
BSC 1010L	Biology 1 Lab*
HIM 3490	Introduction to Health Systems Engineering*
HIM 2340I	Development and Administration of Health Information Systems*
HIM 4064	Survey of the US Healthcare System*
HIM 4654	Implementation of EHR/EMR and Clinical Support Methods*
HIM 3626	Empirical Methods in Health Informatics*
HIM 4508	Assessment of Outcomes for Clinical and Medical Care Delivery*
HIM 4016	Policy Issues in Health Informatics*
IDS 1380	Intro to STEM
IDS 2144	Legal, Ethical, and Management Issues in Technology*
EGN 1007C	Concepts and Methods
BUL 2241	Law, Public Policy, Negotiation, and Business*
MAN 5245	Organizational Behavior and Leadership**

- **Secondary Chemistry Teacher** August 2013- July 2014
  All Saints Academy, Winter Haven, Florida
- **Director of Quality Assurance and Regulatory Affairs** February 2005- July 2013
  FTSI Mulberry, Florida

  FTSI is a contract gamma sterilizer that focuses on the sterilization of medical devices and tissue. I was the first individual to occupy this position at FTSI. Primary responsibilities included:

  • Led the audit team through two FDA audits conducted at FTSI in 2006 and 2010
  • Lead auditor in 7, ISO 13485 audits conducted by third party auditor SGS
  • Chief Internal Auditor
  • CAPA Investigation and Management
  • Radiation Safety Officer
  • Document Control Manager
  • Direct management of Operators and Material handlers
  • Establishment and management of shipping
  • Main technical assistance to customers; assistance with materials compatibility, assistance with validation, assistance with research projects that required special handling

- Main customer contact; customer service, quotes, requesting payment, adjusting POs
- Creation of the risk management program
- Calibration of instrumentation
- Project manager for updating Access software program

- **Adjunct Instructor** January 2008 - December 2009
  University of South Florida, Tampa, Florida

Education

- University of Florida, Gainesville, Florida - PhD (Pharmacology/Physiology), December of 2004
- University of South Florida, Tampa, Florida-Graduate Certificate in Heath Informatics, 2015
- University of South Florida, Tampa, Florida - BA (Chemistry), December of 1999

Skills

- Stata
- Statistical Modeling
- Python

Professional Societies

- American Heart Association, member
- Industrial Engineering and Operations Management Society International, member
- Society of Ethics Across the Curriculum, member
- American Public Health Association, member

Service Activities

- Faculty Representative Committee member (2023-2024, 2019-2020)
- Faculty Assembly Chair (2022-2023)
- Faculty Assembly Chair-Elect (2020-2022)
- University Curriculum Committee Member (2023-2024, 2018-2020)
- THRIVE, Advancing Women at Poly (2018-Present)
- Faculty Advisor for Society of Women Engineers (2022- Present)
- Various Search Committees (Chair or Member) since 2017
- Member of Advisory Board, Lakeland Regional Health and Florida Polytechnic University (2018 – 2019)

Community Involvement

Board member, Secretary, LVIM (Lakeland Volunteers in Medicine) 2017-2024

Harrison School for the Arts Philanthropy Committee 2024-present

Internships and Awards

- Graduate Research Assistant for University of Florida, Gainesville, Florida August 2000 - December 2004

- Medical Guild Research Incentive Award, University of Florida, Gainesville, Florida — December 2001
- Alumni Fellowship Award for the University of Florida, Gainesville, Florida. — August 2000

Publications

- Hajibabaee, P., **LeFrancois, S**., Rodriguez, A. (2026). Ensemble Machine Learning for Healthcare Data: A Comparative Analysis of Chronic Kidney Disease and Cardiovascular Risk Prediction with NHANES Data. In: Florez, H., Rabelo, L., Diaz, C. (eds) Industrial Engineering and Operations Management. IEOM-CS 2025. Communications in Computer and Information Science, vol 2557. Springer, Cham. https://doi.org/10.1007/978-3-031-98235-4_21
- **LeFrancois, S.,** (accepted) *STEM Undergraduate Student Perceptions Regarding the Ethics of ChatGPT*, Teaching Ethics, February 2024.
- Dewey, J. and **LeFrancois**, **S**. An Initial Exploration of Patterns of Variation in Healthcare Provider Reimbursement Rates from a Massive New Dataset (2023)., 8th North America Conference on Industrial Engineering and Operations Management, conference publication.
- Hughes-Miller, M., Englehardt, E., Pritchard, M., **LeFrancois, S**. Centeno, G., Reeves, K., Roman, I. Assessing the Efficacy of a Novel Pedagogical Approach to Cultivating an Ethical STEM Professional Identity: Challenges Faced and Reasons for Optimism (2022) ASEE Excellence through Diversity, https://peer.asee.org/cultivating-the-ethical-identities-of-stem-students-through-enhanced-internships, conference paper.
- **LeFrancois, S.,** Centeno, G. and Reeves, K.A. Ethics training: Cultivating an ethical engineer identity (2021), IEEE International Symposium on Technology and Society (ISTAS), pp. 1-5, doi: 10.1109/ISTAS52410.2021.9629178, conference paper.
- **LeFrancois, S.** (2019) A Strategy for a Meaningful Ethics Curriculum, Teaching Ethics, Volume 19, Issue 2, pages 137-145. https://doi.org/10.5840/tej201919273
- **LeFrancois, S**. Despite a Serious Investment in Information Technology, Patient Safety and Productivity have not improved.: Genetic Engineering and Biotechnology News, November 2015.
- Kem, W., Soti, F., Wildeboer, K., **LeFrancois, S**., MacDougall, K., Wei, D. Q., Chou, K. C., & Arias, H. R. (2006). The Nemertine Toxin Anabaseine and Its Derivative DMXBA (GTS-21): Chemical and Pharmacological Properties. *Marine Drugs*, *4*(3), 255–273.
- Slavov SH, Radzvilovits M**, LeFrancois S**, Stoyanova-Slavova IB, Soti F, Kem WR, Katritzky AR. A computational study of the binding of 3-(arylidene) anabaseines to two major brain nicotinic acetylcholine receptors and to the acetylcholine binding protein. Eur J Med Chem. 2010 Jun;45(6):2433-46. doi: 10.1016/j.ejmech.2010.02.027. Epub 2010 Feb 13. PMID: 20236734.
- Kem WR, Wildeboer K, **LeFrancois S**, Raja M, Marszalec W, Braekman JC. Nicotinic receptor inhibition by Tetraponera ant alkaloids. Cell Mol Neurobiol. 2004 Aug;24(4):535-51. doi: 10.1023/b:cemn.0000023628.65936.a7. PMID: 15233377.
- Kem WR, Mahnir VM, Prokai L, Papke RL, Cao X, **LeFrancois S**, Wildeboer K, Prokai-Tatrai K, Porter-Papke J, Soti F. Hydroxy metabolites of the Alzheimer's drug candidate 3-[(2,4-dimethoxy)benzylidene]-anabaseine dihydrochloride (GTS-21): their molecular properties, interactions with brain nicotinic receptors, and brain penetration. Mol Pharmacol. 2004 Jan;65(1):56-67. doi: 10.1124/mol.65.1.56. PMID: 14722237.

Work in Progress

- **LeFrancois, S.,** Bard, E., Brintzenhofeszoc, K., Centeno, G. (submitted) *Religious Attendance and the Effect on Cardiovascular Disease Risk in Minority Populations*. BMC Public Health. May 2025.

Grants

- FPU Internal Research Funding, Examining differences in hypertension treatment and COVID-19 risk by race, Received, May 2023, $9,469.19. (Principal Investigator)
- Engineering Information Foundation, Thrive/Women in Engineering Program, Received, August 2022, $10,500. (Principal Investigator)
- AAUW (Association of American University Women) Community Action Grant, Increasing the Percentage of Women in STEM through Outreach, Received August 2021, $10,000. (Principal Investigator)
- Florida Cybersecurity Capacity Grant, GR-2000001, Mock Healthcare Network/Testbed, Received July 2019, $75,000. (Principal Investigator)
- NSF, Enhancing Internships with Professional Ethics Training. Cultivating an Ethical Identity, Received July 2019, $600,000. (Senior Personnel)
- Engineering Information Foundation (EIF18.16), Thrive/Women in STEM Grant, Received November 2018, $6,200. (Principal Investigator)

Presentations and Invited Talks

- *Coding Ethics: Qualitative Insights into STEM Students' Ethical Development Through Internships,* 26th Annual Conference for the Society Across the Curriculum, October 2025, panel.
- *Urgent Care and Pharmacy Accessibility in Polk County, Florida*, 2nd Annual Central Florida Research Symposium, April 2024, poster.
- *CVD outcomes in black patients with combined statin and ACE inhibitor treatment*, 2nd Annual Central Florida Research Symposium, April 2024, poster.
- *Shaping an Ethical Identity in STEM Professionals: Findings from an Internship-Based Intervention*, 25th Annual Conference for the Society of Ethics Across the Curriculum, October 2024, presentation.
- *Cultivating an Ethical STEM Identity using Case Studies,* 25th Annual Conference for the Society Across the Curriculum, October 2024, presentation.
- *STEM Undergraduate Student Perceptions Regarding the Ethics of ChatGPT*, 24th Annual Conference for the Society of Ethics Across the Curriculum, October 2023, presentation.
- *An Initial Exploration of Patterns of Variation in Healthcare Provider Reimbursement Rates from a Massive New Dataset*, 8th North America Conference on Industrial Engineering and Operations Management, June 2023, presentation.
- Florida Polytechnic Applied Mathematics Seminar Series, *Public Health and Data Science: A journey through current projects*, April 11, 2023.
- Women in Industry and Academia Panel for the IEOM Society Conference, June 2022, invited talk.
- *Examining racial/ethnic differences in CVD therapy: Implications for COVID-19 morbidity and mortality disparities?*, Session Title: Big Data Analytics for Public Health Research, American Public Health Association, October 26, 2021, presentation.
- Society for Ethics Across the Curriculum, *Cultivating an Ethical Engineer*, October 7, 2021.
- *Cultivating an Ethical Engineer*, Association for Practical and Professional Ethics, Flash Presentation, February 25, 2021, presentation.
- Women in Data + Science Conference, St. Leo University, March 1, 2019, *Academic Efforts to Recruit, Retain, and Support Female STEM Students,* presentation.
- CSCMP Supply Chain Talent Development Symposium, Florida Southern College, March 7, 2019, Educational Panel Guest Speaker
- *Development and Application of an Overall Health Metric,* Health Information and Management Systems Society Conference, February 2019, poster presentation.

- *New Model for Hospital Length of Stay of COPD Inpatients*, IEEE International Conference on Biomedical and Health Informatics, February 2017, poster presentation.

AJEET K. KAUSHIK, M.Sc. Ph.D.

Fellow: Indian Chemical Society
Member – MRSC, ECS, ACS, AAAS
Fulbright Specialist
Faculty Advisor: ECS Student Chapter of Florida Polytechnic University
Chair-Elect: Florida Section of American Chemical Society (ACS)
Honorary Fellow: Global Academy of Nanotechnology & Florida Academy of Nanotechnology

Associate Professor of Chemistry
Department of Chemistry
Founder - NanoBioTech Laboratory, Barnett Applied Research Center (BARC#2263)
Florida Polytechnic University, Lakeland, FL-USA

USA Citizen
Home Address: 4236 Prima Lago Drive, Lakeland, Florida-33810, USA
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Phone: +1-754-203-3737
https://floridapoly.edu/directory/faculty/ajeet-kaushik.php
http://akaushik3.wix.com/nanocare, https://scholar.google.com/citations?user=RYH8Z_4AAAAJ&hl=en

SUMMARY — As an Assistant Professor of Chemistry, I am exploring chemistry education, training, and applied research related to green nanotechnology, analytical chemistry, and electrochemical sensors for 1) health and environmental management and 2) STEM Education and Training at the Civil and Environmental Engineering Department of Florida Polytechnic University, Lakeland, USA.

MY RESEARCH: According to the goals of sustainability and to support the mission of Florida Poly, I am engaged in exploring green chemistry-based multifunctional nanostructures for sensors and nanomedicine applications. My research interests include green technology, nano-biotechnology, analytical systems, targeted drug delivery approaches, nanomedicine, sensors, biosensors, point-of-care sensing systems, and IoT-supported sensing technology for sustainable health and environment management.

FOUNDER OF NanoBioTech LABORATORY

- To support the objectives and mission of FPU, this group mainly focuses on exploring 1) green chemistry and functional materials for catalysis and sensing applications, and 2) chemical sensors and biosensor applications for health and environmental applications. The students are well-engaged in exploring multidisciplinary research and focused on quality STEM education, STEM Training, and cutting-edge research. Our students are also exploring transformative aspects of nano-enabled sensing technology for social impact, especially from the Laboratory to Real Life.
- The group was founded in 2019, and currently (SP-FALL 2024), the group has 4 outstanding undergraduate students. All the scholars enjoy the research with diverse mentoring coming from academia-industry synergy and international backgrounds.
- **ECS Florida Polytechnic University Student Chapter**. As a Faculty Advisor, I have established an **Electrochemical Society (ECS, a reputed foundation)** affiliated student chapter (Approved in October 2024). All the affiliated 11 members will get supervision, guidance, and mentoring from ECS to understand and perform cutting-edge research. **In this ECS Florida Polytechnic University Student Chapter,** we will organize specific activities, including specific lectures, workshops, and training, to

promote research culture in the university. These activities will connect students and faculty to explore collaborations and connect them with other ECS chapters to support the vision and mission of Florida Poly.

- **Success Track of the group:** My group has a good track of quality training, technical education, applied research, and success. As a result, all the students (4-REUs) always do internships every summer, and the graduated students are well-placed. For example, Mr. Alexander Gage worked on the design and fabrication of electrochemical sensors and is presently pursuing an integrated funded MS & PhD at the University of Florida. Justin Sanchez has an offer to pursue grade school in Spain. Mr. Andre Graham has accepted an offer from United Launch Alliance.
- **Overseas Collaborations.** I also mentor several PhD scholars in the USA and overseas. Since 2019, as a dissertation adviser, I have completed 4 PhD (USA, South Korea, India) and supervised 3 ongoing Ph.D. (Poland, India, and South Africa). This group is also involved in several collaborative projects focused on exploring nanotechnology for drug delivery, catalysis, sensors, and biosensing applications, in several top-ranked universities and national laboratories around the world, like India, Denmark, Poland, Spain, Mexico, and Northern Ireland. Surely, these active and productive collaborations will support FPU's mission of outreach activities involving exchange programs and an increase in enrollment.

ADMINISTRATIVE SERVICES/- RESPONSIBILITIES at FPU

1. **Technology Transfer Steering Committee Member (2025)**
   The committee provides strategic direction for the Technology Transfer Office, ensuring its activities effectively support faculty and students in intellectual property (IP) matters, primarily patents. This includes facilitating the development of patents, patent licenses, and other forms of intellectual property; streamlining internal patent processes to ease the burden on faculty; and enhancing outreach efforts to engage faculty and students.
   https://floridapoly.edu/technology-transfer/steering-committee.php

2. **Convener of Florida Poly's Research Day - 2025.**
   FRC is willing to promote a research culture (for both students and faculty) and in this direction will host a research day, which might be sometime in the middle of SP 2025. As a convener, I will plan and monitor well-coordinated efforts to plan this event successfully. For success, there have been many discussions, and I am thinking of making several committees involving faculty from several departments to manage several activities such as making agendas, organizing student poster sessions, managing department showcase research, and interacting sessions.
   As per the vision and objectives of strategic planning, this event will certainly connect scholars (faculty and students) of various fields to perform collaborative research, connect students with the faculty of interest, and enrich the research culture.

3. **Passing Chair of FRC– 2024-2045**
   I will assist the Faculty Trustee and Faculty Representative Council (FRC@FPU) in decision-making to support FPU's mission and objectives. My focus is to promote the research culture at FPU by organizing a research day (First Time) and working with the provost's office to organize research facilities to support applied and technical research.
   Such establishments will support Faculty research, Student research, STEM education, STEM training, Outreach activities, MS & projected doctoral degrees, industrial collaboration, and federal funding.

4. **Ad-Hoc Committee Member – 20024**
   The Faculty Assembly president formed this committee to know the faculty's opinion on faculty retention, some of the related criteria, and various review processes. As a member, I assisted the Faculty Representative Council (FRC) and the provost's office in reviewing the promotion and re-appointment-related criteria based on the faculty's opinion. I suggested recommendations to have better faculty retention and good relationships between the faculty, department, and the provost's office.
5. **Faculty Trustee and President of Faculty Assembly 2023 – 2024**
   I served as a Faculty Trustee, Faculty Assembly President, and Faculty Representative Council Chair (FRC@FPU). In this role, I was focused on the following points
   - Presenting FPU among BOG, BOT, and SUS-Florida System.
   - Serving as a bridge between a) the provost's office and faculties, and b) BOT and faculties for advocating Faculty Development and Student Development.
   - Serving the best interests of the Faculty.
   - Served as a messenger and maintained transparent communication between faculty and management.
   - Managing all the FRC and FA meetings.
   - I worked with the provost's office to promote faculty training, for example, Dale Carnegie Training.
   - Strategically, I worked with the provost's office to introduce special attention to Faculty and Student Research. As a result, Summer Research proposals and Tech Fee Proposals are in practice.

6. **Academic Policy and Procedure (APPC) 2023-2024**
   I coordinated with the provost's office to evaluate policies, guidance, academic programs, and services so that students could meet their tasks.
7. **Graduation Studies Committees 2023 – 2024**
   Assisted the graduate program of FPU in evaluating and making policies and guidelines to establish a strong graduate program. One of my focuses was to encourage quality thesis-based MS degrees and upload the thesis to the university library as an open-access document.
8. **Chair Elect – Faculty Council 2022 – 2023**
   I assisted the Faculty Trustee and Faculty Representative Council (FRC@FPU) in decision-making to support the mission and objectives of FPU related to education, teaching, and research promotion.
9. **University Strategic Planning 2022-**
   As an FRC-Chair elect, I was involved in discussions and planning strategies for successful teaching and research establishment at FPU.
10. **Faculty Representative Council 2019, 2020, 2021**
    I represented the Department of Natural Science to assist the Faculty Representative Council (FRC@FPU) in decision-making to support the mission and objectives of FPU related to education, teaching, and research promotion.
11. **Department Curriculum Committee 2019, 2020,**
    At the Department of Natural Science, I served as a DCC member to review the course curriculums and share my opinion, especially when the Chemistry viewpoint was important.
12. **Chemistry Course Coordinator 2019 – 2021**
    At the Department of Natural Science, I managed CHM-1 and CHM-2 according to the aims and scopes of the department.

13. **Faculty Search Committee Member 2019- 2022, 2024**
I assisted several committees in the search for new chemistry and physics faculty. In this process, I reviewed all the profiles submitted and shared my opinion with the committees.
15. **Scenarios of the Future** (evaluate COVID-19 consequences to Florida Poly) **2020**
I joined the group of experts at FPU to evaluate the consequences of COVID-19 infection and support the policies and regulations to open the campus safely during the COVID-19 pandemic.
16. **Search Committee Chair (Chemistry) 2020**
I have served as the chair of a search committee for the search for a new faculty for chemistry. In this role, I coordinated with committee members and managed the complete process on time.
17. **Ablaze Award Committee Member 2021-2022**
FPU recognizes several faculty or staff members for their services in several/specific fields. On one occasion, I have served as an Ablaze Award Committee Member to review the submitted profiles and select appropriate candidates for a suitable award.
19. **Institutional Review Board (IRB) member for Florida Poly**
I have served as an IRB member for Lakeland Regional Hospital and am actively serving for FPU. From time to time, I reviewed the proposal, which is based on human subjects.

FEDERAL PEER REVIEWERS

1. **Puerto Rico Science, Technology, and Research Trust,**
Since 2018, every year Advanced Research Grant Program.
2. **The Research, Development, and Innovation Authority (RDIA) – 2024 Saudi Arabia Government Agency**
3. **Science Fund of the Republic of Serbia**
4. **SPAIN - Sapienza Università di Roma - 2024**
5. **European Science Foundation 2023, 2024**
6. **Dutch Research Council 2023**
7. **National Health Institutions (NIH), National Institute of Environmental Health Sciences (NIEHS) 2022**
8. **National Council of Science and Technology, Mexican Govt. for "Frontier Science 2019 Call**
9. **French National Research Agency- Generic Call 2021**
10. **National Science Foundation: CCSS UNS Biosensing Systems 2021 – Active**
11. **NSF-SBIR, 2019 -**

APPRECIATION BY FLORIDA POLY

1. **NOMINATIONS – Florida Poly Ablaze Awards**
Excellence in Teaching 2024
Nominated by the Chair and Students

Excellence in Research – 2020
By the Department of Natural Sciences

2. **Nanotechnology for disease diagnosis and treatment earns Florida Polytechnic University professor an international award, 2019**.
https://floridapoly.edu/news/articles/pre/nanotechnology-for-disease-diagnosis-and-treatment-earns-florida-poly-professor-international-award.php

3. **Professor's research featured in the WHO COVID-19 database**
   https://floridapoly.edu/news/articles/2021/01/010521-kaushikwho.php

4. **Florida Poly researchers among the world's top 2% of scientists (2021, 2022, 2023):**
   2021 - https://floridapoly.edu/news/articles/2021/12/120721-topscientists.php
   2022 - https://floridapoly.edu/news/articles/2022/12/121622-top-scientists.php
   2023 - https://floridapoly.edu/news/articles/2023/11/110723-top-scientists.php
   2024 - https://floridapoly.edu/news/articles/2024/12/120324-top-scientists.php

5. Researcher celebrated for valuable contributions in nanotechnology; May 15, 2024
   https://floridapoly.edu/news/articles/2024/05/051524-kaushik.php

6. **New Electrochemical Society chapter to boost undergraduate research**
   https://floridapoly.edu/news/articles/2025/02/020625-ecs-student-chapter.php

7. **Florida Poly global top scientist joins prestigious Fulbright Specialist Roster**
   https://floridapoly.edu/news/articles/2025/02/021725-fulbright-kaushik.php

EDUCATION:

Ph. D. (CHEMISTRY), 2011
Topic: Organic-Inorganic Hybrid Nanocomposites for Sensing Applications
In Collaboration - Department of Chemistry, Jamia Millia Islamia and National Physical Laboratory, New Delhi, India
M.Sc. (Chemistry, Organic Chemistry) 2002 C. C. S. Univ. Meerut (U P), India
B.Sc. (Chemistry, Physics, and Mathematics) 2000 C. C. S. Univ. Meerut (U P), India

INDUSTRIAL COLLABORATION

1. **Palm Sens Inc. Netherlands. 2024** https://www.palmsens.com/
   A world-renowned company known for manufacturing advanced electrochemical analyzers. An active academic collaboration is in place to support electrochemistry-related research activities at Florida Poly. The company provides educational kits and electrodes for performing electrochemical sensor-related research. These electrodes are also utilized to fabricate smart sensors for POC applications.

2. **Molekule Inc.** https://molekule.com/
   Molekule is an air purifier manufacturing company. I am collaborating with their R&D division (located in Tampa) to assist them in exploring analytical chemistry to evaluate the indoor air quality. I have completed a small project with Molekule Inc. and am now associated with them as a consultant.

Recently, we have been working in the field of catalysis for pollutant degradation and exploring approaches for water quality assurance smartly.

3. **Linxens Healthcare @France** https://www.linxens.com/en
   Linxens is a beacon of innovation in connected healthcare and point-of-care diagnostics. This company wants to collaborate to perform electrochemistry-related research at Florida Poly. The company has gifted high-performance electrodes for optimizing performance and developing advanced sensors. In the future, collaboratively, we will be exploring industry-academia research focused on electrochemistry.

4. **MagCorp Inc.** https://magneticscorp.com/
   MagCorp is a Tallahassee-based company that explores semiconducting technology for advanced applications. Recently, I met with Jeffery Whalen, Founder, Director, and CEO at Magnetics Corporation, and saw the opportunities for growing together where STEM-engineering growth is a focus. The company is associated with Florida Poly and supports the capstone projects. In the future, we will explore collaborative opportunities for research, internships, workshops, training, and facility establishment. A plan has been developed to explore the functionalization of magnetic materials for extracting rare-earth materials using a magnetically guided approach.

GRANT CONTRIBUTIONS @FLORIDA POLY

1. **2025 – FTIR Facility Establishment ($40 K)**
   This high-performance FTIR spectrophotometer will be utilized to perform academic and applied research at Florida Poly.
   PI: Ajeet Kaushik, PhD.

2. **2025 – Tech Fee Proposal – Electrochemical Workstation ($25 K)**
   A high-configured Electrochemical Analyzer will be useful to perform academic, fundamental, and applied electrochemistry research at Florida Poly.
   PI: Ajeet Kaushik, PhD.

3. **2024 - Summer Research**
   Electrochemical Sensing of Micro/Nano-Plastics for Environmental Surveillance.
   PI: Ajeet Kaushik - FPU
   Sponsor: Florida Polytechnic University

4. **2023 - Summer Research**
   Fabrication of high-performance electrodes to upgrade bio and chemical sensing technology.
   PI: Ajeet Kaushik - FPU
   Sponsor: Florida Polytechnic University and International Fragrance and Flavor (IFF)
5. **Structural evaluation of airborne proteins processed through air purification technology.**
   PI: Ajeet Kaushik - FPU
   Co-PI: Jaspreet Dhau – Molekule Inc.
   Sponsor: Molekule Inc. 2021

6. **Student Support FPU's HSE - $1500**
   Scholar: Alexander Gage
   Faculty Adviser: Ajeet Kaushik

COMPETED GRANTS

1. **Nanotechnology-based gene editing to eradicate HIV brain reservoirs in drug abusers,**
   Objective: The proposed research will elucidate the role of nanotechnology (MENPs) in delivering Cas9/gRNA across the BBB for the recognition and eradication of the HIV reservoir in the brain and to treat/prevent neurological deficits observed in morphine using HIV-infected subjects
   PI: Madhavan Nair, Co-I: Ajeet Kaushik NIH: RO1DA042706 07/01/2016 - 06/30/2021
2. **Nano-delivery of methanandamide across the BBB to block cannabinoid-induced effects in HIV infection,**
   Objective: The proposed research will evaluate the effect of nanodelivery of HIV drug and Methanadamide, a stable analog of Anandamide, across the BBB to alleviate cannabinoid-induced adverse effects in the BBB and mouse models of HIV and Cannabinoids.
   PI: Madhavan Nair, Co-I: Ajeet Kaushik NIH: R01 DA040537 09/30/2015 - 07/31/2020
3. **Novel Magneto Nanodelivery of Drug to Eradicate HIV from CNS,**
   Objective: The proposed research is based on the development of magnetoelectro (ME)-liposome-based novel multi-ferrous nanoparticles with magneto-electric properties bound with anti-HIV drugs and delivered across the BBB for the eradication of HIV infection in the brain.
   PI: Madhavan Nair, Co-I: Ajeet Kaushik, NIH: R21MH101025 04/22/2013 - 03/31/2017
4. **NSF Nanosystems Engineering Research Center for Advanced Self-Powered Systems of Integrated Sensors and Technologies (National Science Foundation),**
   PI: Shekhar Bhansali, Co-I: Ajeet Kaushik (FIU), ASSIST-EEC-1160483 **09, 2012 – 11, 2013**
5. InstaCortisol-A real-time and continuous assessment of Cortisol in ISF, PI, sub-contract from Phase-II SBIR to Guided Therapeutics, National Institute of Health,
   PI: Shekhar Bhansali, Co-I: Ajeet Kaushik (FIU) NIH: R43MH085474-01**03, 2011 – 03, 2012**
6. Development of a Smart Integrated Miniaturized Sensor System for analytical challenges in diagnostics, industry, and the environment, European Commission (257372).
   PI: Tonny Killard, Co-I: Ajeet Kaushik (Dublin City University, Ireland) Dec 2010-July 2011
7. **Development of Cholesterol Biosensor, National Physical Laboratory, New Delhi**
   Sponsor: **Department of Science Technology, INDIA**
   PI: Dr. B.D. Malhotra Jan 2010 -Dec 2010
8. **NIR Spectroscopic Studies of Cellulosic Materials" National Physical Laboratory,** INDIA
   Sponsor: Aditya Birla Management Corporation Ltd. (ABMCL), Grasim – Nagda.
   PI: Dr. Ranjana Mehrotra June 28, 2004, to August 2006

TEACHING EXPERIENCE

Teaching and research at the interface of science, technology, and engineering in a highly collaborative environment. Developing affordable, acceptable, and application green chemistry-based technologies is the objective of my efforts at Florida Polytechnic University. My university has a mission and vision of quality STEM education that supports the development of Florida State. Therefore, connecting my teaching of applied chemistry, conducting cutting-edge research, and connecting both with a quality engineering degree is always my focus during teaching.

AS AN INSTRUCTOR (2017-2018)

BME-4311 Bio-molecular Engineering: Fall-2017 & 2018

Introduced advanced research of nano-toxicity, biosensors, system development, nanomedicine, and drug delivery systems in the ongoing ME-4311 course.

- **Guided students for the senior design project**
  Co-taught (2011-2013): Intro-to-Nano (ECE-Fall 2011, 2012), Electrical Engineers, aim: - be a problem solver using reduced form factors,
  Guest Lecture (2017-): GMS6904-Scientific Writing Course 2018 & 2019: how to prepare and present a scientific poster/manuscript/patent

  At Florida Polytechnic University (2019-)
  - **ANALYTICAL CHEMISTRY – First Time SP-2025**
  - **ORG CHM – First Time**
  - **CHM-2 (2046), CHM-2 LAB (2046L) – First Time**
  - **CHM-1 (2045), CHM-1 LAB (2045L)**
  - **Supporting Chemistry Education according to the objectives of STEM-CORE**
  - **Objectives: "Think Like a Chemist", "Execute Like an Engineer" and "Act like a Leader"**
  - **Advanced training and skill development.**
  - **Promoting a culture of research & development among young engineers.**
  - **Converting content to value-added knowledge.**
  - **Teach and manage courses according to the needs of ABET.**
  - **Supporting work practices for good engineering and student culture.**
  - **Tracking performance and knowledge in the classroom.**
  - **Connecting chemistry with next-generation technology – green chemistry and sustainability.**
  - **Exploring applied aspects of foundation courses like CHM-1 and CHM-2.**
  - **Connecting a course with upper-level courses like ORG CHM with Environmental Engineering.**
  - **Connecting a course with other Engineering disciplines like ANAL CHM with Applied Engineering.**

AS AN EXPERT SCIENTIST: (2004 -)

- I have delivered numerous invited expert lectures related to nanotechnology for personalized health care.
- Promoting STEM education and STEM Training internationally.
- Assisted collaborators in course modification according to advancements in cutting-edge research.
- Exploring sustainability connected with green chemistry and sensing technology.
- I am serving international experts at various reputable institutions.
- I have supervised various dissertations and am currently the thesis advisor of TWO Ph.D. students
- Serving Editorial Board of various reputed journals.
- Serving various agencies as their reviewer for the assessment of the proposals submitted for funding.

PRESENT RESEARCH INTEREST

- **Green Chemistry and Biomaterials**
- **Analytical Chemistry**
- **Nano-systems for Advanced Applications**
- **Catalysis and Environmental Applications**
- **Electrochemistry,**
- **Electrochemical, Chemical, Gas, and Bio Sensor**

- **Fabrication and optimization of electrochemical sensors**
- **IoT-assisted Sensor**
- **AI-assisted sensing outcomes analysis.**
- **Smart sensor for point-of-care application**

RESEARCH EXPERIENCE

- Over 10 years of experience in exploring the design and development of nanostructures for biosensors, nanomedicine, and drug delivery systems development.
- Over 15 years of experience leading research teams, product development, and device integration to develop electrochemical biosensors for personalized health care.
- Over 15 years of experience in electrochemistry to explore electrochemical properties of various nanostructures, using Electrochemical Impedance Spectroscopy (EIS), Cyclic Voltammetry (CV), and Differential Pulse Voltammetry (DPV), to design and develop efficient biosensors.

- **Over 10 years of experience in nano-enabled electrochemical sensors**
  - Design and development of electro-active nanostructure for sensing application
  - Fabrication, characterization, and optimization of electrochemical sensor
  - Electrochemical characterization of sensors using CV, DPV, and EIS techniques.
  - Development of a miniaturized biosensing device
  - Analysis of biosensor device properties and reliability
  - Exploring POC sensing of biomarkers
  - Exploring sensors for Health and Environmental Management
- **Over 8 years of experience in developing personalized nanomedicine for health care.**
  - Exploring personalized healthcare
  - Exploring electro-magnetic nano-carriers for drug delivery
  - On-demand controlled site-specific drug delivery.
  - Exploring bio-acceptability of nanomaterials
  - Exploring nanomaterials for biomedical and clinical applications

- **Research Managerial and Organizing Skills.**
  - Demonstrated ability to collaborate effectively as a member of multidisciplinary research teams.
  - Establish collaborations and manage/perform research at the multi-institutional level.
  - Managing safety protocols such as IBC, IRB, and IACUC to conduct the research under NIH/NSF/Institutional guidelines.
  - Organizational skills with experience in assuming ownership of assigned tasks, completing the tasks, and mentoring/supervising junior-level scientists.
  - Coordination with experts, institutions, and clinics to promote research at the clinical level.
  - Managing progress reports and research publications to justify the success of the project.
  - Exploring new funding opportunities for future research.
  - Established NanoBioTech Laboratory at Florida Poly and managed research of several projects involving various scholars.
  - Taking care of the progress and success of the funded projects and collaborative research.

EMPLOYMENT HISTORY

July 2019- Assistant Professor of Chemistry
Department of Civil and Environmental Engineering
Florida Polytechnic University, Lakeland, FL-33805

July 2015 - 2019 Assistant Professor
Center of Personalized Nanomedicine, Institute of Neuroimmune Pharmacology, Department of Immunology of College of Medicine, **Florida International University, Miami, FL, USA**

Nov. 2013 – July 2015 Post-Doctoral Fellow
Center of Personalized Nanomedicine, Institute of Neuroimmune Pharmacology, Department of Immunology of College of Medicine, **Florida International University, Miami, FL, USA**

Nov. 2011 – Oct. 2013 Post-Doctoral Associate
BioMEMS and Microfabrication Systems Laboratory, Department of Electrical and Computer Engineering, **Florida International University, Miami, FL, USA**

Sept. 2011 – Nov. 2011 Post-Doctorate
BioMEMS and Microfabrication Systems Laboratory, Department of Electrical Engineering,
University of South Florida, Tampa, FL, USA

Dec. 2010 - July 2011 Research Assistant,
National Center of Sensor Research, Biomedical Diagnostic Institute, **Dublin City University, Dublin, Ireland**

April 2007 – Dec. 2010 Senior Research Fellow,
Biomedical Instrumentation Section, **National Physical Laboratory, New Delhi, India**

June 2004 - April 2007 Project Assistant,
Optical Radiation Standards**, National Physical Laboratory, New Delhi, India**

RESEARCH AND INDUSTRIAL EXPERIENCE

1. Worked as a Project Assistant (II) in a project entitled "***NIR Spectroscopic Studies of Cellulosic Materials***" with the supervision of Dr. Ranjana Mehrotra, Scientist-F *(Optical Radiation Standards)* at **National Physical Laboratory,** New Delhi, from June 28, 2004, to August 2006. This project was sponsored by Aditya Birla Management Corporation Ltd. (ABMCL), Grasim – Nagda.
2. At the National Physical Laboratory along with the above project work, I also worked on the application of ***Fourier transform infrared (FTIR) spectroscopy*** in the characterization of malignant tissue corresponding to the normal tissue of cancer during the growth of cancer tumors.
3. I worked as a **Senior Research Fellow** (April 2007 to March 2010) under the supervision of **Dr. B. D. Malhotra,** National Physical Laboratory, India, in the field of Organic-Inorganic Nano-bio-composites for Biosensor Applications, particularly relating to clinical and non-clinical research such as cholesterol, glucose, urea, food-borne mycotoxins, and pathogens. I have also synthesized nanostructured conducting polymers, metal oxides, and their hybrid nanocomposites for biosensing applications.
4. I worked as a Project Assistant **(III, June 2010 to Dec. 2010)** in a project entitled "**Department of Science Technology Centre of Biomolecular Electronics"** at the National Physical Laboratory, India with the supervision of **Dr. B. D. Malhotra**. Herein, I was involved in the development of optical and electrical cholesterol biosensors.

5. I have completed my Post-Doc at the **National Centre of Sensors Research at Biomedical Diagnostic Institute of Dublin City University,** Dublin, Ireland, where I worked with **Prof. Tony Killard** on the development of a "**Smart Integrated Miniaturized Sensors (SIMS) System**. **Dec 2010 to July 2011.**
6. I completed a Post-doctoral Associate position at **BioMEMS and Microsystem Fabrication Laboratory, Electrical and Computing Engineering of FIU with Prof. Bhansali** to explore nano-enabled biosensing systems for cortisol monitoring. We developed a miniaturized cortisol sensing system for POC applications **(August 2011 to October 2013).**
7. I joined the **Institute of Neuroimmune Pharmacology, Department of Immunology and Nanomedicine, Herbert Wertheim College of Medicine** of FIU as a **Post-Doctoral Associate, later switched as Assistant Professor** with **Prof. Nair** to explore nano-carriers for CNS delivery and on-demand release of therapeutic agents for the treatment of NeuroAIDS. **(October 2013 to July 2019).**
8. **In July 2019,** I joined **Florida Polytechnic University** as an Assistant Professor of Chemistry at the Department of Environmental Engineering to teach chemistry according to Florida Poly's mission and objective of top-ranked STEM education for next-generation engineering to support economic development of Florida State. To meet these objectives, I am exploring independent and collaborative cutting-edge research in the field of nano-enabled sensing technology for health and environmental management. Mainly, I am supporting a quality research culture through top-quality student research in a newly established lab, namely "NanoBioTech Laboratory" at BARC#2251.

AWARDS AND ACHIEVEMENTS:

1. **Honorary Fellow:** Global Academy of Nanotechnology (https://www.nanoflo.org/gan-nexus), Associated with Florida Association of Nanotechnology (FAN) - https://www.nanoflo.org/nanoflorida2026
2. **Judge - Polk Regional Science and Engineering Fair (Polk Regional Science and Engineering Fair**). I am invited by the Polk County School Board to attend their annual science fair and judge science posters on February 08, 2025.
3. **ACS Leadership Training.** As Chair-Elect of the Florida Section of the American Chemical Society (FLACS), I was invited to attend the ACS Leadership Institute (Jan 31 to Feb 2, 2025) for professional training aimed at promoting chemistry for everyone.
4. **Fulbright Specialist:** Selected for the Fulbright Specialist Roaster for the term 2024 to 2027. For this award, I will be establishing a global network to promote stability.
   My Fulbright Foreign Scholarship has matched with Universitat Politecnica de Catalunya's project, SPAIN, Duration June-July 2025.
5. **International Award -** Dr. Nilachala Sahoo Memorial Honor Award, 2024 by the Science & Mathematics Development Organization (INDIA). https://nilachala-foundation.com/
   Prof. Sahoo was a pioneer in the field of science who served India in various roles.
6. **Chair-Elect: FL- ACS** (American Chemical Society Florida Section) 2024-2025 https://fl-acs.org/
7. **NanoFlorida Steering Committee Members** [Florida Association for Nanotechnology (FAN) and NanoFLorida 2025] https://www.nanoflo.org/contact-us
8. **Judge: EMSD-2024** Conference Oral & Poster Sessions.
9. **Oral Judge: NanoFlorida 2025** Conference Poster Sessions.
10. **Poster Judge: NanoFlorida 2024, 2025** Conference Poster Sessions.
11. **Judge: FAME-2024** Conference Poster Sessions.
12. **Chair-Elect Designate: FL- ACS** (***American Chemical Society Florida Section***) 2023-2024
13. **Selected as a Global Initiative of Academic Networking (GIAN) Expert** by the **Ministry of Education – Govt. of INDIA** to conduct a workshop at Guru Jambheshwar University, Haryana, INDIA. Dec 18 to 22, 2023.

14. **Recognition** - Outstanding Reviewers for Materials Advances in 2023 – RSC https://www.rsc.org/journals-books-databases/author-and-reviewer-hub/reviewer-information/outstanding-peer-reviewers/2023/materials-advances/
15. **Outstanding Reviewers** for Journal of Materials Chemistry B in 2021 – RSC https://pubs.rsc.org/en/content/articlehtml/2022/tb/d2tb90072f https://doi.org/10.1039/D2TB90072F Ajeet Kaushik, Three Florida Poly professors among the world's top 2% of scientists https://floridapoly.edu/news/articles/2021/12/120721-topscientists.php
16. The World Health Organization (WHO) has recognized my collaborative research on nano-enabled biosensors and nanomedicine to combat the COVID-19 pandemic and selected it for the database.
17. **Early Career Scientist Award 2020**-International Journal of Nanomedicine
18. Charles De Wis Award 2020, Charles Walter Society for Innovation and Research
19. **Task Force Member,** ICMR Centre for Innovation & Bio-Design (CIBioD), PGIMER, Chandigarh
20. **Co-organizing Secretary,** International Webinar on Materials Synthesis and Characterization (IWMSC-2020), July 11 to 13, 2020 Department of Physics and Electronics, Dr. Rammanohar Lohia Avadh University Ayodhya (U.P.), India & Department of Natural Sciences, Florida Polytechnic University, Lakeland, Florida, USA
21. **Universal Scientific Education Research Network (USERN) Laureate in the field of Biomedical Sciences-2019**
22. **Junior Research Investigator Award in Personalized Nanomedicine by Society for Personalized Nanomedicine-2017**
23. **Invited Presentation Award by NIAAA-Neuro-HIV and Alcohol Abuse satellite Meeting-2017**
24. **Excellent Leadership Award** by Nano-Florida Foundation.
25. **NanoFlorida-2017 Conference Chairman** for 10th Annual Nanoscience Nanotechnology Symposium @Florida International University, Miami, USA.
26. **Awarded lecture "Pran Nath Bohra Trust Fund Lecture" at Panjab University-July-2017.**
27. **Expert Lecture at Central Scientific Instrumentations Organization (CSIO)-CSIR, India, July 2017.**
28. **Young Investigator Award** by Society for Brain Mapping and Therapeutics (SBMT)-2017.
29. **Co-chair session on Nano-Neuroscience and Nano-Neurosurgery in** SBMT-2017.
30. **Early Career Investigator Travel Award by NIAAA-Neuro-HIV and Alcohol Abuse satellite Meeting-2017 -2016.**
31. **International Agency of Standard and Rating (IASR)** recognition among **World's 500 Most Influential Nanotechnologists for the Year 2015 on Earth**.
32. **Certificate of Excellence Research, by 21st Society of Neuroimmune Pharmacology (SNIP) 2016**
33. **"NanoScience Award"** dedicated to **Prof. Joseph Wang** by Cognizure-Publishing Division. 2015
34. **Senior Research Fellowship** awarded by Council of Scientific and Industrial Research, India 2006
35. Best presentation award on Science Day held at National Physical Laboratory, India, 2009.
36. **Judge of oral/poster session at Graduate Scholar Forum@FIU-2016**
37. **Judge of various sessions in McNair Conference-BME-FIU**.
38. **Judge of various sessions in the SNIP Conference**
39. **Judge of various sessions at NanoFlorida since 2011**
40. Foreign Researcher at Centre for the Nanobioengineering and Spintronics (nBEST), Chungnam National University, Daejeon-305-764 Korea.

INVITED EXPERT TALKS/LECTURES

1. **Invited Speaker** – Smart Sensors for Microplastics and PFAS Sensing, Workshop on Ion Beam in Optoelectronics Materials and Sensor Applications at Inter-University Accelerator Centre (IUAC), New Delhi. India. August 12 – 13, 2025.
2. **Plenary Speaker** - High-performance electrochemical sensors to tackle microplastics and PFAS. 7th International Conference on Nanomaterials Science and Mechanical Engineering, University of Aveiro, Portugal, July 8-11, 2025 (ICNMSME-2025).
3. **Plenary Speaker** – State-of-the-Art electrochemical sensor for health and environmental management. International Conference on Emerging Trends in Materials Science and Technology (ICETMT-2025), June 19-20, 2025,
4. **Special Expert Lecture:** Sensor/biosensor useful for health, food, and environment applications; for Food biotechnology course, Doctoral School of Food Science of the Hungarian University of Agriculture and Life Sciences. April 16, 2025
5. **Expert Lecture:** Electrochemical Sensing of Microplastic in point-of-care settings, American Chemical Society (ACS) - Kentucky Lake Section. Friday, March 21st, 2025
6. **Keynote Speaker:** Advanced Electrochemical Sensing to Manage a Sustainable Environment**.** 2nd International Conference on Advanced Materials for Green Chemistry and Sustainable Environment (AMGSE-2025), 20-21 March 2025, INDIA
7. **Plenary Speaker:** Electrochemical Sensing of Microplastics in Point-of-care Settings. NanoFlorida 2025 International Conference, Florida International University, Miami, USA. March 14-16, 2025
8. **Keynote Lecture:** Sustainable sensing for health and environmental management. International Conference on Frontier Research in Materials Science and Technology (FRMST-2025) March 4 - 5, 2025, @CCS University Meerut, INDIA
9. **Invited Speaker.** 6th -Generation Sensors for Health and Environment Management. 5th International Biobanking Conference (IBC) 2025, organized by the Advanced Instrumentation Research Facility (AIRF), Jawaharlal Nehru University, New Delhi; Biobank India Foundation (BBIF), Nano Molecular Society (NMS), India; BBIF Cancer Care, and One Health India Organization. Feb 24th, 2025
10. **Invited Speaker.** Smart sensor for health and environmental management. 5th International Conference on Emerging Smart Materials in Applied Chemistry (ESMAC-2024) & 2nd KIIT-CRSI Seminar on Modern Trends in Chemical Sciences in collaboration with The National Academy of Sciences, India (NASI) Local Chapter 20th -22nd December 2024.
11. **Expert Lecture. Next-Generation Sensing Approaches for Microplastic/Nanoplastic Detection and Monitoring** in a workshop on "Microplastic and Nanoplastic Pollution (MNP-2024): Analytical Tools for Detection and Remediation. Panjab University. Nov 28th, 2024.
12. **Expert Lecture.** ***NanoScience & NanoTechnology for Health and Environmental Management.*** The Physics Society "Invenio"- Department of Physics, Shivaji College, University of Delhi, is organizing an International webinar on “Materials Science" on Nov. 11, 2024
13. **Special Lecture**: 6th generation Electrochemical Sensing Technology. ECS Student Chapter of Jawaharlal Nehru University (JNU), India. July 29th, 2024
14. **Plenary Speaker.** Intelligent Sensing-to-Sense for Sustainable Health and Environment. International Conference on Engineered Materials for Sustainable Development (EMSD 2024) July 24-26, 2024, India
15. **Keynote Lecture:** Sustainable sensing for health and environmental management”. International Conference on Energy and Environmental Materials (E2M-2024) July 11 – 13, 2024. Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Indore
16. **Keynote Lecture:** Emerging sensing Approach for health and Environmental management - Session: Materials Science – Sensors Materials. 6th International Conference on Nanomaterials Science and Mechanical Engineering, University of Aveiro, Portugal, July 9-12, 2024

17. **Keynote Lecture:** Next Generation Sensors for Sustainable Health. 2nd International Conference on Advanced Nanomaterials & Applications (ICANA-2024). VIT-AP University, India, and University of Southern Denmark, Denmark. 10 - 12 July 2024
18. **Keynote Lectures:** Smart sensor for health and environmental management. American Chemical Society; Florida Section. 100th Florida Annual Meeting and Exposition (FAME) 2024, May 30th – to - June 1st, 2024, Tampa, USA
19. **Keynote Lectures:** Smart sensor for health and environmental management. NanoFlorida 2024, April 20th, 2024, at Florida State University, Tallahassee, FL-USA
20. **Special Lecture:** Advanced Sensing to manage infectious diseases for personalized health wellness. RG Group of Technological Institute, April 18, 2024
21. **Invited Talk:** "Manipulative Sensors for Efficient Health and Environment Management" at the International Symposium on Materials Science ISMS 2024" organized by the Department of Physics, Central University of Rajasthan (India) - March 11-12, 2024.
22. **Expert Lecture:** State-of-the-Art Biosensors and Bioelectronics for Personalized Health - Online Familiarization Workshop on Quantum Materials and Nano Devices, IIT Guwahati Dec 06, 2023.
23. **Plenary Lecture:** Yes Nanotechnology can tackle state-of-the-art issues. International Conference on Nanotechnology Research and Innovation, November 20-24, 2023, University of Aveiro, Portugal. Nov 20-24, 2023
24. **Keynote Lecture:** Nanobiotechnology is Getting into The Brain. The International Conference "Brain Aging, Neurodegeneration, and the Role of Natural Molecules in Maitian Brain Health. Oct 11-13, 2023, Paris
25. **Keynote Lecture**: Nano-biosensor to manage COVID-19 infection and Long-COVID. Integrative Chemical Science for Health and Environment (ICHE-2023), INDIA
26. **Special Lecture:** Nano-Accelerated Approaches for Intelligent Health Wellness, CCSU (Central University), INDIA, July 25, 2023.
27. **Invited Lecture:** Nano-Enabled strategies for personalized Health Wellness, Panjab University, INDIA, July 20, 2023.
28. **Special Lecture:** Nano-Enabled strategies for personalized Health Wellness Panjab Engineering College, Chandigarh INDIA July 19, 2023.
29. **Invited Lecture:** Manipulative nano-biosensor to manage infectious diseases intelligently - ADVANCES IN ALGAL BIOTECHNOLOGY & TAXONOMY & CAPACITY BUILDING WORKSHOP on ALGAL ENTREPRENEURSHIP DEVELOPMENT, March 28th, 2023 CCSU Meerut, UP, India
30. **Invited Speaker:** Smart Green Materials, Emerging Materials for Sustainable Energy and Environment (EMSEE-2022), Sunway University, Malaysia.
31. **Invited Speaker:** Advanced Nano-biotechnology for CNS diseases management. XL Latin American Congress of Neurosurgery (CLAN Miami 2022) Miami November 21st to 24th 2022.
32. **Invited Speaker:** Manipulative Nano-Biosensors to manage infectious diseases intelligently, International Conference on Polymers and Advanced Materials – Polymat 2022, October 2022.
33. **Expert Lecture:** Organized by Research Journal in Medical and Health Science, Tunable Nano-Systems for Health Wellness, October 25th, 2022.
34. **Expert Lecture:** Invited by The Innovation, as CellPress journal. Manipulative nano-biotechnology for personalized health wellness. June 11, 2022
35. **Expert Lecture:** Manipulative nano-biosensors to manage infectious diseases intelligently, Global Nano Biotechnology, Consortium Conference, April 23rd, 2022.
36. **Expert Plenary Talk**: "Exploring a material for translational bio-sensing research" third International Conference titled "वसुधैव कुटुम्बकम्" -3 (Topic: Entrepreneurship, Research and Innovations for

Environmental Sustainability and Planetary Health) University of Delhi on the occasion of World Health Day (April, 07-08, 2022).

37. **Expert Lecture:** Towards Next Generation Science. Department of Chemistry & Research Center, St Albert College (Autonomous) Ernakulam, Kerala, INDIA, March 24th, 2022.
38. **Expert Lecture:** Smart Chemistries for Advanced Biomedical Technologies, "Professor R. C. Paul National Symposium on Emerging Chemical Sciences with Modern World, Panjab University, March 11th 2022
39. **Expert Lecture:** Science beyond Boundaries, "on National Science Day" Panjab University, India Feb 28, 2022
40. **Expert Lecture:** Manipulative nano-biosensor to manage infectious diseases intelligently in National Conference on Functional Materials: Synthesis, Properties and Applications, Aligarh Muslim University, INDIA Feb. 21, 2022.
41. **Expert Lecture:** High Performance Bio-Technology for Healthcare, Department of chemistry & Internal Quality assurance cell Parishkar College of Global Excellence Jaipur, INDAI Feb 17, 2022
42. **Expert Lecture:** Smart biosensing for personalized COVID 19 diagnostics, Jan 24th, 2022 "on the theme National Girl Child Day, Department of Chemistry, Chaudhary Charan Singh University, Meerut, UP, INDIA
43. **Expert Lecture:** Smart Biosensors and Personalized Health Wellness, Jan 7th, 2022: WORLD HUMAN SCIENCES & MANAGEMENT CONFERENCE (WHS&MC), organized by Center for Adivasi Research and Development (Card), Odisha in Association with IIM Sambalpur, Ravenshaw University Cuttack & Central University of Odisha, Koraput, INDIA
44. **Expert Lecture:** Smart Green Materials, Sønderborg Climate Neutrality Conference, Session: Smart green materials, September 28-29, 2021 at Southern University of Denmark
45. Invited Lecture: Manipulative Nano Systems for Personalized Healthcare in"4th National Conference in Chemistry -2021, August 6-7, 2021, Discipline of Chemistry, Indian Institute (IIT) Gandhinagar, INDIA
46. **Invited speaker:** Manipulative Nano Systems for Personalized Healthcare in "International Conference on Smart Materials: Application to Devices, May 18, 2021, Kamla Nehru Mahavidyalya, Nagpur-INDIA
47. **Expert Talk:** High-performance Manipulative Nanomedicine for Personalized Healthcare, Los Angeles City College, April 26, 2021
48. **Invited Talk:** NeuroScience Committee Lecture, High-performance Biosensors and Nanomedicine for Intelligence Healthcare, Society for Brain Mapping and Therapeutics, April 09, 2021.
49. **Expert talk:** Atmanirbhar Bharat: India as Manufacturing Hub for Global Health (Promoting Innovation and Entrepreneurship in Medical Devices and TeleHealth)' ICMR Centre for Innovation & Bio-Design (CIBioD), PGIMER, Chandigarh 26-27 November 2020
50. **Panelist,** Charles Walter Society for Innovation and Research, to discuss new education Policy: Oct. 2020
51. Magneto-electric nanoparticles for personalized health care management, International Webinar on Materials Synthesis and Characterization (IWMSC-2020), July 11 to 13, 2020
52. **Special Speaker:** Engineered Nano-Structures for Therapeutics and Biomedical Applications, RPS Group of Institutions, India, July 3, 2020
53. **Expert Lecture:** Magneto-Electric Nanoparticles Based Nanomedicine for Personalized Health-Wellness, Virtual Meeting on Advances and Challenged in Nanomedicine, June 23, 2002
54. **Expert Lecture:** Smart Biosensor for personalized health Care in the Virtual meeting on Bioelectronics, Biosensors and Biochips Virtual Meeting, May 28, 2020
55. **Plenary Speaker**: "Securing of Yourself", National Seminar cum Workshop on Academic Integrity, Plagiarism & Intellectual Property Rights at Panjab University, Chandigarh from DEC. 23-24, 2019.
56. **Special Lecture** on "NanoBio-Technology for Health Wellness, BioNEST-Panjab University, Dec 23rd, 2019

57. **Keynote Speaker,** SCPINM-2019 "International Symposium on Synthesis, Characterization & Processing of Inorganic, Bio and Nano Materials", Chandigarh University, Chandigarh, Dec 20th, 2019.
58. **Invited Speaker** on "Biomedical nanotechnology for getting into the brain for health wellness", Nano/Bio-Technology 2019, Organized by Special Center of Nanoscience at Jawahar Lal University and National Institute of Immunology, Dec 19, 2019.
59. **AWARD LECTURE.** Biomedical Nanotechnology; Getting into the brain for personalized health wellness, 4th Universal Scientific Education Research Network (USERN), Nov 8-10, 2019, Budapest Hungary.
60. Chip-based electro-physiology monitoring of HIV-infected cells in setting of drug abuse, 4th Universal Scientific Education Research Network (USERN), Nov 8-10, 2019, Budapest Hungary.
61. **Special Lecture.** Nano-biotechnology for getting into the brain for health wellness, International Brain Research Organization (IBRO), Blood-Brain Barrier: From Basic Physiology to Neurological Disorder Nov. 4 to 8, 2019. Chandigarh, India.
62. **Invited Speaker.** Nano-biotechnology for personalized health care, 2019 Green Chemistry Engineering Technology at Florida Polytechnic University, Lakeland, FL-USA Oct 25, 2019
63. **Expert Lecture.** Magnetically guided delivery of nanomedicine to the brain, in Nano-NeuroScience session of 16th Society for Brain Mapping and Therapeutic, LA, USA. March 15 to 17, 2019
64. **Invited Speaker.** Chip-based electrophysiology monitoring of HIV-infected cells in the setting of drug abuse, in Nano-Bioelectronics session of 16th Society for Brain Mapping and Therapeutic, LA, USA. March 15 to 17, 2019
65. **Expert Lecture.** Magneto-electric nanoparticles for drug delivery across the blood-brain barrier to manage CNS diseases, Department of Chemistry, University of Miami, Feb 1, 2019.
66. **Invited Speaker.** Aspects of Nano-Bio-technology for drug Delivery to manage CNS diseases, 11th Annual Nanoscience and Engineering Research Conference, Nano-Florida 2018, Oct 5-7, 2018 Florida Technical University, FL, USA.
67. **Expert Lecture.** Biomedical application of magneto-electric nanoparticles, Special Center of Nanoscience of Jawaharlal Nehru University, New Delhi, India, April 17, 2018
68. **Expert Lecture.** Biomedical application of magneto-electric nanoparticles, International Symposium on Functional Materials, Chandigarh, India, April 13, 2018
69. **Expert Lecture.** Biomedical application of magneto-electric nanoparticles, Department of Chemistry, Doon University Dehradun, India, April 10, 2018
70. **Expert Lecture.** Smart Biosensors for Personalized Health Care, Southern HIV & Alcohol Research Consortium (SHARC), at University of Florida, Feb 28, 2018.
71. **Expert Lecture.** Aspects of Biosensors and Nanomedicine to Manage Brain Cancer, Cognitive Neuroscience Society of FIU, Feb 7, 2018
72. **Expert Lecture.** Magnetically guided delivery of magneto-electro nanoparticles to the brain of non-human primate, Society for Personalized Nanomedine, Nov. 2-3, 2017.
73. **Invited Speaker.** Electrochemical system for HIV-infection monitoring in the presence of substance of abuse and/or therapeutic agent, NIAA Neuro-HIV and alcohol abuse satellite meeting-2017.
74. **Expert Lecture.** Nano-biotechnology for Personalized Health Care. NanoFlorida-2017
75. **Expert Lecture.** Nano-Biotechnology for Personalized Health Care, Department of Chemistry of Panjab University Chandigarh, July 20th, 2017.
76. **Expert Lecture.** Nano-Biotechnology for Personalized Health Care, CSIR-Center for Scientific Instrument Organization (CSIO), July 20th, 2017
77. **Expert Lecture.** Magnetically guided brain delivery of drug-nano-carrier to the brain, Society of Brain Mapping and Therapeutics, April 18-20, 2017, LA, USA
78. **Invited Speaker.** Magnetically guided brain delivery of magnetic drug-nanocarrier, NanoFlorida, Sept. 24-25, 2016 University of Central Florida, Orlando, USA.

79. **AWARD LECTURE.** Electrochemical chip-based approach to detect HIV-1 infection in alcohol and cannabinoids users, NeuroHIV and Alcohol Abuse Meeting, Florida International University, Miami May 18, 2016
80. **Special Lecture.** CNS delivery of Magneto-electro nanoparticles and its toxicity evaluation" Society of Brain Mapping and Therapeutics, April 8-10, 2016, Miami, USA
81. **Invited Speaker**. Electrochemical Plasma Cortisol Detection of HIV Positive Patients, Nano-Florida 2014, University of Miami, USA, Sep. 25-26, 2014
82. **Invited Speaker.** India-Japan Workshop on 'Biomolecular Electronics & Organic Nanotechnology for Environment Preservation' (IJWBME) Dec. 13-15, 2009 DTU, India.
83. **Invited Speaker.** Fifth International Conference on Molecular Electronics & Bioelectronics (M&BE5), Miyazaki, Japan. March 2009,
84. **Invited Speaker.** Nano-bioengineering and Spintronics (nBEST), Chungnam National University, Korea, Nov, 2009.
85. **Invited Speaker.** India-Japan Workshop on Biomolecular Electronics & Organic Nanotechnology for Environment Preservation (IJWBME 2009), NPL, India, Dec. 2009.

MENTORING AND SUPERVISION

President of Dissertation Defence (ONLY)

Author: ENRIC PERARNAU OLLÉ Date: July 02, 2024
Title: "Design of service-purpose vehicles through the sense of smell".
Major Adviser: Jasmina Casals-Terré; PhD.
Dept. Mechanical Engineering
Universitat Politècnica de Catalunya, Spain

Chairperson of Dissertation Defence (ONLY)

Student: Indira Kumar Sharan Date: June 22, 2021
Department of Electrical Engineering
University of South Florida, USA
Thesis Title: Preparation and Characterization of Single Layer Conducting Polymer Electrochromic and Touch-Chromic Devices
Major Adviser: Prof. Dr. Elias Stefanakos

MENTORING AND SUPERVISION

Ph.D. Thesis ADVISER-ACTIVE

1. Tuba Oz, 2023 - Active PUMS-POLAND
   Area - Graphene-assisted PD management
2. Akansha Srivastava, 2023 - Active UPES-INDIA
   Area - Nano-enabled sensors for POC applications

Ph.D. Thesis AWARDED

3. Mehar Singh, 2021-2024 PU-INDIA
   Area - Metal Oxide for Envi. management
4. Bianca Seufert, 2024 ECE-USF
   Area - Wearable Sensors Electronics
5. Urmila Chakrabarty, 2020-2023 PU-INDIA
   Area - Smart Metal Oxide for Env. Management.
6. Jayesh Soni, 2015 - 2020 FIU

Area - Deep learning enabled efficient diagnostics.

7. Allen Caobi, 2015 - 2020 FIU
Area - Therapeutics of Zika-Virus infection.

8. Prashant Korea, 2019-2023 KW-South Korea
Area - Point-of-care diagnostics systems

9. Chet Ojha, 2015 - 2019 HWCOM-FIU
Area - Autophagy and Zika virus infection

10. Sneham Tiwari, 2015 - 2019 HWCOM-FIU
Area - Therapeutics delivery to the brain for AD.

11. Khalid Pasha, 2013 - 2019 ECE-FIU
Area - FET-based biosensor systems.

12. Arash Ahmadivand, 2015-2018 ECE-FIU
Area - Plasmonic nano-sensing-platforms

THESIS MENTORING

13. Kiran Phanny, ECE-FIU, 2011-14 Ph.D.
Area - Trapping of multiple cell spheroids

14. Prateek Shah, BME-FIU, 2011-15 Ph.D.
Area - Electrical properties of biomolecules

15. Eric Huey, ECE-FIU 2011-13 Ph.D.
Area - Silica Nanowire for bio-sensing application

16. Abhay Vasudev, ECE-FIU,2011-13 Ph.D.
Area - Electrochemical immuno-sensing of Cortisol

UNDERGRADUATE STUDENTS (FIU)

17. Nicolas Narena, ECE-FIU, 2011-13 REU
Area - Fabrication of electrochemical biosensor

18. A. F. D. Cruz, ECE-FIU, 2011-13 REU
Area - Fabrication of electrochemical biosensor

19. Ariel Ruiz, ECE-FIU, 2014 -16 UG
Area - Magnetic Nano-carriers for drug delivery

20. Tiyas Porira, HWCOM-FIU, 2015 Ph.D. Trainee
Area - Magnetic carriers for drug delivery

21. Puja Yatham, CMEM-FIU, 2017-19 Volunteer
Area - Nano-formulation characterization.

22. Fong Nham, HWCOM-FIU, 2018 Volunteer
Area - Cas9/gRNA-based Nanomedicine for NeuroHIV

UNDERGRADUATE STUDENTS (FPU)

23. Alexendar Gage, 2020-24 UG-FPU **First Student**
Area - Miniaturized Sensor for efficient diagnostics.
Moved to UF to pursue an Integrated MS and PhD degree

24. Kaitlyn Brunson, 2020-21 UG-FPU **First Student**
Area - Nanomedicine for personalized healthcare.
Moved to Pharmacy College at UCF

25. Raul Lopez, 2022- UG-FPU
Area - Point-of-care Sensing Systems.
Pursuing AI-related research

26. Victoria Dirpaul, REU,
Summer 2022@FIU – Hydrogel for Biomedical Applications.

27. Andrew Grahm, 2023 UG-FPU
Area - Electrochemistry of Sensing Electrodes.
Moved to Space-engineering research
Summer 2022@FPU

28. Hannah Tubridy REU,
Summer 2023@FIU

29. Justin Sanchez-Almirola, 2020 UG (ME) FPU
Area - Fabrication of Sensing Platform for Environmental Management.

30. Orr Rilley, 2024 - UG (EE) FPU
Area - Miniaturized Electrochemical Sensors for POC Applications.
Summer 2024@FIU

31. Andrea Lee, 2024 UG-FPU
Area - Miniaturized Electrochemical Sensors for POC Applications.
Summer 2024@FIU

32. Daniel Fellows UG (EE) FPU
Area – Exploring smart sensing systems for diagnostics applications.
SP 2024 Trained CHM-2 TA

PROFESSIONAL MEMBERSHIP AND COMMITTEE ASSIGNMENTS

- **Fellow-Indian Chemical Society**
- **USERN: Universal Scientific Education Research Network 2019 -**
- **American Institute of Healthcare Compliance, Inc.**

- **Society of Brain Mapping and Therapeutics (SBMT), from 2015-2021**
  - **Member of the annual meetings organizing committee**
  - **Member of the program science committee, from 2015-2021**
  - **Co-chair of Nano-Neuroscience/Nano-Neurosurgery subcommittee**
  - **Member of the award committee**

- **Society of Personalized NanoMedicine-SPNM, 2014-2018**
  - **Member of the organizing committee**
  - **Member of a poster evaluation committee**

- **Electrochemical Society (ECS): 2020 -**
- **American Chemical Society (ACS): 2021 –**
- **Member Royal Society Chemistry (MRSC): 2024 -**
- **American Association for the Advancement of Science (AAAS): 2024 -**

JOURNAL REFEREE:

1. Chemical Reviews,
2. Langmuir,
3. Analytical Chemistry,
4. Biomacromolecules,
5. Analyst,
6. Journal of Materials Chemistry A,
7. Biosensors and Bioelectronics,
8. Nanoscale,
9. Applied Surface Science,
10. Journal of alloy and compounds,
11. Polymers for Advanced Technologies,
12. Journal of Nanoscience Letters,
13. Journal of Materials Research,
14. Sensors and Actuators: B,
15. Bioelectrochemistry,
16. Analytical Methods,
17. Journal of Biosensors and Bioelectronics,
18. Open Journal of Applied Biosensor.
19. International Journal of Current Biochemistry,
20. Science Letters Journal,
21. Analytical Chimica Acta,
22. Journal of Nanomaterials & Molecular Nanotechnology,
23. British Journal of Applied Science and Technology,
24. Journal of Nanomaterials,
25. RSC Advances,
26. Arabian Journal of Chemistry,
27. Applied Physics Letters,
28. Sensors and Actuators: A,
29. Sensors,
30. Applied Biochemistry and Biotechnology,
31. Measurement,
32. Fermentation,
33. Journal of Nanomaterials & Molecular Nanotechnology,
34. ACS Nano,
35. International journal of Nanomedicine,
36. Nanomaterials,
37. Dalton Transactions,
38. Infectious Disorders-Drug Targets,
39. Biomaterials,
40. This Solid Films,
41. iMedPub Journals,
42. Environmental Monitoring and Assessment,
43. Micromachines,
44. Scientific Reports,
45. Chinese Chemical Letters,
46. Micromechines,
47. Advances in Colloid and Interface Science,

48. Chemical Society Reviews,
49. Chemistry and Physics of Lipids,
50. Science of Total Environment,
51. International Journal of Biological Macromolecules,
52. IEEE Biomedical Reviews,
53. Current Drug Delivery,
54. Therapeutic Advances in Infectious Disease,
55. Physical Chemistry Chemical Physics,
56. Journal of Molecular Liquids,
57. Surface and Interface Analysis,
58. Materials Chemistry and Physics,
59. Journal of Electrochemical Society,
60. Electrochimica Acta,
61. Microchimica Acta,
62. Japanese Journal of Applied Physics,
63. Physica B: Condensed Matter,
64. Materials Research Engineering C,
65. Biotechnology Journal,
66. 3Biotech,
67. Progress in Polymers Research,
68. International Journal of Hydrogen Energy,
69. European Journal of Pharmaceutics and Biopharmaceutics,
70. Journal of Agricultural and Food Chemistry,
71. Frontiers in Microbiology,
72. Frontiers in Physiology,
73. Frontiers in Pharmacology,
74. Composite Communication,
75. Inorganic Chimica Acta,
76. Applied Physics A,
77. Diagnostics,
78. Soft Matter,
79. Colloids and Surfaces B: Biointerfaces,
80. Biosensors,
81. Journal of Biomolecular Structure & Dynamics,
82. Chemico-Biological Interactions,
83. Journal of Materials Chemistry B,
84. International Journal of Biological Macromolecules,
85. Ceramic International,
86. Asian Journal of Physics,
87. Materials Science-Poland,
88. Surface and Interface Analysis,
89. ACS Omega,
90. ACS Applied Nano Materials,
91. Composites Science and Technology,
92. Journal of Theranostics,
93. Optics and Laser Technology,
94. Micro & Nano Letters,
95. Biomedical Engineering and Computational Biology,

96. Progress in Organic Coatings,
97. Antimicrobial Agents and Chemotherapy,
98. Journal of Electronic Materials,
99. Vacuum,
100. Journal of Industrial and Engineering Chemistry,
101. Journal of Materials Chemistry C,
102. ACS - Journal of Physical Chemistry,
103. ACS Biomaterials Science & Engineering,
104. Journal of the American Chemical Society,
105. MRS Communications,
106. Computer Methods and Programs in Biomedicine,
107. Biotechnology Advances,
108. Lake Reservoirs and Management,
109. Organic Pharmaceuticals,
110. Journal of Drug Delivery Science and Technology,
111. Biochimica et Biophysica Acta (BBA)-Review cancer
112. Trends in Plant Science
113. Trends in Food Science & Technology
114. Solar Energy
115. Nanoscale Horizon
116. Applied Materials Today
117. Materials Today Chemistry
118. Heliyon
119. Neurological Sciences
120. Biomolecules-MDPI.
121. ACS Applied Electronics Materials
122. Superlattices and Microstructures
123. Optical and Quantum Electronics
124. Composites Communications
125. Current Alzheimer Research
126. Materials Characterization
127. Sensors International
128. IEEE Sensors
129. Advanced Therapeutics
130. Applied Nanosciences
131. Applied Surface Science Advances
132. Neurobiology of Stress
133. Journal of Virological Methods
134. Emergent Materials
135. Science of the Total Environment
136. Microbial pathogenesis
137. Chemosphere
138. Nanoscale Advances
139. Expert Opinion on Therapeutics Target
140. IEEE Internet of Things Magazine
141. Seminar in Cancer Biology
142. Saudi Journal of Biological Sciences
143. COVID-MDPI

144. MDPI-Diagnostics
145. ES Energy & Environment
146. ES Food & Agroforestry
147. Journal of Trace Element in Biology
148. Bioresource Technology
149. Advanced Materials Interfaces
150. Fibers
151. Fuel
152. Industrial Crop and Products
153. Bioengineered
154. Nanotechnologies Reviews
155. Nanofabrication
156. Clinical and Translational Discovery
157. Energy Storage
158. The innovation
159. Journal of King Saud University – Science
160. Advances in Colloid and Interface Science
161. MedComm
162. Microbial Research
163. Results in Chemistry
164. I-science
165. Materials Today Bio
166. Sensors & Diagnostics
167. Infection and Drug Resistance
168. ECS Sensors Plus
169. Journal of Gene Medicine
170. Translational Neuroscience
171. EPL
172. Advanced Materials
173. Journal of Materials Science: Materials in Electronics
174. Cancer and Metastasis Reviews
175. Hybrid Advances
176. Engineering Reports
177. Journal of the Energy Institute
178. Bioengineering & Translational Medicine
179. Advanced Fiber Materials
180. Separation and purification technology
181. Biomedical physics & engineering express
182. Drug Delivery and Translational Research
183. Materials Research Express
184. Advanced Materials Interfaces
185. ACS Sustainable Chemistry & Engineering
186. Engineering
187. Environmental Energy Reviews
188. Applied Physics Reviews
189. IEEE Sensors Letters
190. Cell Biochemistry and Function
191. Composites Science and Technology

192. Views
193. ACS Environmental Science and Technology (ES&T)
194. Archives of Medical Research
195. ACS Chemical Health
196. MedComm Biomaterials and Applications
197. The Protein Journal
198. Npj2D Materials
199. Chemical Communication
200. Small
201. Advanced Sciences
202. Physical Chemistry - Chemistry Physics (PCCP)
203. SmartMat
204. BMEMat
205. Bioorganic Chemistry
206. Journal of Energy Storage
207. SusMat
208. Chemical Papers
209. ACS Sustainable Resource Management
210. Science and Technology of Advanced Materials
211. Sensors and Actuators Reports
212. Cell Biomaterials
213. Next-Nanotechnology
214. The Chemical Record
215. Science China Chemistry

JOURNAL – EDITORIAL ROLE:

ASSOCIATE EDITOR

OpenNano; Elsevier: https://www.sciencedirect.com/journal/opennano/about/editorial-board

CONSULTING EDITOR:

International Journal of Nanomedicine
https://www.dovepress.com/journal-editor-international-journal-of-nanomedicine-eic5

EDITORIAL BOARD MEMBERS

1. *Chemical Communications RSC*
2. *The Innovations Cell Press*
3. *Nature Scientific Reports, NPG*
4. *Biosensors and Bioelectronics-X – Elsevier*
5. *ECS Sensors Plus -ECS*
6. *Results in Engineering - Elsevier*
7. *Hybrid Advances - Elsevier*
8. *Expert Opinion on Drug Delivery*
9. *Material Research Express*
10. *BMEMat*
11. *Journal of Nanostructures in Chemistry, Springer-Nature*

SPECIAL ISSUE EDITOR

1. **Functional Materials for Sustainable Biomedical Engineering**
   Biomedical Engineering Frontiers
   A Science Partner Journal
   https://spj.science.org/page/bmef/si/functional-materials
   Guest Editors
   Professor Chenzhong Li, The Chinese University of Hong Kong, Shenzhen, China
   Professor Sandeep Kumar, Punjab Engineering College (Deemed to be University), Chandigarh, India
   Professor Ajeet Kaushik, Florida Polytech University, Lakeland, USA
   Professor Shan Liu, The University of Electronic Science and Technology of China, Sichuan Provincial People's Hospital, Chengdu, China
   Professor Ganga Ram Chaudhary, Panjab University, Chandigarh, India

2. **Advanced materials for sensing and biomedical applications. 2023 - active**
   RSC Materials Advances
   https://pubs.rsc.org/en/journals/articlecollectionlanding?sercode=ma&themeid=301a6906-9ade-426d-8aa9-4b3d0eec4752
   Guest Editor: **Dr. Ajeet Kaushik,** Florida Polytechnic University, USA.
   Prof. Yogendra Mishra, University of Southern Denmark, Denmark

3. **Editors' Showcase: Biomedical Nanotechnology 2023**
   Frontiers in Nanotechnology
   Section Biomedical Nanotechnology:
   https://www.frontiersin.org/research-topics/52475/editors-showcase-biomedical-nanotechnology
   Guest Editor: Dr. Ajeet Kaushik, Florida Polytechnic University, USA.

4. **Special Issue: Functional Molecules-based Approaches in Cancer Therapeutics**
   Nature's Cancer and Metastasis Reviews (IF 9.264)
   Vijai Kumar Gupta, PhD SRUC, Kings Building, Edinburgh, UK
   Steven Fiering, PhD, Geisel School of Medicine at Dartmouth, USA
   Ajeet Kaushik, PhD Florida Polytechnic University, Lakeland, FL, USA

5. **New Drugs, Approaches, and Strategies to Combat Antimicrobial Resistance**
   https://www.frontiersin.org/research-topics/45869/new-drugs-approaches-and-strategies-to-combat-antimicrobial-resistance
   Frontiers in Pharmacology (IF-5.9)
   Kushneet Kaur Sodhi, University of Delhi, INDIA
   Mohammad S Mubarak, University of Jordan, Jordan
   Ajeet Kaushik, Florida Polytechnic University, USA

6. **Nanotechnology and Nanoscience to manage SARS-CoV-2 Variants of Concern**
   https://www.frontiersin.org/research-topics/38579/nanotechnology-and-nanoscience-to-manage-sars-cov-2-variants-of-concern - **Publishes as a Book**

Frontiers in Nanotechnology
Ajeet Kaushik
Linqi Zhang
Nicola Maria Pugno
Zhimin Tao
Valtencir Zucolotto
Jie-Sheng Chen
Zhi-Ping Liu
Akio Adachi
ROCKTOTPAL KONWARH
Aditya Kumar
Guillermo Raul Castro
Masaru Katoh

7. **Surface Engineered 2D Materials based Platforms for Advanced Technologies (SE-2DMPAT)**
   Applied Surface Science Advances
   https://www.journals.elsevier.com/applied-surface-science-advances/call-for-papers/call-for-papers-surface-engineered-2d-materials-based-platforms-for-advanced-technologies-se-2dmpat
   Guest Editors
   Ajeet Kaushik- Florida Polytechnic University, USA.
   Prof. Satheesh Krishnamurthy - Open University, United Kingdom
   Prof. Dawid Janas- Silesian University of Technology, Poland

8. **Smart biosensing at point-of-care for intelligent health wellness**
   Biosensors and Bioelectronics-X
   https://www.journals.elsevier.com/biosensors-and-bioelectronics-x/call-for-papers/smart-biosensing-at-point-of-care-for-intelligent-health-wellness**Guest Editors.**
   Jinhong Guo, University of Electronics Science and technology of China
   Ajeet K. Kaushik, Department of Environmental Engineering, Florida Polytechnic University, Lakeland, FL, USA
   Chenzhong Li, Center for Cellular and Molecular Diagnostics, Tulane University, School of Medicine
   Yogendra Kumar Mishra, University of Southern Denmark, Alsion 2, 6400 Sønderborg, Denmark
   Shalini Prasad - Department of Bioengineering, University of Texas at Dallas
   https://www.sciencedirect.com/special-issue/10MZCJ2S3K8

9. **Special Issue "Special Issue in Honor of Professor Bansi D. Malhotra—From Nanosystems to a Biosensing Prototype for an Efficient Diagnostic"**
   https://www.mdpi.com/journal/biosensors/special_issues/honor_prof_BDM_nano_bio_diag
   MDPI-Biosensor (Impact Factor 5.5)
   Guest Editors
   Dr. Ajeet Kaushik Department of Environmental Engineering, Florida Polytechnic University, USA
   Dr. Pratima Solanki Special Center for Nano Science, Jawaharlal Nehru University, New Delhi, India
   Dr. Raju Khan CSIR-Advanced Materials & Processes Research Institute (AMPRI), Bhopal, MP, India
   Prof. Dr. Yogendra Kumar Mishra NanoSYD, University of Southern Denmark, Denmark
   Dr. Sonu Gandhi DBT-National Institute of Animal Biotechnology (NIAB), Hyderabad, India

10. **Device-on-Chip Application in Biomedical Engineer**
    https://www.mdpi.com/journal/biosensors/special_issues/Chip_Biomedical#editors

MDPI-Biosensor (Impact Factor 5.5)
Guest Editors
Dr. Wei Lin Department of Biomedical Engineering, Stony Brook University, NY 11794-5280, USA
Dr. Ajeet Kaushik - Florida Polytechnic University, Lakeland, FL, USA

11. **Special Issue on Smart and Intelligent Nanobiosensors: Multidimensional applications**
Materials Letter (Impact Factor 3.4)
https://www.sciencedirect.com/journal/materials-letters/special-issue/10MWDHSRVSH
Managing Guest Editor
Ravindra Pratap Singh - Indira Gandhi National Tribal University, India
Ajeet K. Kaushik, Florida Polytechnic University, USA
Jay Singh, Banaras Hindu University, India

12. **Frontiers in Nanotechnology [Section: Biomedical Nanotechnology]**
Nanotechnology Solutions to Mitigate COVID-19: Detection, Protection, Medication
https://www.frontiersin.org/research-topics/13838/nanotechnology-solutions-to-mitigate-covid-19-detection-protection-medication
Themis Prodromakis – University of Edinburgh, UK
Bingqing Wei – University of Delware, USA
Ajeet Kaushik - Florida Polytechnic University, USA
Hongqi Sun – Edith Cowan University, Australia
Francis Verpoort – Wuhan University of Technology, China
Wee-Jun Ong – Xiamen University, Malaysia

13. **Sensors-MDPI: Detection and Diagnostics of the novel coronavirus**
https://www.mdpi.com/journal/sensors/special_issues/Detection_Diagnosis_New_Coronavirus
Guest Editors
Ajeet Kaushik – Florida Polytechnic University, USA
Hai-Feng (Frank) Ji Department of Chemistry, Drexel University, USA

14. **Frontiers in Nanotechnology [section: Biomedical Nanotechnology]**
National Conference on Nano/Bio-Technology 2-19, India
https://www.frontiersin.org/research-topics/15270/national-conference-on-nanobio-technology-2019-india
Guest Editor
Pratima R Solanki – Jawahar Lal Nehru University, India
Ajeet Kaushik – Florida Polytechnic University, USA
Anil Kumar – National Institute of Immunology, India

15. **Sensors-MDPI: Point-of-Care Sensing Devices"**
https://www.mdpi.com/journal/sensors/special_issues/Point_of_Care_Sensing_Devices
Ajeet Kaushik – Florida International University, USA
Mubarak Mujawar - Florida International University, USA

16. **Micormechines: "Biommecial Applications of Nanotechnology and Nanomaterials"**
http://www.mdpi.com/journal/micromachines/special_issues/biomedical-applications-nanotechnology-nanomaterials
Vinay Bhaedwaj – BME Florida International University

Ajeet Kaushik – Medical College, Florida International University

17. **Frontiers in Pharmacology "Nanopharmacology for Neurology and Oncology"**
    https://www.frontiersin.org/research-topics/7500/nanopharmacology-for-neurology-and-oncology
    Vinay Bhaedwaj – BME Florida International University
    Ajeet Kaushik – Medical College, Florida International University
    Ziab Khatib – Nicklaus Childrens Health System
    Anthony McGoron - BME Florida International University
    Madhavan Nair - Medical College, Florida International University

PATENTS, BOOKS, RECOGNITION, and PUBLICATIONS

PATENTS GRANTED/PUBLISHED

1. **USA Patent Filed** (Reference No. 2954.27.UTL). Sensing Plastic with Electrode Sensor to Monitor Fluid Environments.
   Inventors: Justin Sanchez-Almirola and Ajeet Kaushik.

   From FIU
2. Arti Vashist, **Ajeet Kaushik** & M. Nair "Micro/nano magnetic hydrogels with autofluorescence for therapeutic and diagnostic applications" US 10,344,100 B1, 2019
3. **Ajeet Kaushik** & M. Nair, "Devices and methods to monitor HIV-infection in the presence of substance of abuse and/or therapeutic agent", **US Patent: US9759709 B1.**
4. **Ajeet Kaushik & M. Nair "Rapid Zika virus detection using nano-enabled electrochemical sensing systems" USA Patent: US10012645 B2.**
5. **Ajeet Kaushik** & M. Nair "Materials and methods for the delivery of nanocarrier to the brain" **US Patent: US20170290916 A1.**

RECOGNITION

1. **Book Reviews**
   Nanobiotechnology for Sensing Applications: From Lab to Field, Ajeet Kumar Kaushik, Chandra K. Dixit (Eds.). Apple Academic Press Inc. (2016), 386, ISBN: 978-1-77188-328–3, **Biosensors and Bioelectronics** 91 (2017) 629-630.
2. **Interview**
   Interview **@Chemical Today, World of Chemicals** [http://www.worldofchemicals.com/] as Academic Speak, entitled **"Designing nano-carriers for smart drug delivery**"
   https://issuu.com/worldofchemicals/docs/chemical_today_feb/41?e=15544522/34368901

PUBLICATIONS

Google Scholar Profile:
https://scholar.google.com/citations?hl=en&user=RYH8Z_4AAAAJ&view_op=list_works

BOOKS IN-PREPARATION

1. **Sustainable Nano-Sensors for Noxious Gas Sensing" has been accepted by Springer-Nature publication**
   SPRINGER NATURE
   EDITORS

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CURRENT POSITION

Faculty Member | *Assistant Professor of Physics*

Physics Department, **Florida Polytechnic University**, Lakeland, FL 2025 – present

- Physics lecturer and researcher in Complex Systems and Biophysics studying:
  - I. Nonequilibrium cohesive behavior involving fibrils formation in biomolecular condensates, humans, machinery and AI, and online aggregation
  - II. Multi-scale mechanisms aiding antimicrobial resistance, persistence and heteroresistance

EDUCATION

Ph.D. | Physics University of Miami, Coral Gables, FL, (USA) 2015

Concentration: *Complex Dynamical Systems*

Dissertation title: *"Topics in Complexity: From Physical to Life Science Systems"*

M.Sc. | Physics University of Los Andes, Bogotá, (Colombia) 2009

Concentration: *Open Quantum Systems*

Thesis title: *"Study of Non-Markovian Thermalization in Qubit Systems"*

B.Sc. | Physics University of Los Andes, Bogotá, (Colombia) 2007

Thesis title: *"Geometrical Effects on Charge Transport in DNA Molecules"*

PROFESSIONAL EXPERIENCE

Research Scientist

Physics Department, **The George Washington University**, Washington D.C. 2021 – 2024

- Independent researcher in projects pertaining the dynamics of real-world systems characterized by heterogeneity in their individual components and time-dependent interactions
- Design and development of mathematical models (analytical, numerical, and data-driven) inspired in the physics, math, and statistics literature, and their applications into real-world systems from the biological, engineering, and up to the social domain
- Mentor of Physics PhD students interested in nonequilibrium physics, data analysis, and AI
- Project deliveries in the form of 4 first-author scientific articles, one of which is highlighted in the Editors' Suggestion of *Physical Review Letters*

Director's Postdoctoral Fellow

Theoretical Division, **Los Alamos National Laboratory**, Los Alamos, NM 2019 – 2021

- Designed, constructed, and implemented a multiscale quantitative model of active matter systems able to describe key aspects of intrinsic antibiotic resistance in Gram-negative bacteria colonies
- Constructed and analyzed a network-based approach derived from all-atom molecular dynamics simulations of *SARS-CoV-2* Spike protein providing quantitative insights about the strength and weaknesses of the emerging virus variants
- Developed and implemented dimensionality reduction techniques and non-linear AI classifiers to identify effective chemical signatures associated to permeation and efflux avoidance in Gram-negative *Pseudomonas aeruginosa*

- Conducted mathematical generalizations of statistical mechanics theories of many-body heterogeneous dynamical systems, and implemented the solutions to model and analyze competitive and contentious social networks (e.g., political ideology, anti-vaccines)
- Coauthor of 7 papers. One of them is published in *Nature*

Postdoctoral Researcher

Department of Physics, **University of Miami**, Coral Gables, FL 2016 – 2019

- Modeled competitive many-body dynamical systems, within the context of a generalized cyber-physical system, aimed at understanding the effect of information delays and a variable number of components
- Performed kinetic theory, heterogeneous agent-based modeling, and statistical analysis techniques, to describe the onset and sudden growth of online clusters in support of extremism
- Implemented a many-body dynamics formalism to link the stimulus input to the motor response of a complex system that statistically compares with exploratory trajectories of simple crawling organisms (e.g., drosophila larvae)
- Developed stochastic and mean-field applications to describe the dynamics of infection spreading in online (e.g., ideological extremism) as well as offline (e.g., Zika virus), network systems
- Substitute Physics lecturer (undergraduate-level, Physics) for science and engineering students
- Co-author of 11 papers in high-impact journals including *Physical Review Letters* and *Science Advances*

Research & Teaching Assistant

Department of Physics, **University of Miami**, Coral Gables, FL 2011 – 2015

- Performed Monte Carlo simulations to understand and optimize the role of spatial correlations of incoming photons into a photosynthetic organism capable of light absorption, excitation transfer, and reaction center ionization
- Implemented graph theory techniques to analyze the dynamics and success of real-world extreme network systems
- Carried out machine learning modeling and simulations to study the relationship between online social media activity and offline civil unrest action
- Uncovered striking divergences between two popular approaches to estimate the non-equilibrium properties of an open quantum system when the number of interacting subunits is greater than 1
- Co-author of 16 papers in high-impact journals including *Science & Science Advances*

Research Assistant

Chair of Materials Science, **Dresden University of Technology**, Germany 2009 – 2010

- Developed and implemented a quantum mechanical model to capture and explain the underlying transport properties of an organic molecular system. The results of this project are published in the materials science journal *Nano Letters*

Graduate Assistant

Department of Physics, **University of Los Andes**, Bogotá, Colombia 2006 – 2009

- Derived a non-Markovian quantum dynamical equation to study the memory effects in an open quantum system comprised of a collection of interacting qubits in contact with reservoirs in thermal equilibrium
- Lecturer of undergraduate-level Physics classes for science and engineering students

AWARDS & RECOGNITIONS

Editors' Suggestion Recognition. Letter: "Shockwavelike behavior across social media". American Physical Society Editorial Office. Hauppauge, New York 2023

Spot Award. Project: "Cell-to-Cell Heterogeneity in Antibiotic Resistance: Accounting for Efflux Pumps and Impermeability". Associate Laboratory Director for Simulation and Computation (ALDSC). Los Alamos National Laboratory. Los Alamos, New Mexico 2021

Los Alamos National Laboratory Director's Fellowship Award. "Multiscale Quantitative Description of Drug Resistance Mechanisms in Bacterial Systems" Los Alamos National Laboratory. Los Alamos, New Mexico 2019 – 2021

International Max Plank Research School for Dynamical Processes in Atoms, Molecules, and Solids Fellowship Award, Max Plank Institute, Dresden, Germany 2009 – 2010

Proyecto "Semilla" Fellowship Award. "Non-Markovian thermalization for few qubit system" Department of Physics, University of Los Andes, Bogota, Colombia 2007

SERVICE TO THE SCIENTIFIC COMMUNITY

Editor/Reviewer

Review Editor Board member of *Frontiers in Physics* 2023 – present

Review Editor Board member of *Frontiers in Complex Systems Theory* 2023 – present

Guest editor *MDPI Computation*: Special Issue "Computational Social Sciences and Complex Systems" 2022 – present

Guest editor *MDPI Entropy*: Special Issue "Non-Equilibrium Physics and Its Interdisciplinary Applications" 2024 – present

Journals Refereed

Physica A: Statistical Mechanics and its Applications, Nature Communications Physics, Nature Scientific Reports, Nature Climate Change, ACS Infectious Diseases, Applied Network Science, MDPI Systems, MDPI Electronics, Sustainable Chemical Engineering

TEACHING, SERVICE AND MENTORING EXPERIENCE

Teaching Experience

Physics Lecturer (undergrad-level, Physics). Florida Polytechnic University, FL 2024 –present

Substitute Physics lecturer (undergrad-level, Physics). University of Miami, FL 2016 –2019

Physics academy instructor (undergrad-level, Physics). University of Miami, FL 2014 –2015

Physics laboratory instructor (undergrad-level, Physics). University of Miami, FL 2011

Physics Lecturer (undergrad-level, Physics). University of Los Andes, Colombia 2008

Physics group discussions and laboratory instructor (undergrad-level, Physics). University of Los Andes, Colombia 2005 –2008

Service to the Department

Curriculum Development Physics Major. Physics Department. Florida Polytechnic University 2025

Cofounder and coordinator of the "Graduate Students Seminar" of the Department of Physics at the University of Miami, FL 2013 –2015

Students Mentored

Frank Huo, Physics PhD student, George Washington University 2021–2024

Sara El Oud, Physics PhD student, George Washington University 2019–2023

Justin Lindsay, Biology graduate intern, Los Alamos National Laboratory 2021
Liam Herndon, Engineering graduate intern, Los Alamos National Laboratory 2021
Minzhang Zheng, Physics PhD student, University of Miami 2018–2019

LIST OF PUBLICATIONS

Number of citations by 8/16/2025: **1,993** (*Google Scholar* h-index: 17, i10-index: 24)

42. F. Huo, **P.D. Manrique**, M. Zheng, N. F. Johnson. "Online Complexity: The New Social Physics of Extremes, Misinformation and AI" *Oxford University Press,* (Book in Press), (2025)
41. **P.D. Manrique**, N. F. Johnson. "Bypassing Covert Resilience in Contentious Online Networks" *SIAM News.* https://www.siam.org/publications/siam-news/articles/bypassing-covert-resilience-in-contentious-online-networks/ (2025)
40. F. Huo, **P.D. Manrique**, D. J. Restrepo, G. Woo, N. F. Johnson. "Physics reveals and explains patterns in conflict casualties" *Europhysics Letters* **151**, 12001, (2025)
39. F. Huo, **P.D. Manrique**, N. F. Johnson. "Multi-Species Cohesion: Humans, machinery, AI and beyond". *Physical Review Letters.* **133**, 24, 247401, (2024)
38. **P.D. Manrique,** F. Huo, S. El Oud, N. F. Johnson. "Non-equilibrium physics of multi-species assembly applied to fibrils inhibition in biomolecular condensates and growth of online distrust". *Scientific Reports*, **14**, 21911, (2024)
37. **P.D. Manrique**, I. V. Leus, C. A. Lopez, J. Mehla, G. Malloci, S. Gervasoni, A. V. Vargiu, R. Kinthada, L. Herndon, N. W. Hengartner, J. K. Walker, V. V. Rybenkov, P. Ruggerone, H. I. Zgurskaya, S. Gnanakaran. "Predicting Permeation of compounds across the outer membrane of *P. aeruginosa* using molecular descriptors", *Communications Chemistry*, **7**, 84 (2024).
36. **P.D. Manrique**, F. Huo, S. El Oud, M Zheng, L. Illari, N.F. Johnson. "Shockwavelike behavior across social media". *Physical Review Letters,* **130**, 237401 (2023)
    Media Attention: American Physical Society Physics Magazine (USA) Viewpoint: https://physics.aps.org/articles/v16/89
    Nature Research Highlights (UK): Physics-inspired model for online content dynamics, *Nature Computational Science,* **3**, 575 (2023) https://www.nature.com/articles/s43588-023-00492-5
35. **P.D. Manrique**, S. Chakraborty, R. Henderson, R. J. Edwards, R. Mansbach, K. Nguyen, V. Stalls, C. Saunders, K. Mansouri, P. Acharya, B. Korber, S. Gnanakaran. "Network analysis uncovers the communication structure of SARS-CoV-2 Spike protein identifying sites for immunogen design". *iScience*, **26**, 1, (2023)
34. **P.D. Manrique**, C.A. Lopez, S. Gnanakaran, V.V. Rybenkov, H.I. Zgurskaya. "New understanding of multi-drug efflux and permeation in antibiotic resistance, persistence and heteroresistance". *Annals of the New York Academy of Sciences*, **1519**, 1, 46–62, (2022)
33. N. Velasquez, **P. Manrique**, R. Sear, R. Leahy, N. Johnson Restrepo, L. Illari, Y. Lupu, N.F. Johnson. "Hidden order in online extremism and its disruption by nudging collective chemistry". *Scientific Reports*, **11**, (2021)
32. **P.D. Manrique**, S. Gnanakaran. "Microscopic approach to intrinsic antibiotic resistance". *Journal of Physical Chemistry B,* **125**, (2021)
31. J. Mehla, G. Malloci, R. Mansbach, C.A. López, R. Tsivkovski, K. Haynes, I.V. Leus, S.B. Grindstaff, R.H. Cascella, N. D'Cunha, L. Herndon, N.W. Hengartner, E. Margiotta, A. Atzori, A.V. Vargiu, **P.D. Manrique**, J.K. Walker, O. Lomovskaya, P. Ruggerone, S. Gnanakaran, V.V. Rybenkov, H.I. Zgurskaya. "Predictive rules of efflux inhibition and avoidance in Pseudomonas aeruginosa". *mBio*, **12**, (2021)

30. N.F. Johnson, N. Velasquez, N. Johnson Restrepo, R. Leahy, N. Gabriel, S. El Oud, M. Zheng, **P. Manrique**, S. Wuchty, Y. Lupu**.** "The online competition between pro- and anti-vaccination views". *Nature*, **131**, (2020)
    Media Attention: *Nature,* **581**, 251 (2020) DOI: 10.1038/d41586-020-01423-4
    Science, **368**, Issue 6492, pp. 699. 15 May 2020, DOI: 10.1126/science.368.6492.699
29. N.F. Johnson, R. Leahy, N. Johnson Restrepo, N. Velasquez, M. Zheng, **P. Manrique**, P. Devkota, S. Wuchty. **"**Hidden resiliency and adaptive dynamics of the global online hate ecology". *Nature*, **573**, (2019)
    Media Attention: Science News (UK) doi:10.1126/science.aaz2320
28. N.F. Johnson, **P. Manrique**, M. Zheng, Z. Cao, J. Botero, S. Huang, N. Aden, C. Song, J. Leady, N. Velasquez, E.M. Restrepo. **"**Emergent dynamics of extremes in a population driven by common information sources and new social media algorithms". *Scientific Reports*, **9**, (2019)
27. **P.D. Manrique**, M. Klein, Y.S. Li, C. Xu, P.M. Hui, N.F. Johnson. "Getting closer to the goal by being less capable". *Science Advances*, **5**, (2019)
    Media Attention: *Scientific American* (USA)
    https://www.scientificamerican.com/article/artificial-dumbness-may-be-a-solution-for-engineering-smart-machines/ Quanta Magazine (USA) https://www.quantamagazine.org/smarter-parts-make-collective-systems-too-stubborn-20190226/
26. Z. Cao, M. Zheng, **P.D. Manrique**, Z. He, N.F. Johnson. "Temporal evolution of online extremist support". *Physica A: Statistical Mechanics and its applications,* **519**, (2018)
25. **P.D. Manrique**, M. Zheng, Z. Cao, E.M. Restrepo, N.F. Johnson. **"**Generalized gelation theory describes onset of online extremist support". *Physical Review Letters,* **121**, (2018)
    Media Attention: American Physical Society Physics Magazine (USA)
    https://physics.aps.org/articles/v11/76
24. **P. Manrique**, M. Klein, Y.S. Li, C. Xu, P.M. Hui, N. Johnson. "Decentralized competition produces nonlinear dynamics akin to klinotaxis". *Complexity*, **2018**, (2018)
23. **P.D. Manrique**, N.F. Johnson**.** "Individual heterogeneity generating explosive system network dynamics". *Physical Review E,* **97**, (2018)
22. M. Zheng, Z. Cao, Y. Vorobyeva, **P. Manrique**, C. Song, N.F. Johnson**. "**Multiscale dynamical network mechanisms underlying aging of an online organism from birth to death". *Scientific Reports*, **8**, (2018)
21. **P.D. Manrique**, J.C. Beier, N.F. Johnson. "Simple visit behavior unifies complex Zika outbreaks". *Heliyon,* **3**, (2017)
20. **P.D. Manrique**, M. Zheng, Z. Cao, D.D. Johnson Restrepo, P.M. Hui, N.F. Johnson. "Subsecond tsunamis and delays in decentralized electronic systems". *Electronics*, **6**, (2017)
19. **P.D. Manrique**, M. Zheng, D.D. Johnson Restrepo, P.M. Hui, N.F. Johnson. "Impact of delayed information in sub-second complex systems". *Results in Physics*, **7**, (2017)
18. A.M. De Mendoza, F. Caycedo-Soler, **P. Manrique**, L. Quiroga, F.J. Rodríguez, N.F. Johnson. "Exploiting non-trivial spatio-temporal correlations of thermal radiation for sunlight harvesting". *Journal of Physics B: Atomic, Molecular and Optical Physics*, **50**, (2017)
17. **P.D. Manrique**, D.D. Johnson, N.F. Johnson. "Using competition to control congestion in autonomous drone systems". *Electronics*, **6**, (2017)
16. **P.D. Manrique**, F. Caycedo-Soler, A. De Mendoza, F. Rodríguez, L. Quiroga, N.F. Johnson**. "**Exploring the effects of photon correlations from thermal sources on bacterial photosynthesis". *Results in Physics*, **6**, (2016)

15. **P.D. Manrique**, C. Xu, P.M. Hui, N.F. Johnson. "Atypical viral dynamics from transport through popular places", *Physical Review E*, **94**, (2016)
14. **P.D. Manrique**, H. Qi, M. Zheng, C. Xu, P.M. Hui, N.F. Johnson. "Anomalous contagion and renormalization in networks with nodal mobility". *Europhysics Letters*, **115**, (2016)
    Media Attention: Science 2.0
    https://www.science20.com/news_articles/contagion_in_popular_places_from_zika_to_political_extremism-177670
13. H. Qi, **P. Manrique**, D. Johnson, E. Restrepo, N.F. Johnson. "Association between volume and momentum of online searches and real-world collective unrest". *Results in Physics*, **6**, (2016)
12. N.F. Johnson, M. Zheng, Y. Vorobyeva, A. Gabriel, H. Qi, N. Velásquez, **P. Manrique**, D. Johnson, E. Restrepo, C. Song, S. Wuchty. "New ecology of adversarial aggregates: ISIS and beyond". *Science*, **352**, (2016)
    Media Attention: The New York Times (USA)
    https://www.nytimes.com/2016/06/17/science/fighting-isis-with-an-algorithm-physicists-try-to-predict-attacks.html
11. **P. Manrique**, Z. Cao, A. Gabriel, J. Horgan, P. Gill, H. Qi, E.M. Restrepo, D. Johnson, S. Wuchty, C. Song, N. Johnson. "Women's connectivity in extreme networks". *Science Advances*, **2**, (2016)
    Media Attention: La Vanguardia (Spain)
    https://www.lavanguardia.com/ciencia/ciencia-cultura/20160610/402410992803/mujeres-estado-islamico-terrorismo.html
10. H. Qi, **P. Manrique**, D. Johnson, E. Restrepo, N.F. Johnson. "Open source data reveals connection between online and on-street protest activity". *EPJ Data Science*, **5**, (2016)
9. **P.D. Manrique**, P.M. Hui, N.F. Johnson**.** "Internal character dictates transition dynamics between isolation and cohesive grouping". *Physical Review E*, **92**, (2015)
8. **P.D. Manrique**, F. Rodríguez, L. Quiroga, N.F. Johnson. "Non-equilibrium quantum systems: divergence between global and local descriptions". *Advances in Condensed Matter Physics*, **12**, (2015)
7. **P.D. Manrique**, A. De Mendoza, F. Caycedo-Soler, F. Rodríguez, L. Quiroga, N. Johnson. "Survivability of photosynthetic bacteria in non-terrestrial light". *Journal of Astrobiology & Outreach,* **3**, (2015)
6. N.F. Johnson, P. Medina, G. Zhao, D.S. Messinger, J. Horgan, P. Gill, J.C. Bohorquez, W. Mattson, D. Gangi, H. Qi, **P. Manrique**, N. Velasquez, A. Morgenstern, E. Restrepo, N. Johnson, M. Spagat, R. Zarama. "Simple mathematical law benchmarks human confrontations". *Scientific Report*, **3**, (2013)
    Media Attention: Science World Report (USA)
    https://www.scienceworldreport.com/articles/11581/20131214/mathematical-formula-describes-human-struggles-crying-babies-wars.htm
5. A.P. Morgenstern, N. Velásquez, **P. Manrique**, H. Qi, N. Johnson, N. Johnson. "Resource Letter MPCVW-1: Modeling political conflict, violence, and wars: a survey". *American Journal of Physics*, **81**, (2013)
4. N. Johnson, G. Zhao, F. Caycedo, **P. Manrique**, H. Qi, F. Rodriguez, L. Quiroga. "Extreme alien light allows survival of terrestrial bacteria". *Scientific Reports*, **3**, (2013)
    Media Attention: Real Clear Science (USA)
    https://www.realclearscience.com/articles/2013/08/02/little_green_men_try_tiny_purple_bacteria_106616.html

3. **P. Manrique**, H. Qi, A. Morgenstern, N. Velasquez, T.C. Lu, N. Johnson. “Context matters: improving the uses of big data for forecasting civil unrest”. *IEEE International Conference on Intelligence and Security Informatics,* p169-p172, (2013)
2. N.F. Johnson, **P. Manrique**, P.M. Hui. “Modeling insurgent dynamics including heterogeneity: a statistical physics approach”. *Journal of Statistical Physics,* **151**, (2013)
1. H. Kleemann, R. Gutierrez, F. Lindner, S. Avdoshenko, **P.D. Manrique**, B. Lüssem, G. Cuniberti, K. Leo. “Organic zener diodes: tunneling across the gap in organic semiconductor materials”. *Nano Letters*, **10**, (2010)

Hyeyoung Cho

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Florida Polytechnic University
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Mobile: 801-550-1697
E-mail: hcho@floridapoly.edu

PROFESSIONAL PROFILE

- Assistant Professor of Chemical Engineering with 10+ years of research experience in nanoporous materials, CO_2 capture, thermodynamics, nanoconfined phase behavior, and sustainable energy.
- Strong academic and industry background, including 4+ years as a lithography module development engineer at Intel leading defect-reduction and data-driven process optimization.
- Proven research impact with 16 peer-reviewed publications and 3,500+ citations in energy, environmental, and materials science.
- Advanced expertise in materials characterization (XRD, TEM, SEM, BET, TGA, DSC, UV-Vis, GC, Rheometry).
- Committed to building an innovative research program, mentoring undergraduate students, and contributing to interdisciplinary growth at Florida Poly.

PROFESSIONAL EXPERIENCE

Assistant Professor August 2025 – Present
Department of Chemical Engineering, Florida Polytechnic University, Lakeland, FL

- **Teaching**: General Chemistry I (CHM 2045) and Chemistry I Laboratory (CHM 2045L); develop course materials aligned with ABET outcomes and active learning pedagogy.
- **Service**: Departmental representative on the Undergraduate Curriculum Committee (UCC), supporting curriculum innovation and program development.
- **Research**: Building a new laboratory focused on porous materials, functional materials, and composite systems for applications in energy, environment, and infrastructure.
- **Professional Service**: NSF Proposal Reviewer, providing national-level peer review for research proposals.
- **Professional Engagement**: Executive Committee Member, Korean Institute of Chemical Engineers (KiChE) U.S. Chapter, contributing to academic outreach and community engagement.

TD Module Development Engineer June 2020 – November 2024
Lithography, Intel Corporation, Hillsboro, OR

- Optimized lithography processes and managed multiple tools to improve stability, yield, and productivity.
- Led defect reduction initiatives (QTM SSAFI and associated layers) through defect classification, SPC analysis, and cross-functional collaboration.
- Supported process qualification, cost-saving efforts, and provided technical training to team members.
- Received SAT Award (Apr 2021) for identifying a critical process logging error that prevented a major production issue.

Research Associate December 2018 – March 2020
Energy Frontier Research Center (EFRC), University of Utah, Salt Lake City, UT
Funded by U.S. Department of Energy (DOE)

- Developed microchannels using advanced fabrication techniques, synthesizing nanoporous materials to explore new material properties.
- Conducted research on the phase behavior of hydrocarbons in confined environments, providing valuable insights into nanoscale systems.
- Mentored and supervised graduate students, fostering a collaborative research environment and promoting innovative research approaches.

Postdoctoral Researcher December 2017 – November 2018
Reservoir Engineering Research Institute, Palo Alto, CA

- Conducted experiments on enhanced oil recovery, exploring the effects of water salinity and chemical additives in carbonate rocks.
- Characterized crude oil and core sample properties to improve understanding of fluid behavior in reservoirs.

Remote Researcher December 2017 – May 2018
Earth Science and Engineering, King Abdullah University of Science and Technology (KAUST), Saudi Arabia
- Investigated gas adsorption and desorption in shale formations, focusing on hydrocarbons and CO_2 storage under high-pressure conditions.
- Discovered new insights into hydrocarbon behavior in unconventional reservoirs, contributing to advancements in energy resource management.

Graduate Research Assistant January 2014 – December 2017
Energy & Geoscience Institute, University of Utah, Salt Lake City, UT
- Developed novel synthesis techniques for silica-based monoliths, advancing materials research.
- Designed specialized equipment to measure thermodynamic properties, yielding critical data for hydrocarbon studies.

Graduate Research Assistant February 2011 – February 2013
Catalysis & Nanomaterials Laboratory, Inha University, Incheon, South Korea
- Synthesized advanced porous materials using innovative chemical methods, pushing the boundaries of catalyst development.
- Conducted various catalytic reactions and managed complex analytical instrumentation to support research in nanomaterials and catalysis.

Graduate Research Assistant April 2011 – March 2012
Korea Carbon Capture and Sequestration R&D Center (KCRC), South Korea
- Synthesized metal-organic frameworks (MOFs) for carbon capture applications, using both traditional and cutting-edge techniques.
- Conducted gas adsorption studies to understand the behavior of materials in carbon capture processes.

TEACHING EXPERIENCE

Assistant Professor August 2025 – Present
Department of Chemical Engineering, Florida Polytechnic University, FL
- General Chemistry I (CHM 2045)
- Chemistry I Laboratory (CHM 2045L)

Guest lecturer
Department of Chemical Engineering, University of Utah, UT
- CH EN 6185 Reservoir Engineering (April 18, 2017)
- CH EN 5310 Renewable Energy (December 1, 2016)
- Delivered lectures to graduate students on advanced topics in reservoir engineering and renewable energy, emphasizing critical thinking and the practical application of theoretical concepts.

Department of Nursing Science, Inha University, South Korea
- NUR 4024 Community Nursing (October 29, 2012)
- Conducted undergraduate lectures on general chemistry, focusing on foundational chemistry knowledge crucial for nursing students.

Teaching Assistant August – December 2016
Department of Chemical Engineering, University of Utah, UT
- Taught the undergraduate and graduate lab sections for the Renewable Energy Course
- Assisted in course design, examination preparation, and grading, enhancing the learning experience for both undergraduate and graduate students

Teaching Assistant January – May 2016
Department of Chemical Engineering, University of Utah, UT
- Assisted in exam and assignment preparation and grading for Reservoir Engineering Course

Teaching Assistant February 2011 – February 2013
Department of Nursing Science, Inha University, South Korea
- Assisted in exam and assignment preparation and grading

EDUCATION PROFILE

Ph.D. in Chemical Engineering December 2017
University of Utah, Salt Lake City, UT
- Specialization: Thermodynamics and flow properties of hydrocarbons in confined systems
- Dissertation: Thermodynamics of Fluids in Mesoporous Media
- Advisor: Professor Milind Deo
- GPA: 3.7

M.S. in Chemical Engineering February 2013
Inha University, Incheon, South Korea
- Specialization: Synthesis and applications of porous materials to mitigate environmental degradation
- Dissertation: High Yield 1-Liter Scale Synthesis of ZIF-8 via a Sonochemical Route
- Advisor: Professor Wha-Seung Ahn
- GPA: 4.0

B.S. in Chemical Engineering February 2011
Inha University, Incheon, South Korea
- GPA: 3.9

JOURNAL PUBLICATIONS

Summary: Published 16 peer-reviewed journal articles in renowned scientific journals, covering topics such as nanoporous materials, hydrocarbon phase behavior, and enhanced oil recovery. These publications have received significant attention in the field, as evidenced by over 2500 citations.

Andrew T Jacobson, Chen Chen, Janet C Dewey, Grant C Copeland, Wayne T Allen, Bryony Richards, John P Kaszuba, Adri C T van Duin, **Hyeyoung Cho**, Milind Deo, Yuqi She, Thomas P Martin. "Nanoscale pore geometries and the point of zero charge of synthesized silica materials." JCIS Open, 8 (2022) 100069.

Taniya Kar, **Hyeyoung Cho**, Abbas Firoozabadi. "Assessment of Low Salinity Waterflooding: Interfacial Viscoelasticity and Tuning Process Efficiency by Use of Functional Molecules." J. Colloid Interface Sci., 607 (2022), 125-133.

Lani McKinnon, Bonan Wang, Viktoriya Semeykina, Michael Bartyl, Ilya Zharov, **Hyeyoung Cho**, Milind Deo, Jules Magda, Swomitra Mohanty. "Novel Strategies for Fluid Confinement and Experimental Effects of Pressure-Driven Flow," AICHE Nov 11, 2021, Boston, Massachusetts. Conference Paper, Refereed, Presented.

Yiqing Xia, **Hyeyoung Cho**, Michael Bartl, Subhash Risbud, Sabyasachi Sen. "Coexistence of Structural and Dynamical Heterogeneity in Liquids Under Nanoconfinement." Front. Phys., 8 (2020) 130, 1-17.

Hyeyoung Cho, Taniya Kar, Abbas Firoozabadi. "Effect of interface elasticity and wettability on improved oil recovery from low salinity, and functional molecules at 100 ppm." Fuels, 270 (2020) 117504-117511.

Yiqing Xia, **Hyeyoung Cho**, Milind Deo, Subhash H. Risbud, Michael H. Bartl, Sabyasachi Sen. "Layer-by-layer freezing of nanoconfined water." Sci. Rep., 10 (2020) 5327-5334.

Hyeyoung Cho, Dominic Caputo, Michael Bartl, Milind Deo. "Measurements of hydrocarbon bubble points in

synthesized mesoporous siliceous monoliths." Chem. Eng. Sci., 117 (2018) 481-490.

Hyeyoung Cho, Michael Bartl, Milind Deo. "Bubble point measurements of a hydrocarbon mixture in mesoporous media." Energy Fuels, 31 (2017) 3436-3444.

Manas Pathak, **Hyeyoung Cho**, Milind Deo. "Experimental and molecular modeling study bubble points of hydrocarbon mixtures in nanoporous media." Energy Fuels, 31 (2017) 3427-3435.

Yu-Ri Lee, Min-Seok Jang, **Hye-Young Cho**, Hee-Jin Kwon, Sangho Kim, Wha-Seung Ahn. "ZIF-8: A comparison of synthesis methods." Chem. Eng. J., 271 (2015) 276-280.

Hye-Young Cho, Jun Kim, Se-Na Kim, Wha-Seung Ahn. "High yield 1-L scale synthesis of ZIF-8 via a sonochemical route." Micro. Meso. Mater., 169 (2013) 180-184.

Se-Na Kim, Jun Kim, Hee-Young Kim, **Hye-Young Cho**, Wha-Seung Ahn. "Adsorption/catalytic properties of MIL-125 and NH2-MIL-125." Catal. Today, 204 (2013) 85-93.

Hye-Young Cho, Da-Ae Yang, Jun Kim, Soon-Yong Jeong, Wha-Seung Ahn. "CO2 adsorption and catalytic application of Co-MOF-74 synthesized by microwave heating." Catal. Today, 185 (2012) 35-40.

Da-Ae Yang, **Hye-Young Cho**, Jun Kim, Seung-Tae Yang, Wha-Seung Ahn. "CO2 capture and conversion using Mg-MOF-74 prepared by a sonochemical method." Energy Environ. Sci., 5 (2012) 6465-6473.

Jun Kim, **Hye-Young Cho**, Wha-Seung Ahn. "Synthesis and adsorption/catalytic properties of the metal organic framework CuBTC." Catal. Surv. Asia, 16 (2012) 106-119.

Seung-Tae Yang, Jun Kim, **Hye-Young Cho**, Sangho Kim, Wha-Seung Ahn. "Facile synthesis of covalent organic frameworks COF-1 and COF-5 by sonochemical method." RSC Adv., 2 (2012) 10179-10181.

CONFERENCE PRESENTATIONS

Summary: Presented research findings at 19 international conferences, including AIChE, AGU, ACS, and Goldschmidt meetings. These presentations covered a wide range of topics such as nanoconfined water behavior, hydrocarbon phase transitions, CO_2 adsorption in metal-organic frameworks, and the effects of nanoporous materials on fluid properties. The research contributed to interdisciplinary dialogues in chemical engineering, materials science, and environmental science, highlighting novel strategies for fluid confinement, experimental studies on nanoscale materials, and energy applications.

Lani McKinnon, Bonan Wang, Viktoriya Semeykina, Michael Bartyl, Ilya Zharov, **Hyeyoung Cho**, Milind Deo, Jules Magda, Swomitra Mohanty. "Novel Strategies for Fluid Confinement and Experimental Effects of Pressure-Driven Flow," Oral presentation at American Institute of Chemical Engineers Annual meeting (AIChE), John B, Hynes Convention Center, Boston, MA, USA, November 7-19, 2021.

Andrew T. Jacobson, Janet Dewey, Madhavi Muralidharan, Chen Chen, Adri C.T. van Duin, Grant C. Copeland, John Kaszuba, Yiqing Xia, Sabyasachi Sen, Subash Risbud, **Hyeyoung Cho**, Milind Deo, Michael Bartl, Darryl P. Butt. "Deviations in point of zero charge with nanoscale pore geometries of synthesized silica-based materials," Oral presentation at Goldschmidt conference, Hawaii Convention Center, Honolulu, HI, USA, June 21-26, 2020.

Andrew T. Jacobson, Janet C. Dewey, Murali G. Muraleedharan, Chen Chen, Adri C.T. van Duin, Grant C. Copland, John P. Kaszuba, Yiqing Xia, Sabyasachi Sen, Subhash Risbud, **Hyeyoung Cho**, Milind Deo, Michael Bartl, Darryl Butt. "Deviations in point of zero charge with nanoscale pore geometries of synthesized silica-based materials," Oral presentation at American Geophysical Union (AGU) Fall meeting, Moscone Center, San Francisco, CA, USA, December 9-13, 2019.

Hyeyoung Cho, Taylor Jordan, Milind Deo. "Boiling points of hydrocarbons in nanoporous media at high pressures using differential scanning calorimetry measurements." Oral presentation at American Institute of Chemical Engineers

Annual meeting (AIChE), Hyatt Regency, Orlando, FL, USA, November 10-15, 2019.

Lani McKinnon, **Hyeyoung Cho**, Bonan Wang, Swomitra Mohanty, Jules Magda, Milind Deo, Michael Bartl. "In-situ synthesis and characterization of mesoporous SBA-15 inside enclosed polymer microchannels." Poster presentation at American Institute of Chemical Engineers Annual meeting (AIChE), Hyatt Regency, Orlando, FL, USA, November 10-15, 2019.

Hyeyoung Cho, Taylor Jordan, Milind Deo. "Effect of confinement on phase transitions of hydrocarbons in nanoporous materials." Oral presentation at ACS (American Chemical Society) Fall 2019 National Meeting & Exposition, San Diego Convention Center, San Diego, CA, USA, August 25-29, 2019.

Hyeyoung Cho, Dominic Caputo, Alberto Martinez, Milind Deo. "Effect of nanoporous monoliths on saturation pressure in shale reservoirs." Oral presentation at American Institute of Chemical Engineers Annual meeting (AIChE), Hilton San Francisco Union Square, Parc 55 San Francisco, and Hotel Nikko San Francisco, San Francisco, CA, USA, November 13-18, 2016.

Hyeyoung Cho, Dominic Caputo, Milind Deo. "Measurements of saturation pressure in Nano-porous silica monoliths." Oral presentation at US-Korea Conference on Science Technology and Entrepreneurship (UKC 2016), Hyatt Regency DFW, Dallas, TX, USA, August 10-13, 2016.

Hyeyoung Cho, Alberto Martinez, Dominic Caputo, Michael H. Bartl, Milind Deo. "Effect of Nano-sized porous media on saturation pressure in shale reservoirs." Oral presentation at Petrophase 2016, Strand- & Badehotel Marienlyst A/S, Elsinore, Denmark, June

Hyeyoung Cho, Christian Payne, Milind Deo. "Effect of Nanoporous Materials on Saturation Pressure in Shale Reservoirs." Oral presentation at American Institute of Chemical Engineers Annual Meeting (AIChE), Marriott Downtown at City Creek and Hilton Salt Lake City Center, Salt Lake City, UT, USA, November 8-13, 2015.

Hyeyoung Cho, Christian Payne, Skyler Edvik, Bryce Alexanderturner, Milind Deo. "Effect of Nanoporous Materials on Saturation Pressure in Shale Reservoirs." Poster presentation at US-Korea Conference on Science, Technology, and Entrepreneurship (UKC 2015), Hyatt Regency, Atlanta, GA, USA, July 29 – August 1, 2015.

Hyeyoung Cho, Milind Deo. "Saturation Pressures in Nanoporous Rocks." Poster presentation at Energy & Geoscience Institute Corporate Associate Technical Conference (EGI CA Conference), Energy & Geoscience Institute (EGI), Salt Lake City, UT, USA, June 7-12, 2015.

Se-Na Kim, Jun Kim, Hee-Young Kim, **Hye-Young Cho**, Wha-Seung Ahn. "Synthesis and Adsorption/Separation/Catalytic Applications of MIL-125 and NH2-MIL-125." Poster presentation at 2012 Zeolite Workshop – Challenges in Nanoporous and Layered Materials for Catalysis, Ramada Plaza Hotel, Jeju Island, South Korea, August 3-5, 2012.

Hye-Young Cho, Se-Na Kim, Jun Kim, Wha-Seung Ahn. "ZIF-8 Synthesized via a Sonochemical Route: CO2 Adsorption and Knoevenagel Reaction." Poster presentation at the 6th Pacific Basin Conference on Adsorption Science and Technology (PBAST-6), NTUH International Convention Center, Taipei, Taiwan, May 20-23, 2012.

Jun Kim, Se-Na Kim, **Hye-Young Cho**, Wha-Seung Ahn. "CO2 Adsorption and Conversion Using MOFs (Metal Organic Frameworks)." Oral presentation at the 2012 Korean Institute of Chemical Engineers Spring Meeting, International Convention Center Jeju, Jeju Island, South Korea, April 25-27, 2012.

Hye-Young Cho, Jun Kim, Wha-Seung Ahn. "Solvothermal Synthesis of ZIF-60." Poster presentation at Korean Zeolite Association Annual Meeting, Andong National University, Andong, South Korea, August 18-19, 2011.

Jun Kim, **Hye-Young Cho**, Han-Kyol Youn, Samiran Battacharjee, Wha-Seung Ahn. "CO2 Adsorption Catalytic Applications Using Co-MOF-74 Synthesized by Microwave Heating." Poster presentation at the 13th Korea-Japan Symposium, Seogwipo KAL Hotel, Jeju Island, South Korea, May 23-25, 2011.

Jun Kim, Da-Ae Yang, Sun-Hee Kim, **Hye-Young Cho**, Chen Chao, Wha-Seung Ahn. "CO2 Adsorption and Storage Using MOFs (Metal Organic Frameworks)." Oral presentation at the 1st Korea Carbon Capture & Sequestration Conference, Ramada Plaza Hotel, Jeju Island, South Korea, April 13-15, 2011.

INVITED SEMINARS/ INVITED TALKS

- Kangwon National University, South Korea (April 10, 2025)
- Moon-il Girl's High School, South Korea (April 7, 2025)
- Inha University, South Korea (March 27, 2025)

INSTRUMENTATION EXPERIENCE

- **Microscopy Techniques**

Transmission Electron Microscopy (TEM)
Scanning Electron Microscopy (SEM)

- **Spectroscopy and Diffraction**

X-ray Diffraction (XRD)
Ultraviolet-Visible Spectroscopy (UV-Vis)

- **Thermal and Surface Analysis**

Thermo Gravimetric Analysis (TGA)
Differential Scanning Calorimetry (DSC)
Surface Area and Porous Analyzer (BET)

- **Analytical Techniques**

Gas Chromatography (GC)
Rheometer

AWARDS

2nd Annual Graduate Research Symposium April 2016
Department of Chemical Engineering, University of Utah, UT
- **Third place** in an oral presentation.

Energy & Geoscience Institute Corporate Associate Technical Conference June 2015
Energy & Geoscience Institute, University of Utah, University of Utah, UT
- Received a certificate of appreciation for a poster presentation.

Award for Excellence as a Graduate Student February 2013
College of Engineering, Graduate School, Inha University, South Korea
- Selected as a student with the highest research achievements in each field.

Future Energy Technology Idea Contest with SK E&S December 2012
SK E&S, South Korea
- Won **first place** in a national competition and awarded $5,000 for the top overall project idea on future energy technologies.

Master's Thesis Presentation Contest December 2012
Department of Chemical Engineering, Inha University, South Korea
- Secured **first place** for the best master's thesis presentation.

Women's Academy for Technology Changer in the 21st Century November 2010
Women in Science, Engineering and Technology in Korea, South Korea
- Achieved **third place** in a national science competition; awarded $1,000.

- Conducted research on carbon dioxide adsorbent Metal-Organic Frameworks for mitigating global warming.

FELLOWSHIPS/SCHOLARSHIPS

EGI Fellowship January 2014 – December 2017
Energy & Geoscience Institute, University of Utah, Salt Lake City, UT
- Awarded $28,000 per year for collaborative work on the fundamentals of fluid flow and rock physics.

Graduate Fellowship September 2013 – August 2014
Department of Chemical Engineering, University of Utah, UT
- Awarded $26,000 to incoming Ph.D. students for academic excellence.

Research Assistant Scholarship March 2011 – February 2013
Department of Chemical Engineering, Inha University, South Korea

Teaching Assistant Scholarship March 2011 – February 2013
Department of Nursing Science, Inha University, South Korea

TEACHING CERTIFICATIONS

Higher Education Teaching Specialist (HETS)
Center for Teaching & Learning Excellence (CTLE), University of Utah, UT

- Required Classes:

Teaching in Higher Education (CTLE 6000)
Cyber Pedagogy (CTLE 6510)

- Required Workshops:

Teaching Portfolio and CV Workshop (February 3, 2017)
Making Research Relevant & Understandable Workshop (October 28, 2016)
Training in How to Handle Difficult Conversations (March 25, 2016)
Training in How to Survive Teaching Online (February 19, 2016)
Rubrics & Grading Workshop (February 5, 2016)
Teaching Philosophy Workshop (January 29, 2016)

- Required Teaching Assessments:

2 CTLE In-Class Observations
2 Faculty Mentor Reviews
2 Semesters of Student Feedback Results

- Teaching Portfolio

A comprehensive teaching portfolio detailing my teaching philosophy, experience, and assessments is available upon request. It includes:
- My teaching philosophy and approach
- Sample syllabi and course materials
- Student evaluations and feedback
- Teaching assessments and observations
- Please contact me if you would like to review my teaching portfolio.

Inha Friend Program December 2012 – February 2013
Center for Continuing Education, Inha University, South Korea
- Helped foreign students learn Korean and adapt to Korean culture
- 11 weeks, more than 33 hours

Inha Extreme English Teaching with Mentoring March 2012 – June 2012
Center for Continuing Education, Inha University, South Korea
- Obtained Certificate of Completion

LEADERSHIP ACTIVITIES

Executive Committee Member November 2025 – Present
Korean Institute of Chemical Engineers (KiChE) U.S. Chapter
- Plan and Organize KIChE session in AIChE (American Institute of Chemical Engineers) annual meetings.

Representative of MUSE center December 2018 – August 2019
Department of Energy (DOE) Basic Energy Sciences-Early Career Network
- Planned webinars and hosted meet-ups at national meetings.
- Organized early career events at biennial principal investigators meetings

Committee Member February 2015 – December 2017
Korean-American Scientists and Engineers Association (KSEA), UT
- Planned and managed seminars and social events.

Chair of Academic Affairs, Student Association March 2007 – February 2008
Department of Chemical Engineering, Inha University, South Korea
- Planned and managed numerous school events.

PROFESSIONAL AFFILIATIONS

American Chemical Society (ACS)
American Institute of Chemical Engineers (AIChE)
Society of Petroleum Engineers (SPE)
Korean-American Scientists and Engineers Association (KSEA)

Curriculum Vitae

Tracy C. Olin, Ph.D.

330-647-0467 • Tracy.olin@outlook.com

PROFESSIONAL PROFILE: I have been teaching chemistry at the college level for over 15 years. In my experience as a Distinguished Instructor, Assistant and Associate Professor, I have taught 24 different chemistry courses and labs. I have also developed new programs and several new courses to support university and student needs. My research projects have mainly focused on both forensics and natural product extraction and characterization for a multitude of applications. I have put forth much effort into coordinating multi-section chemistry courses and labs. I also serve as Director of the Tutoring Learning Center at Florida Polytechnic University where I interview and hire all tutors, as well as maintains communications and obtains resources for the Center. I have worked with diverse student and faculty populations and strive to make the classroom inclusive for everyone. My other responsibilities have included: maintaining and servicing many departmental instruments, providing instrumental and safety training, doing community outreach, and serving on several departmental and university-wide committees. I am a member of the American Academy of Forensic Sciences (AAFS) and the American Chemical Society (ACS).

EDUCATION

- **Doctor of Philosophy in Chemistry**
  University of Akron, Akron, OH
  May 2014

  Research Advisors: David Modarelli, PhD and Christopher Ziegler, PhD
  Thesis title: The Design, Synthesis and Characterization of 2,4,9-Trithiaadamantane Derivatives as Anti-influenza A Drug Candidates.
    - **Coursework – Organic Chemistry**: Mechanistic and Synthetic Chemistry I & II, Advanced Synthetic Organic Chemistry, Physical Organic Chemistry. **Inorganic and Biochemistry**: Bioinorganic Chemistry, Metals in Medicine, Main Group Organometallics. **Analytical Chemistry**: Spectral Identification of Organic Compounds.

- **Bachelor of Science, Chemistry (ACS Certified); Minor in Biology**
  Youngstown State University, Youngstown, OH
  Summa cum Laude, May 2008

SKILLS

- Ability to teach a wide-range of chemistry courses (freshman-level, organic, biochemistry, forensics) both in-person and hybrid/online to diverse student populations.
- Capabilities of maintaining and servicing instrumentation (cryogenics, training, gas tanks, line changes, troubleshooting, etc.).
- Working collaboratively with colleagues on multiple research projects with other departments and across multiple universities.
- Coordinate chemistry courses and manage the chemistry laboratories (inventory, ordering, hiring TA's, etc.)
- Experience using several online learning management systems (Moodle, Desire to Learn, Blackboard, and several publisher-based systems),a s well as entire Microsoft Office suite.

RESEARCH EXPERIENCE

- **Florida Polytechnic University** **2023 – current**
  Lakeland, FL

    - Served as a faculty advisor and mentor for a thesis research project in Fall 2023 by: Hogea Razvan Ioan titled "Augmented Reality Labs: Immersive Learning in Chemistry."
        - Together, we piloted a novel augmented reality chemistry experience to my freshman chemistry 1 labs.
        - The results were published: Hogea Razvan Ioan, Tracy Olin, Bayazit Karaman, Doga Demirel: Augmented Reality Labs: Immersive Learning in Chemistry. HCI (41) 2024: 155-172

- **Edinboro University of Pennsylvania** **2016 – 2022**
  Edinboro, PA

    - Algae and Microbial Toxin Mitigation/Remediation Using Ozone Impregnated Nano-Bubbles (In collaboration with Youngstown State University Chemistry Department and National Oceanic and Atmospheric Administration, NOAA), **2020**.
        - Determination of the concentration of total dissolved contaminants (sulfate, nitrates, metals, etc.) in water samples that are untreated, 24 h post-treatment with nanobubbles, and 36 hours post-treatment with nanobubbles, using ICP-MS.

    - Identifying Contaminants in Cotton Swabs and Their Effects on Ear Infections (In collaboration with Dr. Joseph Derbyshire, UPMC – Otolaryngology, Head and Neck Surgery). Presented results at the UPMC Hamot Research Week Poster Presentation, **2019**.
        - Evaluated a variety of cotton swabs for chemical contaminants (pesticide and adhesive residues, etc.) using GC/MS.

    - Extraction of Flavonoids from Blueberries as Potential Cognitive Enhancers (In collaboration with Dr. Peter McLaughlin, Edinboro – psychology). Results presented at the Erie local section of the ACS dinner, Edinboro University, **2019**.
        - Extracted flavonoids (anthocyanins) from blueberries using Soxhlet extraction. In collaboration with the Psychology Department, the extracts were fed to rats and tested for cognitive enhancement.

    - Determining the Synergetic Effect on the Antimicrobial Properties of Lavandula Angustifolia Essential Oil Extracts (In collaboration with Dr. David Fulford, Edinboro – Biology). Presented results at the Edinboro Celebration of Scholarship, **2018**.
        - Extraction of essential oils from lavender plants and identified and quantified several components of the extracts. These extracts were then analyzed for their antimicrobial properties.

    - Complex Crystal Formation of Metals, Ligands, Diphosphonates, and Molybdenum Clusters (In collaboration with Dr. Gabe Armatas). This work was presented as a poster, **2016**.
        - Performed air-sensitive reactions to synthesize diphosphonates for use in the complex crystal formation of metals, ligands, and Molybdenum clusters.

- **The University of Akron** **2009 – 2014**
  Akron, OH

  - Synthetic and Medicinal Organic Chemistry:
    The design, synthesis, and characterization of 7-substituted 2,4,9-trithiaadamantanes as potential M2 ion channel blockers of the influenza A virus. Results presented at the 244th ACS National Meeting & Exposition, Philadelphia, PA, United States, **2012**.
  - Materials Research:
    Material development in glucose sensing polymers.

- **National Aeronautics and Space Administration (NASA)** **2009**
  Glen Research Center, Materials and Polymer Division
  Cleveland, Ohio

  - Performed novel research on materials, namely ultra low-density aerogels. Synthetic routes were optimized, and several studies were done to improve the desired functions of these materials and to test their physical properties. Many analytical instruments were used, including FTIR, TGA, AA, and SEM. The results of this research were presented at several national meetings and published, **2014** and **2010**.

TEACHING EXPERIENCE

Florida Polytechnic University, Lakeland, FL

- **Distinguished Instructor** August 2022 – Current
  Environmental Engineering Department

  - Bring my extensive experience in teaching freshmen and curriculum design to freshman chemistry courses and labs. Develop learning materials for use in the Tutoring Center. Serve as the course coordinator for freshman chemistry, which enrolls over 500 students each year. Coordinate the faculty cohort needed to teach all sections of chemistry lecture and laboratory. Hire and schedule all student workers needed for the department. Other duties include teaching lecture and lab courses, managing and ordering all chemicals for chemistry labs, development of a chemistry certificate program, and the development of new supporting chemistry courses.

Edinboro University of Pennsylvania, Edinboro, PA

- **Associate Professor** January 2015 – July 2022
  Chemistry Department

  - Duties included teaching courses from foundational to upper-level/advanced topics in chemistry, developed new programs and courses to meet the needs of students and the university, maintained several research projects involving students and other faulty, served as freshman chemistry course coordinator, was the advisor for the forensic chemistry program, strengthened the honors program through development and instruction of honors courses, served on numerous departmental and university-wide committees.

Eastern Gateway Community College, Youngstown, OH

- **Instructor** August 2014 – December 2014
  Mathematics Department

The University of Akron, Akron, OH

- **Teaching Assistant and Instructor** January 2009 – May 2014
  Chemistry Department

Courses Instructed:

- General Chemistry
- Chemistry Orientation
- Principles of Chemistry 1
- Principles of Chemistry 1 Honors
- Principles of Chemistry 1 Lab
- Principles of Chemistry 1 Lab Honors
- Principles of Chemistry 2
- Principles of Chemistry 2 Honors
- Principles of Chemistry 2 Lab
- Principles of Chemistry 2 Lab Honors
- General Chemistry (GOBC)
- General Chemistry 1 (GOBC) Lab
- Organic Chemistry 1
- Organic chemistry 1 Lab
- Organic Chemistry 2
- Organic Chemistry 2 Lab
- Biochemistry
- Biochemistry Lab
- Toxicology
- Forensic Chemistry Fact and Fiction
- Physical Chemistry Lab
- Forensic Analysis
- Independent Research
- Introduction to Algebra
- Qualitative Analysis Laboratory

GRANTS AND FUNDING

- **Teaching equipment and supplies grant: Funded, GR-24TEQU-TO for $18,612.00**
  - Obtained funding for the purchase of Mini-GC and UV-Vis instruments, as well as supporting equipment, to be used in undergraduate chemistry teaching laboratories for newly developed courses – Analytical Chemistry and Forensic Chemistry.

PUBLICATIONS AND PRESENTATIONS

- Hogea Razvan Ioan, Tracy Olin, Bayazit Karaman, Doga Demirel: Augmented Reality Labs: Immersive Learning in Chemistry. HCI (41) **2024**: 155-172.

- "High Temperature Aluminum-Silicon-Zirconium Aerogels: Applications as Thermal Insulation." ACS Erie Local Section meeting hosted by Tracy Olin, Edinboro University, Edinboro, PA, November 14, **2018**.

- Olin, Tracy C. "Design and Synthesis of 2,4,9-Trithiaadamantane Derivatives as Anti-Influenza a Drug Candidates." (*PhD Dissertation*) University of Akron Graduate Dissertation, **2014**. http://rave.ohiolink.edu/etdc/view?acc_num=akron1397062645

- Hurwitz, Frances; Gallagher, Meghan; **Olin, Tracy**; Shave, Molly; Ittes, Marlyssa; Olafson, Katy; Fields, Meredith; Guo, Haiquan; Rogers, Richard. *Optimization of Alumina and Aluminosilicate Aerogel Structure for High Temperature Performance.* International Journal of Applied Glass Science, (**2014**), 5(3), 1-11.

- **Olin, Tracy C**.; Davis, Caroline; Hu, Jun. "Synthesis and characterization of new influenza A M2 ion channel blockers." Abstracts of Papers, 244th ACS National Meeting & Exposition, Philadelphia, PA, United States, August 19-23, 2012 (**2012**), ORGN-482.

- Hurwitz, Frances I.; Sheets, Eric J.; Liou, Deng-Yuan; **Olin, Tracy C**.; Ittes, Marlyssa A. *Development of backbone structure and morphology in aluminosilicate aerogels*. Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (**2010**), 51(1), 249-250.

- **Olin, Tracy**; Hu, Jun J.; Weingart, Jacob J. "Synthesis and Characterization of new influenza A M2 ion channel blockers." Abstracts, 41st ACS Central Regional Meeting, Dayton, OH, United States, June 16-19 (**2010**), CERMACS-113.

- Pischera, Anna M.; Liou, Deng-Yuan; Hurwitz, Frances; Ittes, Marlyssa; Espe, Matthew P.' **Olin, Tracy C**. "Aluminosilicate aerogels: Synthesis and characterization." Abstracts, 41st ACS Central Regional Meeting, Dayton, OH, United States, June 16-19 (**2010**), CERMACS-115.

- Hurwitz, Frances I.; Sheets, Eric J.; Liou, Deng-Yuan; **Olin, Tracy C**.; Ittes, Marlyssa A. "Development of backbone structure and morphology in aluminosilicate aerogels." Abstracts of Papers, 239th ACS National Meeting, San Francisco, CA, United States, March 21-25 (**2010**), POLY-241.

PROFESSIONAL MEMBERSHIPS

- **Member of American Academy of Forensic Sciences (AAFS)** Beginning Spring 2020
- **Member of American Chemical Society (ACS)** Beginning Spring 2010

PROFESSIONAL CONFERENCES AND WORKSHOPS ATTENDED

- **Biennial Conference on Chemical Education** Summer 2024
  University of Kentucky
  Lexington, KY
- **STEM Day Speaker/Demonstrations** Spring 2023
  Chain of Lakes Elementary School
  Winter Haven, FL
- **NIST Forensics Seminar/Workshop** Fall 2018
  National Institute of Standards and Technology
  Gaithersburg, MD
- **SMART Seminar/Training** Summer 2018
  Edinboro University
  Edinboro, PA
- **NMR Workshop** Summer 2016
  University of Pittsburgh
  Pittsburgh, PA

SERVICE CONTRIBUTIONS

Departmental Services

- Hiring Committee Chair – Chemistry Open-Rank Search (2024 – 2025)
- Hiring Committee Chair – Chemistry Instructor Search (2024)
- Hiring Committee Member – Engineering Physics (2024)
- Course Coordinator for Freshman Chemistry Lecture and Lab
- Development and
- Maintain ACS Accreditation – keep records and write annual and periodic reports.
- Freshman chemistry laboratory coordinator – maintain all laboratory equipment and keep inventory of supplies and chemicals.
- Program coordinator for the forensic chemistry program – recruiting and advising
- Program coordinator for the natural products chemistry program – recruiting and advising

- Maintenance of departmental instruments (cryogenics, training, gas tanks, line changes, calibrations, etc.)
- Development and approval of a natural products chemistry program – 2019
- Development and approval of new courses – Toxicology (CHEM 352), Isolation and Characterization of Natural Products (CHEM 451), Natural Products Chemistry (CHEM 351) - 2019
- Member of Departmental Sabbatical Committee
- Chair of the Departmental Sabbatical Committee
- Chemistry Department Senior Seminar Evaluation Committee
- Faculty Marshal for commencement
- Member of the Departmental Hiring Committees
- Chemistry tutoring coordinator – schedules, manages and promotes peer tutoring
- Advisor for RW Bunsen Society (student ACS affiliate) – help with funding, activities, managing funds
- Open house department representative
- Admitted and prospective students tour guide of chemistry facilities
- Participation in several local and regional outreach efforts

University Service

- Director of the Tutoring and Learning Center (2023 – present)
- Served on Promotion and Reappointment Committees (2022 – present)
- University Honors College Committee (2019 – 2022) – assisted in the development of a new Honors College and a new "Big Question" course for honors students.
- Admissions and Recruitment Council (2018 – current)
- University Senate Academic Concerns Committee (2017-2018)
- APSCUF Adjunct Faculty Committee (2016 – 2017)
- Perform many outreach and marketing activities – open houses, tours, website design, etc.

CERTIFICATES

- Teaching Online Certificate Course (TOCC) – Completed a 5-week course on online course development and best practices. (July 2020)
- Title IX Training Certificate
- Cybersecurity Training Certificate
- Diversity Training Certificate

AWARDS AND HONORS

- **The National Society of Leadership and Success – Excellence in Teaching Award**
  Edinboro University, 2019
- **Outstanding Department of Chemistry Graduate Teaching Assistant Award**
  The University of Akron, 2010, 2011, 2012
- **The Clarence P. Gould Society**
  Youngstown State University, 2006

VIJAYA SISTA

vsista@floridapoly.edu| 813-317-5534 | Tampa, FL

EDUCATION

ANDHRA UNIVERSITY, VISAKHAPATNAM, INDIA | 1990–1992

- Master of Philosophy in Inorganic & Analytical Chemistry (Research Degree)
- Dissertation: A study on The Photochemical and Thermal Reduction of Thallium(III) with Oxalic Acid

ANDHRA UNIVERSITY, VISAKHAPATNAM, INDIA | 1986–1988

- M.S Bio-Inorganic Chemistry (Graduate Studies with emphasis on metals in biological systems and their characterization)

ANDHRA UNIVERSITY, VISAKHAPATNAM, INDIA | 1981–1984

- B.S Chemistry

PROFESSIONAL EXPERIENCE

FULL-TIME INSTRUCTOR, FLORIDA POLYTECHNIC UNIVERSITY, Spring 2023 – Current

- Teaching General Chemistry I & II Lecture and Labs (CHM2045, CHM2045L, CHM2046 & CHM2046L).
- Developing syllabi for a diverse student population and utilizing Canvas LMS for course delivery.
- Collaborating with faculty and staff to align the curriculum with departmental goals and STEM core requirements.
- Lab Coordinator and Manager, coordinating laboratory safety protocols and ensuring compliance with SOPs.

VISITING INSTRUCTOR, FLORIDA POLYTECHNIC UNIVERSITY, Fall 2021 – Fall 2022

- Teaching General Chemistry I Lecture and Labs (CHM2045 & CHM2045L).
- Developing syllabi for a diverse student population and utilizing Canvas LMS for course delivery.
- Collaborating with faculty and staff to align the curriculum with departmental goals and STEM core requirements.
- Coordinating laboratory safety protocols and ensuring compliance with SOPs.

ADJUNCT FACULTY, FLORIDA POLYTECHNIC UNIVERSITY, Fall 2016 – Spring 2021

- Teaching General Chemistry I& II Lecture and Labs (CHM2045, CHM2045L, CHM2046, & CHM2026L).
- Developing syllabi for a diverse student population and utilizing Canvas LMS for course delivery.
- Collaborating with faculty and staff to align curriculum with departmental goals and implement interactive tools like H5P.
- Coordinating laboratory safety protocols and ensuring compliance with SOPs.
- Incorporating online and hybrid teaching methods to maximize student engagement.

ADJUNCT FACULTY, UNIVERSITY OF SOUTH FLORIDA, Fall 2015 – Spring 2021

- Conducting General Chemistry I & II Labs emphasizing inquiry-based and hybrid formats.
- Leading cooperative learning exercises and designing open-ended problem-solving tasks for students.
- Ensuring adherence to laboratory safety and operational procedures.

ADJUNCT FACULTY, HILLSBOROUGH COMMUNITY COLLEGE (SOUTHSHORE), Fall 2008 – Spring 2021

- Designed and coordinated chemistry lecture and lab curricula for Introductory, General, and Organic Chemistry courses.
- Trained lab personnel on instrumentation techniques, including spectrophotometry and chromatography.
- Implemented flipped classroom practices and utilized Canvas LMS for online course enhancement.
- Mentored students pursuing STEM careers and facilitated transitions to four-year institutions.

ADJUNCT FACULTY, UNIVERSITY OF TAMPA, Fall 2012 – Fall 2014

- Taught Chemistry and Society lecture and General Chemistry Labs.
- Guided students in experiment design and ensured all safety protocols were met.

CHEMISTRY LECTURER, SECONDARY AND POST-SECONDARY SCHOOLS, INDIA, 1985 - 1996

- Taught General and Physical Chemistry lectures and labs.
- Mentored students and evaluated theory and practical exams in Inorganic Chemistry labs.

SERVICE WORK

- Lab Coordinator and Manager, Fall 2022 - Current
- Hiring Committee member, Fall 2024 – Current
- Developed lecture course materials and designed laboratory experiments for General Chemistry I & II.

RELEVANT SKILLS

- **Instructional Design:** Curriculum Development, Interactive Teaching Methods (Flipped Classroom, H5P)
- **Laboratory Proficiency:** Spectrophotometry, Chromatography, and Instrument Calibration.

- **Other:** Canvas, Blackboard, Microsoft Office Suite.

Dr. Bert Rivera
briveram@gmail.com • 407-885-6430

November 24, 2025

Faculty Search Committee
Department of Biology, Chemistry, and Chemical Engineering
Florida Polytechnic University
Lakeland, FL

Dear Members of the Search Committee:

I am writing to express my enthusiastic interest in the faculty position in the Department of Biology, Chemistry, and Chemical Engineering at Florida Polytechnic University. With over twenty years of experience in higher education as a professor, researcher, and academic administrator—and with a strong record of teaching, curricular leadership, and student mentoring, I am eager to contribute to the University's growth as it launches the new Biomedical Sciences degree and expands its high-quality undergraduate biology instruction.

My academic background includes a Ph.D. in Biology with a focus on animal behavior and genetics, an M.S. in Biology with a specialization in pollination ecology, and extensive research experience in molecular ecology, entomology, behavioral biology, and applied ecological genetics. My teaching experience spans a wide range of undergraduate and graduate courses including General Biology, Anatomy and Physiology–adjacent disciplines such as Zoology and Physiology-focused courses in animal behavior—Genetics, Ecology, Evolution, Biostatistics, and Research Methods. Across institutions and appointment levels, I have consistently emphasized student-centered instruction, integration of research into coursework, and the use of data-driven, active-learning pedagogies to support students at all levels.

I am particularly excited by Florida Poly's emphasis on high-quality introductory biology instruction and its commitment to preparing students for health-related and STEM professions. At both Polk State College and the Inter American University of Puerto Rico, I have led initiatives that strengthened foundational STEM coursework, improved student success, and expanded undergraduate research opportunities. These experiences, including directing institution-wide STEM initiatives, supporting curriculum innovation, and coordinating assessment within science programs—have given me a deep understanding of how to cultivate strong first-year and second-year learning experiences within a STEM-forward institution.

My research record includes work on insect behavior and genetics, pollination ecology, bat biology, marine mammal physiology and genetics, pest population genetics, and molecular ecology. I have published extensively in peer-reviewed journals, secured over $7 million in external funding as principal investigator or co-investigator, and mentored dozens of undergraduate and graduate students through research projects, conference presentations, and internships. I am committed to maintaining an active undergraduate-centered research program and to developing interdisciplinary, applied projects aligned with Florida Poly's mission and strengths.

In addition to my academic background, my administrative experience—as Dean of Academic Affairs, Associate Dean, program director, and accreditation coordinator—has strengthened my capacity to collaborate effectively with faculty colleagues, support program development, manage laboratories and academic resources, and contribute meaningfully to departmental and institutional governance. I value Florida Poly's student-focused culture and its commitment to combining rigorous STEM instruction with industry-connected applied learning.

I am confident that my combination of teaching excellence, applied research experience, curricular leadership, and student-centered mentorship will allow me to make an immediate and positive contribution to the department and to the launch of the Biomedical Sciences program.

Thank you for considering my application. I look forward to the opportunity to discuss how my experience and vision align with the mission and strategic growth of Florida Polytechnic University.

Sincerely,

Bert Rivera, Ph.D.

DR. BERT RIVERA

• PH. 407-885-6430 • EMAIL: BRIVERAM@GMAIL.COM

PROFILE:

- An experienced educator, academic administrator, grant writer, and researcher with over 20 years working with undergraduate and graduate students in higher education.
- A proactive leader with motivational and outstanding communication skills, excellent common sense, practical problem solving, and decision-making abilities.
- Comprehensive experience in academic program development, curriculum actualization, accreditation, and assessment.
- Extensive experience in strategic planning, market evaluation, viability studies, business planning, project implementation, budget management, and internationalization.
- Vast experience in research, grant writing and project administration.
- Dedicated educator with experience teaching at different levels and in different scenarios.
- Extensive research experience in zoology, botany, animal behavior, population genetics, tropical ecology, honeybee biology, entomology, bat biology, and pollination dynamics.
- Proficient user of Microsoft Office, Banner, TK20, SPSS, Blackboard, Canvas, and others.
- Fully Bilingual - Able to communicate, read and write fluently in English and Spanish.
- Committed member of the community with an eagerness to help others.

EDUCATION:

Doctor in Philosophy – Ph.D. in Biology (Ecology): Animal Behavior and Genetics
Dissertation: *Africanized honey bees in Puerto Rico*
Advisor: Dr. Tugrul Giray,
University of Puerto Rico, Río Piedras Campus - 2006.

Master of Sciences – M.S. in Biology (Ecology)
Thesis: *Pollination biology of* Pilosocereus royenii *in Guánica State Forest*
Advisor: Dr. James Ackerman
University of Puerto Rico, Río Piedras Campus- 2001.

Bachelor of Sciences - B.S. in Biology
Inter American University of Puerto Rico, Bayamón Campus - 1998.

PROFESSIONAL EXPERIENCE:

August 2022 – Present: POLK STATE COLLEGE – LAKELAND CAMPUS

- **October 2023- Present Dean of Academic Affairs**

  Primary Duties: Oversee the Associate in Arts, General Education (Science; Math; Social Sciences; Wellness), Aerospace programs. Supervise and evaluate full-time and part-time faculty. Schedule classes and enrollment management. Evaluate assessment plans and reports. Manage

all Lakeland Campus Academic Affairs budgets. Address student concerns. Analyze enrollment and student success data. Manage Academic Affairs budget. Oversee campus-wide dual enrollment.

Other Duties: Lead all college-wide HSI efforts. Collaborate with the new Strategic Plan. Assist with the reaffirmation of the college by SACSCOC. Along with the Faculty Senate, revise all Procedures pertaining to faculty. Procedures Participate as the academic representative in the college's transition to the Ellucian Banner platform. Serve as a liaison with different community organizations. Serve as *Excelencia in Education* Grant Lead. Collaborate in the development of grants.

- **August -September 2023 Interim Dean of Academic Affairs**

  Primary Duties: Oversee the Associate in Arts and General Education programs. Supervise and evaluate full-time and part-time faculty. Schedule classes and enrollment management. Evaluate assessment plans and reports. Assist with Lakeland Campus Academic Affairs budgets. Address student concerns. Analyze enrollment and student success data. Oversee campus-wide dual enrollment.

- **August 2022-September 2023 Associate Dean of Academic Affairs**

  Primary Duties: Support and assist in activities related to the assessment, design, development, and evaluation of the College's academic programs.

  Other Duties: Assist with course scheduling and enrollment analysis. Credential faculty for teaching. Perform faculty evaluations and classroom visits. Coordinate dual enrollment course offerings and faculty assignments. Assist with textbook orders. Address student grievances and coordinate mediations. Assist in streamlining science lab planning and execution. Participate in College committees. Serve as *Excelencia in Education* Grant Lead.

January 2002 – July 2022: INTER AMERICAN UNIVERSITY OF PUERTO RICO - BAYAMÓN CAMPUS

- **February 2017 – June 2022**: **Director of the Expanding and Inspiring through opportunities in STEM (EXITOS) Project (USDEd)**

  Duties: Direct the Federally Sponsored program that aims to increase the number of Hispanics graduating from STEM fields. This project has various components including STEM student support

services (Academic Coaching and Tutoring); development of a new engineering program and two minor degrees, one in chemistry and one in biotechnology; development of online courses; articulation of agreements with two-year institutes in order to offer the opportunity for their students to complete a bachelor's degree; and the establishment of a Success Center. As director I directly supervise a staff of five, eight professors and 35 tutors, and I manage the $1.2 million yearly budget.

Achievements: Established the first ever Success Coaching system on Campus, positively impacting students from STEM fields. Created an integrated tutoring system which engages students, faculty, and campus staff with over 1000 students assisted a month. Began steps towards agreements with two-year colleges for their students to complete their bachelor's degree at our university. Coordinated the onset of the construction of the campus's first Success Center.

- **August 2015 – February 2017: Associate Dean of Academic Affairs in charge of Research and External Resources**

  Primary Duties: Oversee campus-wide research and external funding. Promote undergraduate research and the integration of research activities in academic programs. Establish relationships with the community and external partners. Oversee the operations of the School of Engineering, and the Departments of Natural Sciences and Mathematics, Informatics, and Communications, including faculty recruitment, academic regulations compliance, accreditation processes, and course scheduling and assignment. Coordinate the Engineering School's accreditation process with ABET (Accreditation Board for Engineering and Technology).

  Other Duties: Coordinate activities associated to research and off campus experiences for students. Led team in hosting the visit of His Highness Sheik Abdul Aziz bin Ali Rashid Al Nuaimi and the Green Sheikh Foundation Team.

  Achievements: Increased faculty and student rate of participation in research by 40% and 50% respectively. Attained multiple agreements with theindustry and non-for-profit organizations to increase faculty and student experiences as well as offer employees the opportunity of continuous learning. Led the efforts in writing grant proposals to the US Department of Education, NOAA and USDA. Assisted in writing grants to NSF, NASA, DoD, and FAA. Collaborated with all academic programs towards implementing a new educational philosophy based on research in the classroom. Coordinated the efforts in achieving the ABET accreditation for the Mechanical, Industrial, Computer and Electrical Engineering programs.

- **August 2014 –July 2022: Full Professor in the Department of Science and Mathematics**

  Primary Duties: Teach graduate and undergraduate level courses. Perform scientific research. Assist department chair in scheduling and assigning undergraduate and graduate courses. Create and review syllabi. Provide academic advice to students. Teach graduate and undergraduate level courses. Perform scientific research. Graduate Courses: Integrated Biology, Evolutionary Processes, Biogeography, and Community Ecology. Undergraduate Courses: Entomology, Animal Behavior, Evolution, Zoology, Botany, Biostatistics, Ecology, Genetics, Conservation Biology, General Biology, Botany, Research Methods, Biology Skills Laboratory, and Science, Technology and Environment.

- **August - December 2014: Acting Chair of the Department of Science and Mathematics**

  Primary Duties: Supervise and evaluate faculty and staff. Manage Department budget. Schedule and assign undergraduate and graduate courses. Provide orientation to new and current undergraduate and graduate students. Coordinate the revision of curricula and syllabi. Assist in the creation of new academic programs. Coordinate academic assessment for the eight programs within the department.

- **July 2009 – August 2014: Associate Professor in the Department of Science and Mathematics**

  Primary Duties: Teach graduate and undergraduate level courses. Perform scientific research. Assist department chair in scheduling and assigning undergraduate and graduate courses. Create and review syllabi. Provide academic advice to students. Teach graduate and undergraduate level courses. Perform scientific research. Graduate Courses: Integrated Biology, Evolutionary Processes, Biogeography, and Community Ecology. Undergraduate Courses: Entomology, Animal Behavior, Evolution, Zoology, Botany, Biostatistics, Ecology, Genetics, Conservation Biology, General Biology, Botany, Research Methods, Biology Skills Laboratory, and Science, Technology and Environment.

- **November 2009 – July 2010: Associate Dean of Academic Affairs**

  Primary Duties: Supervise eight academic departments including faculty recruitment, academic regulations compliance, accreditation processes, and course scheduling and assignment. Coordinate Campus's accreditation process with the Middle States on Higher Education and Council

of Higher Education, a state accreditation office. Coordinate faculty development workshops. Assist with program assessment.

Achievements: Completed the accreditation process by the Council of Higher Education for the Campus. As a member of the Steering Committee of the Middle States on Higher Education and Council of Higher Education Accreditation Team worked in attaining the Campus's reaccreditation. Assisted the Health Science Department to attain the National League for Nursing Accreditation Commission Candidacy for the Nursing Programs.

- **August 2006 – July 2009: Assistant Professor in the Department of Science and Mathematics**

  Primary Duties: Teach graduate and undergraduate level courses. Perform scientific research. Assist department chair in scheduling and assigning undergraduate and graduate courses. Create and review syllabi. Provide academic advice to students. Teach graduate and undergraduate level courses. Perform scientific research. Assist department chair in scheduling and assigning undergraduate and graduate courses. Create and review syllabi. Provide academic advice to students. Graduate Courses: Integrated Biology, Evolutionary Processes, Biogeography, and Community Ecology. Undergraduate Courses: Entomology, Animal Behavior, Evolution, Zoology, Biostatistics, Ecology, Genetics, Conservation Biology, General Biology, Botany, Research Methods, Biology Skills Laboratory, and Science, Technology and Environment.

- **August 2006 – July 2015: Other Duties related to Academic Administration and Faculty Responsibilities:**
  - **June 2014 – July 2015: Director of the Undergraduate Research Program**

    Duties: Coordinate undergraduate research for the Campus's Undergraduate Research Program that aimed to oversee undergraduate research, increase student participation in symposia and meetings, and assist in the application to internships.

    Achievements: Recruitment of over 40 students of all programs for undergraduate research. Assisted 15 students in placing them in internships in different agencies including NASA, National Institute of Standards and Technology, USDA, NSF-sponsored programs, and the Research Experience for Undergraduates at the University of Puerto Rico.
  - **February 2012 – August 2015: Coordinator for the US Forestry Service National Career Paths Program**

    Duties: Coordinate recruitment and placement in internships of students for the Program.

Achievements: Recruitment of five students of the Natural Science Department for the Program and assisted in their summer internship applications.

- **February 2012- July 2014: Coordinator for the US Forestry Service National Career Paths Program**

  Duties: Coordinate recruitment and placement in internships of students in the program.

  Achievements: Recruitment of five students of the Natural Science Department for the Program and assisted in their summer internship applications.

- **January 2012 – May 2014: Liaison for the NSF-Puerto Rico Louis Stokes Alliance for Minority Participation**

  Duties: Coordinate undergraduate research recruitment and sponsorship for the National Science Foundation program that aims to increase minorities in graduate programs within Science, Technology, Engineering and Mathematics. Oversee the $100,000 budget for the program.

  Achievements: Recruitment of 25 students of the science and engineering programs for undergraduate research. Assisted eight students placing them in internships in different agencies including National Institute of Standards and Technology, USDA and the Research Experience for Undergraduates at the University of Puerto Rico.

- **June 2011 – July 2014: Director of the Math and Science Partnership for the 21st Century Phase III**

  Duties: Direct the Federally Sponsored program that aims to improve elementary and secondary education by offering workshops to Science and Math teachers.

  Achievements: Led the team that positively impacts 70 teachers from elementary and secondary schools. Increased the academic performance of the teacher's students.

- **May 2009 – August 2015: Coordinator for the Biology Graduate Program**

  Duties: Oversee all procedures of the program including course scheduling and assignment, student orientation, academic regulation compliance, assessment and student thesis coordination.

  Achievements: Led the team which attained the accreditation of the Master's in Biology Program; assisted in recruiting over 100 students for the program in three years.

- **May 2009 – August 2015: Coordinator for the Biology Undergraduate Program**

  Duties: Oversee all procedures of the program including course scheduling and assignment, student orientation, academic regulation compliance and assessment.

Achievements: Maintained the Program to the highest standards of the University. Was part of the team that, through orientations and recruitment, increased student enrollment by nearly 50%.

- **January 2008 – June 2008: Puerto Rico NASA Space Grant Consortium Outreach Coordinator**

  Duties: Coordinated and oversaw all outreach activities related to the NASA- STEM project, including workshops and conferences for students and faculty.
- **January 2007 - December 2009: Coordinator for the Center for Environmental Education, Research and Conservation (CECIA)**

  Duties: Oversaw and coordinated all activities related to environmental affairs on Campus. Supervised the use of the Campus's wetland. Coordinated science educational activities for the University and neighboring communities.

  Achievements: Established the Annual Biodiversity Symposium for Puerto Rico.
- **August 2006 – December 2009: Administrator of *Mata de Plátano* Field Station and Biological Reserve**

  Duties: Oversaw and coordinated all activities at the station including visits by researchers, educational groups, and federal and state agencies. Processed and analyzed meteorological and ecological data, including wildlife management.

  Achievements: Inclusion of the Reserve in the NSF proposal for the National Ecological Observatory Network (**NEON**).
- **January 2002 -July 2006: Adjunct Professor in the Department of Natural Sciences and Mathematics**

  Duties: Part time faculty member teaching undergraduate level courses.

August 1999 – July 2004: UNIVERSITY OF PUERTO RICO – RIO PIEDRAS CAMPUS

- **January 2003 – July 2004: Research Assistant for the Department of Biology**

  Duties: Performed research in honey bee behavior and genetics. Oversaw and managed an apiary including pest management, queen rearing, honey harvesting, and maintenance.
- **August 2000 - December 2002: Research Assistant for the Department of Biology**

  Duties: Performed research in flea beetle evolution and biogeography including genetic and morphological analysis. Worked the summer of 2001 in Rutgers University with flea beetle genetics.

- **August 1999 - May 2000**: **Teaching Assistant for the Department of Biology**

  Duties: Taught undergraduate level lab courses.

RESEARCH EXPERIENCE:

- Social Insect Behavior- Examine the role of the environment, genes and hormones in the regulation of behaviors of social insects including honey bees (*Apis mellifera*), fire ants (*Solenopsis invicta*) and little fire ants (*Wasmannia auropunctata*). Research techniques include behavioral assays, genetics (PCR, Quantitative Real Time PCR), bioinformatics, Scanning Electron Microscopy, taxonomy, and parasite resistance analysis.
- Marine mammal genetics and physiology: Collaborate in experimental design and execution, as well as perform data analysis in marine mammal genetic studies and physiology research.
- Citrus Leaf Miner, Citrus Psyllid and *Diaprepes* Weevil Population Genetics- In collaboration with the USDA Horticultural Lab in Fort Pierce, Florida and the Puerto Rico Department of Agriculture, evaluate the population structure of the citrus leaf miner (*Phyllocnistis citrella*), citrus psyllid (*Diaphorina citri*) and the weevil *Diaprepes abreviatus* in citrus groves in Florida and Puerto Rico using genetic markers such as microsatellites.
- Coffee bean borer Population Genetics and Control Resistance- In collaboration with the UPR- Utuado Campus and the Puerto Rico Department of Agriculture, evaluate the population structure and resistance to pest control of the coffee bean borer, *Hypothenemus hamperi*, in Puerto Rico using genetic techniques such as Single Nucleotide Polymorphisms (SNP's).
- Flea Beetles- Assisted in a study of the evolution of flea beetles. Research techniques include taxonomy, dissections, slide preparation, genetics, and phylogenetic analysis.
- Pollination Ecology- Investigated the pollination biology of cacti in a tropical dry forest. Research techniques include pollination research techniques, nectar analysis, pollen slide preparation and identification, and pollinator taxonomy.
- Bat Ecology- Studied bat physiological adaptations to different roosting environments and feeding habits. Research techniques include bat capture and manipulation techniques, taxonomy, blood and tissue sampling, and histological techniques.
- Bird Ecology- Assisted in study on the ecology of introduced passerine birds. Research techniques include mark and recapture techniques and taxonomy.
- **Students** - Seventeen graduate, three undergraduate interns, and thirty-four undergraduate students have participated in the lab. My students have been sponsored by USDA, the Campus's Undergraduate Research Program, the Louis Stokes Alliance for Minority Participation (NSF program), and the Puerto Rico NASA Space Grant Consortium.

AWARDED GRANTS

- **Rivera, B.** (P.I.), Moran, K.T. (Co-P.I.). ***Activating STEM Skills and Efficacy for Transfer (ASSET).*** National Science Foundation awarded $494,795.00 from October 2025- September 2028.
- **Rivera-Marchand, B.** (P.D.). ***Expanding and inspiring through opportunities in STEM (EXITOS)***. The U.S. Department of Education awarded **$6,000,000.00** from October 2016- September 2021 (non-cost extension through 2022).
- Vardar, N. (P.I.). Rivera-Betancourt, H. (Collaborator.), Vivoni, A. (Collaborator), **Rivera-Marchand, B.** (Collaborator). ***Integration of nanoscale science and engineering into undergraduate STEM education*** at Inter American University of Puerto Rico, Bayamon Campus. U.S. Department of

Education awarded **$235,333.00** from October 2012- September 2015 (non-cost extension through 2016).

- Rivera-Betancourt, H. (P.I.), Rincón, A. (Co-P.I.), **Rivera-Marchand, B.** (Co-P.I.) and Vardar, N. (Co-P.I.). ***MRI: Acquisition of a scanning electron microscope for research and teaching***. NSF awarded **$316,839.00** from August 2011-December 2014.
- **Rivera-Marchand, B.** (P.I.). ***Math and Science Partnership for the 21st Century Phase III***. U.S. Department of Education through the Puerto Rico Department of Education $550,000.00 awarded from June 2011- May 2012 and **$525,000.00** awarded from June 2012- May 2013.
- **Rivera-Marchand, B.** (P.I.). ***Reproductive biology of the little fire ant Wasmannia auropunctata***. Institutional Seed Grant awarded **$5000.00** from August 2011-June 2012.

PUBLICATIONS

- Rivera-Perez, C.I., Caballero, Caicedo-Herrera, De La Rosa, F., de Wit, M., **Rivera-Marchand, B**., Ponnampalam, L.S., and Mignucci-Giannoni, A.A. (*Accepted 2025*). Molecular identification of two species of trematode parasites of American manatees (*Trichechus manatus*) and their possible role as bio-indicators of host distribution and diet. Journal of Parasitology.
- Mignucci-Giannoni, A.A., Escobar-Torres, S.M., Cabrias-Contreras, L.J., Jiménez-Rivera, S., Pagán-Benítez, Y., Rafols-Segarra, R.R., **Rivera-Marchand, B**., Rivera-Pérez, C.I. and Richardson, D.L., (2025) Sexual Dimorphism in Brown Pelicans (Pelecanus occidentalis) from Puerto Rico: Biometric Evidence Corroborated by Molecular and Necropsy Techniques. Waterbirds, 48(2), 1-11.
- Sylvester, T., Adams, R., Hunter, W. B., Li, X., **Rivera-Marchand, B**., Shen, R., ... & McKenna, D. D. (2024). The genome of the invasive and broadly polyphagous *Diaprepes* root weevil, *Diaprepes abbreviatus* (Coleoptera), reveals an arsenal of putative polysaccharide-degrading enzymes. Journal of Heredity, 115(1), 94-102.
- Valenzuela-Venegas CV, Cabrias-Contreras LJ, Cavin JM, Sánchez-Okrucky R, Rivera-Guzmán AL, **Rivera-Marchand B**, Mignucci-Giannoni AA. 2023. Normal urinalysis of rough-toothed dolphins (*Steno bredanensis*) in comparison to those of the common bottlenose dolphins (*Tursiops truncatus*) under human care. Water Biology and Security (Special Issue on Advances of Cetcean Research).
- Cabrias-Contreras LJ, Caicedo-Herrera D, Montoya-Ospina RA, Millán-Tripp S, Mona-Sanabria Y, Gómez-Camelo IV, Jaramillo-Ortíz L, Aguirre AM, **Rivera-Marchand B**, Mignucci-Giannoni AA. 2023. Hematology and blood chemistry reference intervals for Antillean manatees (*Trichechus manatus manatus*) in Colombia. Aquatic Mammals.
- Ortiz-Alvarado, Y., Fernández-Casas, R., Ortiz-Alvarado, C.A., Diaz-Iglesias, E. and **Rivera-Marchand, B**., 2021. *Behavioral flexibility in* Wasmannia auropunctata *(Hymenoptera: Formicidae*). Journal of Insect Science, 21(4):.16. https://doi.org/10.1093/jisesa/ieab059.
- Ortiz-Alvarado Y. and **Rivera-Marchand B**. (2020) Worker Queens? Behavioral flexibility of queens in the little fire ant *Wasmannia auropunctata*. Front. Ecol. Evol. 8:241. doi: 10.3389/fevo.2020.00241.
- Jiménez-Zucchet et al. 2019. Establishing a baseline urinalysis values in common Caribbean bottlenose dolphins (*Tursiops truncatus*) under human care. Journal of Veterinary Diagnostic Investigation.
- Galindo-Cardona A., J. P. Acevedo, **B. Rivera-Marchand**, T. Giray. 2013. Genetic structure of the gentle Africanized honey bee population (gAHB) in Puerto Rico. BMC- Genetics 14: 65.
- **Rivera-Marchand, B.** D. Oskay and T. Giray. 2012. Gentle Africanized honey bees on an island. Featured as the Cover: Evolutionary Applications 5(7): 746-756. DOI: 10.1111/j.1752-4571.2012.00252.x

- **Rivera-Marchand, B.,** T. Giray and E. Guzmán-Novoa. 2008. Minireview: The cost of defense: Insights from the honey bee**.** Acta Entomologica et Experimentatta DOI: 10.1111/j.1570-7458.2008.00747.x.
- **Rivera-Marchand, B.**, J. Keularts, D. Oskay and T. Giray. 2008. Coexistence of feral Africanized and European honey bees (Hymenoptera: Apoidea: Apidae) on St. Croix Island. Caribbean J. of Science 44(2): 264-266.
- **Rivera-Marchand, B.** 2008. Polinización in Biodiversidad de Puerto Rico: Agustín Stahl, Flora, Hongos, R. L. Joglar editor. Editorial Universidad de Puerto Rico. p164.
- **Rivera-Marchand, B.** 2006. Africanized Honey Bees in Puerto Rico. PhD Thesis.
- **Rivera-Marchand, B** and J. D. Ackerman. 2006. Bat Pollination Breakdown in the Caribbean Columnar Cactus Pilosocereus royenii. Biotropica 38(5): 635-642.
- **Rivera-Marchand, B**. 2001. Pollination Biology of Pilosocereus royenii L. (Cactaceae) in Guánica State Forest. MS Thesis.
- **Rivera-Marchand, B**. and A. Rodríguez-Durán, A. 2001. Renal Biology of Neotropical Bats as a Function of Roost Microhabitat. Caribbean Journal of Science 37(3-4): 272-274.

SCIENTIFIC PRESENTATIONS

- B. Rivera-Marchand. 2019. Loss of defense on tropical islands: Insights from invasive species. Invited speaker in the Puerto Rico Honey Bee Conference. San Juan, PR
- B. Rivera-Marchand. 2016. The little fire ant, *Wasmannia auropunctata* (Roger) in the West Indies: Native pest or successful invasive species? Invited speaker in The International Conference of Entomology Orlando, FL.
- Grau, E. and B. Rivera-Marchand. Evaluation of Sociality in a Caribbean Halictid Bee. 2015. Poster presentation in Entomological Society of America Minneapolis, MN. Winner of First Prize in Student Competition.
- Ramos-Marrero, L.O., B. Rivera-Marchand, R.R. Canales-Pastrana and S. Lapointe. 2014. Color distribution of the cane root borer *Diaprepes abbreviatus* in Puerto Rico. Oral presentation in Jr. Technical Meeting/PRISM San Juan, PR.
- Ramos-Marrero, L.O., B. Rivera-Marchand and S. Lapointe. 2013. Why so many colors? Color Variation in the cane root borer *Diaprepes abbreviatus*. Poster presentation in Entomological Society of America Annual Meeting, Austin TX.
- Rivera-Marchand, B., Y. Ortiz-Alvarado, A. Rosado-Rodríguez, Y. Rodríguez-Cruz and C. Ortiz-Alvarado. 2011. Nursing foragers and worker queens: Behavioral plasticity in the little fire ant *Wasmannia auropunctata*. Invited presentation in Entomological Society of America Southeastern Branch Meeting, San Juan, Puerto Rico.
- Rivera-Marchand, B., R. Fernández-Casas and Y. Ortiz-Alvarado. 2010. Behavioral plasticity in the little fire ant. Oral presentation in Entomological Society of America Annual Meeting, San Diego, California.
- Ortiz-Alvarado, Y., and B. Rivera-Marchand. 2010. Worker queens? Effect of methoprene on behavioral plasticity in queens of the little fire ant *Wasmannia auropunctata*. Poster presentation in Entomological Society of America Annual Meeting, San Diego, California.
- Fernández-Casas, R., C. Ortiz-Alvarado and B. Rivera-Marchand. 2010. Effects of methoprene on workers of the little fire ant *Wasmannia auropunctata*. Poster presentation in Entomological Society of America Annual Meeting, San Diego, California.

- Díaz-Iglesias, E., C. Ortiz-Alvarado and B. Rivera-Marchand. 2010. Together we conquer! Intraspecific aggression in the little fire ant *Wasmannia auropunctata*. Poster presentation in Entomological Society of America Annual Meeting, San Diego, California.
- Ortiz-Alvarado C., R. Fernández-Casas and B. Rivera-Marchand. 2010. Young protectors: Interspecific nest defense in the little fire ant *Wasmannia auropunctata*. Poster presentation in Entomological Society of America Annual Meeting, San Diego, California.
- Rodríguez-Cruz, Y., Y. Ortiz-Alvarado and B. Rivera-Marchand. 2010. Flightless winged females and flight-capable males of the little fire ant *Wasmannia auropunctata*. Poster presentation in Entomological Society of America Annual Meeting, San Diego, California.
- Rosado-Rodríguez, A., Y. Ortiz-Alvarado and B. Rivera-Marchand. 2010. Relationship between juvenile hormone and defensive behavior in the little fire ant *Wasmannia auropunctata*. Poster presentation in Entomological Society of America Annual Meeting, San Diego, California.
- Rivera-Marchand, B. 2008. Division of labor in the "albayalde" *Wasmannia auropunctata*. Oral Presentation at the Annual Meeting of the Caribbean Division of the American Association for the Advancement of Science. San Juan, P.R.
- Rivera-Marchand, B. 2008. The cost of defense. Oral Presentation at the International Union for the Study of Social Insects Breakout Meeting, Guajataca, P.R.
- Fernández-Casas, R. and B. Rivera-Marchand. 2008. Worker division of labor in the little fire ant. Poster presentation in The Evolution Annual Meeting, Indianapolis, Indiana.
- Ortiz-Alvarado, Y. and B. Rivera-Marchand. 2008. Queen behavioral plasticity in the little fire ant. Poster presentation in The Evolution Annual Meeting, Indianapolis, Indiana.
- Vázquez-Santos, V. and B. Rivera-Marchand. 2007. Guarding behavior of gentle Africanized honey bees in Puerto Rico. Poster presentation in Entomological Society of America Annual Meeting, San Diego, California.
- Trinidad, J. and B. Rivera-Marchand. 2007. Wing morphology of Africanized honey bees in Puerto Rico. Poster presentation in Entomological Society of America Annual Meeting, San Diego, California.
- Figueroa-Nieves, V. and B. Rivera-Marchand. 2007. Aggressive behavior of the red imported fire ant on an island. Poster presentation in Entomological Society of America Annual Meeting, San Diego, California.
- Fernández-Casas, R. and B. Rivera-Marchand. 2007. Worker division of labor in the little fire ant. Poster presentation in Entomological Society of America Annual Meeting, San Diego, California.
- Rivera-Marchand, B. 2006. Social Insects on islands. Invited oral presentation in Entomological Society of America Annual Meeting, Indianapolis, Indiana.
- Rivera-Marchand, B., D. Oskay and T. Giray. 2006. Varroa mite resistance of gentle Africanized honey bees in Puerto Rico. Oral presentation in CREST-CATEC Annual Meeting, San Juan, Puerto Rico.
- Rivera-Marchand, B. 2006. Defense vs. Growth: Bees on an Island. Poster presentation in AAAS-Annual Meeting, St. Louis, Missouri.
- Rivera-Marchand, B., D. Oskay and T. Giray. 2005. Hygienic behavior and *Varroa* mite infestation of gentle Africanized honey bees in Puerto Rico. Oral presentation in Entomological Society of America Annual Meeting Fort Lauderdale, Florida. Second Place in Student Competition.
- Rivera-Marchand, B. 2005. Defense vs. Growth: Bees on an Island. Poster presentation in AAAS-Caribbean Division Annual Meeting, Bayamón, Puerto Rico. First Place: Robert Lawrus Award.
- Rivera-Marchand, B. and T. Giray. 2004. Atypical traits of Africanized Honey Bees in Puerto Rico. Oral presentation in Entomological Society of America Annual Meeting Salt Lake City, Utah.
- Rivera-Marchand, B. and T. Giray. 2003. Africanized Honey Bees in Puerto Rico: Reduced Defensiveness and Mite Resistance. Oral presentation in Entomological Society of America Annual Meeting Cincinnati, Ohio.

- Rivera-Marchand, B. and T. Giray. 2003. Africanized Honey Bees in Puerto Rico and Vieques. Oral presentation in Simposio sobre Vieques, Río Piedras, Puerto Rico.
- Trejo-Torres, J. C. and Rivera-Marchand, B. 2000. Biogeography of Caribbean Bats Using Parsimony Analysis. Poster presentation in The North American Symposium of Bat Research, Miami, Florida.
- Rivera-Marchand, B. and A. Rodríguez-Durán. 1998. Renal Adaptations of Puerto Rican Bats. Poster presentation in The International Symposium of Bat Research, Brasilia, Brazil.

SELECTED EDUCATIONAL PRESENTATIONS

- B. Rivera-Marchand. 2023. ***STEM Week: "From Bats to Bees and Beyond"***. Polk State College, Winter Haven, FL
- B. Rivera-Marchand. 2022. ***My LSAMP Story***. Polk State College, Winter Haven, FL
- B. Rivera-Marchand. 2021. ***Genética y Conducta de la Abeja de Miel "Boricua": Evidencias para la solución de pérdidas de abejas en el mundo.*** Décimotercer Simposio Estudiantes Investigadores, Universidad Interamericana de Puerto Rico, Barranquitas, P.R.
- B. Rivera-Marchand. 2020. ***Abejas de miel Boricuas: Una posible solución a la crisis mundial de abejas?*** *Eco-exploratorio, San Juan, P.R.*
- B. Rivera-Marchand. 2019. ***Honey Bees in Puerto Rico: A possible solution to worldwide honey bee losses?*** *Presented in over ten schools.*
- B. Rivera-Marchand. 2018. ***Controversy in the School Science Curriculum***. Education Doctorate Program. UPR- Río Piedras, PR
- B. Rivera-Marchand. 2014-2017***. Biotechnology and Medicine***. García Rinaldi Foundation, PR
- B. Rivera-Marchand. 2016. ***Evolution***. Commonwealth High School, Hato Rey, PR.
- B. Rivera-Marchand. 2016, 2015, 2014. ***Math and Bees***. Colegio San Antonio, Rio Piedras, PR
- B. Rivera-Marchand. 2016, 2015, 2014. ***Biotechnology***. Colegio Dáscalos, Rio Piedras, PR
- B. Rivera-Marchand. 2015. ***Bats***. Colegio San Antonio, Rio Piedras, PR
- B. Rivera-Marchand. 2011. ***Darwin: The man and his theory***. Commonwealth High School, Hato Rey, P.R.
- B. Rivera-Marchand. 2011. ***Bats***. Colegio San Antonio, Rio Piedras, PR
- B. Rivera-Marchand. 2008. ***Gentle killer bees in Puerto Rico***. Baldwin School, Guaynabo, PR.
- B. Rivera-Marchand. 2008. ***Colors of Nature***. Parkville School, Guaynabo, PR.
- B. Rivera-Marchand. 2008. ***Carreras en biología***. Inter American University of Puerto Rico, Bayamón Campus, PR.
- B. Rivera-Marchand. 2008. ***Evolución: El Legado de Darwin***. Inter American University of Puerto Rico, Bayamón Campus, PR.
- B. Rivera-Marchand. 2008. ***Biología en nuestra vida***. Inter American University of Puerto Rico, Bayamón Campus, PR.
- B. Rivera-Marchand. 2007. ***Integrando los niveles de la vida***. Presentation for the Toa Baja School District, PR.
- B. Rivera-Marchand. 2007. ***Insectos: ¿Para qué los quiero?*** Inter American University of Puerto Rico, Bayamón Campus, PR.

MEDIA EXPOSURE

- **World Bee Day 2021**
  - *News Media*: El Nuevo Día; Media News; NimB; Primera Hora; Caribbean Business; Metro; El Vocero; Buena Vida; Magazine PR; ¡Ey Boricua!; Placeres de Puerto Rico; Es Noticia; La Perla del Sur
  - *Radio*: WKAQ 580 AM – La Noticia Positiva, Radio Isla 1320 AM – Radio Interview: Dr. Bert Rivera-Marchand: "Sobre la Mesa" con Yolanda Vélez Arcelay
  - *TV*: MegaTV; Telemundo: Telenoticias
- WAPA-TV "Noticentro al Amanecer" ***Be a Bee Initiative"*** November, 2019
- WAPA-TV "En tu mañana" ***Could animals dominate humans?*** August, 2017
- Telemundo-TV "Noticias" ***Puerto Rican honeybees***. March, 2015
- Telemundo-TV "Noticias" ***Little Fire Ants***. March, 2015
- NatGeo Wild "**Python Hunters Bat Capture**" June, 2014

SERVICE:

- Lead on the *Excelencia* Grant
- President of the Academic Senate
- MSCHE- Bayamón Campus Reaccreditation Committee, Co-Chair
- IAUC- Inter American University, President
- IRB- Inter American University, Member
- "Be a Bee" Educational Project- Island-wide honey bee outreach project
- Consejo de Educación de Puerto Rico- UPR- Utuado Sustainable Agriculture Program evaluator
- ABET Steering Committee Team Leader
- Middle States Association Commission on Higher Education Steering Committee Team Leader for the Program Assessment Standard Group
- President of the Chancellor's Special Committee on Student Recruitment
- Member of the Chancellor's Special Committee on Sustainability
- Director of the Institutional Animal Care and Use Committee (IACUC)
- Inter American University Academic Senate:
- President of Graduate Programs Committee
- President of the Special Environmental Committee
- Secretary of Graduate Programs Committee
- Development of Master's degree courses (Integrated Biology, Evolutionary Processes, Biogeography, Population Ecology, Tropical Ecology, Community Ecology, Scientific Writing)
- Co-creator of the Master's degree in Biology Program
- Graduate and undergraduate student association advisor
- Reviewer for Journal of Insect Science
- Reviewer for Psyche: A Journal of Entomology
- Reviewer for Focus Journal
- Volunteer for the Caribbean Stranding Network- Marine mammal recue and rehabilitation
- Student Representative for the Association of Biology Graduate Students
- Student Representative to the Graduate Program-UPR Río Piedras, PR: 2000-2001

HONORS AND AWARDS:

- **2012 E. Kika de la Garza Science Fellow**, USDA Fellowship Awarded to Faculty of Hispanic Serving Institutions, USDA Washington DC
- **2012 Carrier of the Presidential Mace During Commencement**, Awarded to Most Outstanding Faculty Member Inter American University of Puerto Rico, Bayamón.
- **2008 Student Association Advisor of the Year**, Inter American University of Puerto Rico, Bayamón.
- **2005 Entomological Society of America Student Competition: Second Place** – Awarded for best oral presentation at the Entomological Society of America Annual Meeting in Fort Lauderdale, FL.
- **2005 Robert Lawrus Award: First Place** – Awarded for outstanding poster presentation at the AAAS Caribbean Division Annual Meeting in Bayamón, Puerto Rico.
- **2005-2006 Dean of Graduate Studies Fellowship Award** - Awarded for merit.
- **2003-2004 AGEP Fellowship Award** – Awarded for merit.
- **1998 Inter American University Biology Department Medal** - Awarded for academic achievement.

CONTINUED EDUCATION

- **August 2024**: President's Leadership Institute (Polk State College)
- **June 2018**: CRESTCOM Bulletproof Manager
- **May 2017:** Introduction to Project Management- University of California, Irvine
- **February 2015:** Philosophy and the Sciences – The University of Edinburgh

AFFILIATIONS:

- American Association for the Advancement of Science (Member of the Board of Directors of the Caribbean Division 2008-2010, Member since 2005)
- International Union for the Study of Social Insects (Member since 2004)
- Entomological Society of America (Member since 2003)
- Ecological Society of America (Member since 2002)
- Society for the Study of Evolution (Member since 2002)
- Kansas Entomological Society (Member since 2002)
- Association for Tropical Biology (Member since 2000)

REFERENCES

- Nydia Feliciano- Former supervisor at Inter American University nfeliciano@bayamon.inter.edu
    - Dean of Academic Affairs Inter American University
- Antonio Mignucci- Research collaborator mignucci@manatipr.org
    - Director of the Manatee Conservation Center and Professor and Researcher at Inter American University
- Harry Rivera- Co-PI in grants hriverab@bayamon.inter.edu
- Professor and Researcher at Inter American University

Common Prerequisites Manual (CPM) Revision Request

Institution:	**Florida Polytechnic University**
Institution Liaison:	Tom Dvorske
Date of Submission:	10/14/2025
Program/Degree Type:	**Bachelor of Science in Biomedical Sciences**
Program CIP Code:	26.0102
Program Credit Hours:	120

If applicable, please complete the following if you are notifying us of a change to:

Program Credit Hours:	Current Credit Hours: Click or tap here to enter text. New Credit Hours: Click or tap here to enter text. Effective Date: Click or tap here to enter text.
Limited Access Program Status:	☐ Change from open access to limited access ☐ Change from limited access to open access Effective Date: Click or tap here to enter text.
Program CIP Code:	Current CIP code: Click or tap here to enter text. New CIP Code: Click or tap here to enter text. Effective Date: Click or tap here to enter text.
Baccalaureate Program Status:	☐ Notification of a Program Termination – Term/Year Program Should be Removed from the CPM: Click or tap here to enter text. ☒ Notification of New Program – Anticipated Program Implementation Date: Fall 2026 ☐ Notification of Program Name Change – Revised Program Name: Click or tap here to enter text.

Proposed Revisions(s) to the CPM (check all that apply)

The CIP Code Is Currently in the CPM:

☐ 1. Make curriculum changes to an existing track at proposing institution

☒ 2. Add program to a current track without curriculum changes

☐ 3. Add program to a current track with curriculum changes

☐ 4. Establish a new track without prerequisites

☐ 5. Establish a new track with prerequisites

6. For numbers 1-5, please provide track information below:

a. ☒ Track 1 ☐ Track 2 ☐ Track 3 ☐ Track 4 ☐ Track 5 ☐ Track 6

b. Track Name: Biological and Biomedical Sciences Discipline

c. If this is a request to establish a new track, please provide justification as to why a new track is needed: Click or tap here to enter text.

The CIP Code Is Not Currently in the CPM:

☐ 7. Add program to the CPM without prerequisites

☐ 8. Add program to the CPM with prerequisites

Proposed Curriculum Actions:

☐ Add course(s) and/or course alternative(s)

☐ Eliminate course(s) and/or course alternative(s) (delete course from the CPM)

☐ Exempt course(s) and/or course alternative(s) (request exception from course)

☐ Carry over prerequisites from previous CIP without changes (CIP Code change)

☐ Carry over prerequisites from previous CIP with changes (CIP Code change)

☐ Other – please specify Click or tap here to enter text.

Please include the following supporting documentation with this proposal:

- The program page from the Common Prerequisite Manual, if applicable.
- The program requirements for the baccalaureate degree program at your institution.

If this request is for any of the following, do not complete anything further:

- Add program to a current track without curriculum changes
- Establish a new track without prerequisites
- Add program to the CPM without prerequisites

If this request is for any of the following, please complete 1-8, where applicable:

- Make curriculum changes to an existing track at proposing institution
- Carry over prerequisites from previous CIP with no changes
- Carry over prerequisites from previous CIP with changes
- Add program to a current track with curriculum changes
- Establish a new track with prerequisites
- Add program to the CPM with prerequisites

1. For required prerequisite course(s) and/or course alternative(s), please list the following information for each course (add rows if necessary).

Course Prefix and Number	Course Title	Course Alternative	Justification for Course(s)	Credits
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	
			Total Credits	

2. If the course(s) above includes a course(s) that is offered currently at three or fewer FCS or SUS institutions, please provide justification as to why the course is critical for a student's success in the baccalaureate degree program. Please visit the Statewide Course Numbering System to determine the number of institutions that offer the course(s) (add rows if necessary). Click here for instructions on how to navigate the SCNS.

Course(s) Offered at 3 or Less FCS/SUS Institutions	Number of FCS Institutions Currently Offering Course (out of 28)	Number of SUS Institutions Currently Offering Course (out of 12)	Justification for Course(s)
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

3. If the request includes courses that are offered only at your institution, explain what options are available to students at other institutions for completing the required courses (add rows if necessary).

Course(s) Offered Only at Proposing Institution	Option(s) at Other Institutions	Explanation of Option(s)
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

4. If the request includes exemption from or elimination of a prerequisite course(s) and/or course alternative(s), please list the following information for each course that you would like to be exempt from or eliminate (add rows if necessary).

Course Prefix and Number	Course Title	Justification for Course Elimination/Exemption
Click or tap here to enter text.	Click or tap here to enter text.	☐ Exempt from Course ☐ Elimination of Course Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	☐ Exempt from Course ☐ Elimination of Course Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	☐ Exempt from Course ☐ Elimination of Course Click or tap here to enter text.

5. Please provide the college level prerequisite(s) for the common prerequisite course(s) if applicable (add rows if necessary).

Course Prefix	College Level Prerequisites	Credits
Click or tap here	Click or tap here to enter text.	
Click or tap here	Click or tap here to enter text.	
	Total Credits	

6. Please provide the information requested below for the review of common prerequisite completion within 60 credit hours.

Number of Credit Hours for AA degree	**60**
Subtract the number of credit hours required for common prerequisites	- 39
Subtract the number of credit hours of college-level course prerequisites for common prerequisite courses (if known)	-0
Add the number of credit hours for common prerequisites that are also general education core requirements	+ 19
Total Credits remaining to complete the rest of the student's general education requirements	= 40

7. If a student does not have enough room in the "Total Credits" above to complete the rest of the general education requirements, please provide justification for requiring more common prerequisite course credit hours than can be accommodated by the student in 60 credit hours.

Click or tap here to enter text.

8. Other.

Click or tap here to enter text.

Common Prerequisites Manual

2025-26 Manual

← Return to Search Print

BIOMEDICAL SCIENCES

Biomedical Sciences

University of West Florida - Bachelor of Science

CIP: 26.0102 **Track: 1** **Hours: 120**

Requirement	
STA2023 ELEMENTS OF STATISTICS	3.0 hours

Requirement	
MAC2311 ANALYTIC GEOMETRY AND CALCULUS I	4.0 hours

Requirement	
PHY2053 ALGEBRA-BASED PHYSICS I	3.0 hours
PHY2053L ALGEBRA-BASED PHYSICS I LAB	1.0 hours
PHY2054 ALGEBRA-BASED PHYSICS II	3.0 hours
PHY2054L ALGEBRA-BASED PHYSICS LAB II	1.0 hours

Requirement	
CHM2211L ORGANIC CHEMISTRY II LABORATORY	1.0 hours
CHM2211 ORGANIC CHEMISTRY II	3.0 hours

Requirement	
CHM2210 ORGANIC CHEMISTRY I	3.0 hours
CHM2210L ORGANIC CHEMISTRY I LABORATORY	1.0 hours

Requirement	
CHM2046 GENERAL CHEMISTRY II	3.0 hours
CHM2046L GENERAL CHEMISTRY II LABORATORY	1.0 hours

Requirement	
CHM2045 GENERAL CHEMISTRY I	3.0 hours
CHM2045L GENERAL CHEMISTRY I LABORATORY	1.0 hours

Requirement	
BSC2011 BIOLOGY II	3.0 hours
BSC2011L BIOLOGY II LAB	1.0 hours

Requirement	
BSC2010L BIOLOGY I LABORATORY	1.0 hours
BSC2010 BIOLOGY I	3.0 hours

AGENDA ITEM: V.

Florida Polytechnic University

Board of Trustees

March 4, 2026

Subject: Authorization to Form a Direct Support Organization (DSO) to Support the CMU/NREC Affiliate Initiative

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Proposed Board Action

Authorize and direct the President to take all actions necessary to form a Florida not-for-profit corporation intended to operate as a Direct Support Organization (DSO) to support the University's CMU/NREC affiliate initiative and return to the Board with proposed Articles of Incorporation, Bylaws, proposed board slate, and required agreements for Board certification.

Background Information

Florida Polytechnic University is advancing a proposed five-year Affiliate PLUS partnership with Carnegie Mellon University's National Robotics Engineering Center (NREC) to establish a sponsor-funded applied robotics center and accelerate industry engagement and contract-funded applied R&D activity. The University has completed a white paper outlining the proposed operating model, implementation approach, financial framing, and risks and mitigations.

A DSO is a common structure used by Florida public universities to enable sponsor-funded operations with the speed and flexibility needed for contracting, procurement, and hiring, while maintaining appropriate oversight, financial controls, and compliance. The proposed action is being brought forward because Florida Statutes and Board of Governors regulations establish specific requirements for DSOs, including Board involvement in governance, certification, and approvals related to organization documents and board appointments.

This agenda item authorizes the President to begin the formal formation steps and directs the administration to return to the Board with the full package needed for certification, including proposed Articles, Bylaws, board slate, and required agreements.

Supporting Documentation: N/A

Prepared by: Dr. Cole Allen, Vice President of Information Technology and CIO