UNIVERSITY of
SOUTH FLORIDA

Patel College of Global Sustainability

2023-2024 ANNUAL REPORT

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DEAN'S MESSAGE

I am delighted to present the 2023-2024 Annual Report for the Patel College of Global Sustainability (PCGS). Since its establishment, PCGS has emerged as a preeminent academic destination for students seeking careers in sustainability within industries, governments, non-governmental organizations, and entrepreneurial ventures. The newly launched PCGS Master of Science (M.S.) graduate program in five concentrations is doing well as attested by admissions and graduation trends. Launching of the MS degree program fulfilled one of the key recommendations of the External Evaluation Report of our academic program. An increase in the graduation requirement from 30 to 36 credit hours for all Master's degrees, another recommendation of the external evaluator, was also implemented. PCGS will undergo its next academic program evaluation during AY 2024-2025.

One of the notable achievements for the College was successfully hosting the 10th Anniversary of the founding of Patel College Global Sustainability in November 2023. Another major achievement was the election of Dr. George Philippidis as a 2023 Fellow of the American Association for the Advancement of Science (AAAS).

The College enhanced student success, raised admission standards, and revised and updated graduate curriculum to reflect the rapid changes taking place in the field of sustainability education and research. PCGS faculty and students provided data and analytical support for the university that helped rank USF third in the country in the most recent Times Higher Education (THE) ranking of universities for the implementation of United Nations Sustainable Development Goals (UNSDGs) in academic practices.

The academic mission of PCGS is achieving sustainable development, both locally and globally, by fostering social, economic, and environmental sustainability. We accomplish this mission through teaching, research, student mentoring, and community and industry engagement, as well as by generating practical knowledge and developing innovative technologies, skills, and policies. This mission is aligned to support the strategic priorities of the University of South Florida as a preeminent global research university.

DEAN'S MESSAGE

The College is engaged in education, research, and service activities that create solutions leading to sustainable development in a rapidly changing world, drawing on USF's broad interdisciplinary expertise in renewable energy, water, climate science, public health, energy, transportation, global security, and social equity, among others. This interdisciplinary approach prepares our students for career options and professional opportunities within industries, governmental agencies (at city, county, state, and federal levels), international organizations and NGOs that are seeking solutions to various sustainability challenges.

The Patel College of Global Sustainability has been successful in enhancing its role as the hub for sustainability-related research and teaching across the USF campuses. It has also teamed up with the Mote Marine Laboratory to collaborate in externally funded research on mitigating Florida's red tide problem.

Shortly after receiving a $4 million gift from Dr. Kiran Patel that doubled the PCGS Endowment Fund, PCGS signed agreements for a multi-million-dollar promised gift from the estate of Don & Penny Butz. In the past three years, Dr. Kiran Patel provided a combined gift of $300,000 to the College to support academic operations. In November 2021, Amy and Michael Drake donated $106,000 to the College to establish an endowed scholarship in their name, and scholarships have been granted to students during the 2021-2022, 2022-2023 and 2023-2024 academic years.

I look forward to enhancing the College's academic reputation and student enrollment numbers, as well as expanding partnerships with more public and private organizations in the Tampa Bay Region and beyond during the 2024-2025 Academic Year. With resilience, grit, and innovation, the College continues to serve the needs and aspirations of our students and community partners.

Govindan Parayil, Ph.D.
Dean and Professor

2023-2024 HIGHLIGHTS

- George Philippidis elected as a 2023 **Fellow of the American Association for the Advancement of Science (AAAS).**
- Successfully organized the Patel College of Global Sustainability **10th Year Anniversary Celebration and All-Class Reunion** on November 2nd, 3rd, and 4th, 2023. This commemorative event entailed two receptions, an alumni conference, and an awards dinner.
- Won two new **grants** from the Florida Fish & Wildlife Conservation Commission (FWC) to **investigate mitigation of red tides** using electromagnetic technology.
- Won a **travel award** from the European Union Jean Monet Center to develop pedagogical material about EU's policy and research on sustainable transportation fuels.
- Collaborated with the Tampa Bay Regional Planning Council to develop the **Clean Air Tampa Bay Priority Climate Action Plan** as part of a $1 million grant funded by the U.S. Environmental Protection Agency.
- **Facilitated a Memorandum of Understanding (MOU) between USF and Tampa International Airport** to enhance collaboration and partnership opportunities in research and educational areas.
- **Signed a Memorandum of Understanding (MOU) between the Indian Institute of Technology Gandhinagar and PCGS/USF** to facilitate research, promote cooperation between students and faculty, and advance the development of new global sustainability and engineering programs.

OUR HISTORY

The Patel College of Global Sustainability was established in 2013 as the newest degree-granting college of the University of South Florida based at the Patel Center for Global Solutions, which was founded in 2009. The College is engaged in education, research, and service activities that create solutions for achieving sustainable development in a rapidly changing world by drawing on USF's broad interdisciplinary expertise in the areas of renewable energy, water, climate change, policy, transportation, global security, and social equity.

The Patel College of Global Sustainability offers Master of Arts (M.A.) and Master of Science (M.S.) Programs in Global Sustainability and a Graduate Certificate Program in Sustainability. It is an inclusive and collaborative academic unit with interdisciplinary research, teaching and service focus, and has partnered with several USF Colleges to carry out these activities.

One of the unique features of the College enshrined in its mission is to work as the hub for sustainability- related scholarship across the USF campus. Thus far, the Patel College has collaborated with five other USF Colleges: College of Arts & Sciences (especially the School of Geosciences and the School of Public Affairs), College of Engineering, College of Business, College of Marine Science, and College of Public Health.

Two significant leadership changes since the establishment of the college were the appointment of Richard Berman as the Interim Dean in August 2015 and the appointment in July 2017 of Govindan Parayil as the permanent Dean.

VISION

Drawing from various definitions of "sustainability," we seek to ensure that these efforts both endure and dramatically expand at USF; that they encourage the natural interconnections among those groups on campus addressing ecology, economics, politics and culture; that they recognize the essential contributions of scholars and professionals in engineering, business, architecture and urban planning, transportation, health, global studies and the natural and social sciences; and that they serve to create and maintain the conditions under which humans and nature can exist in productive harmony, fulfilling the social and economic requirements of present and future generations.

MISSION

The mission of PCGS is achieving sustainable development, both locally and globally, by fostering social, economic, and environmental sustainability; we accomplish this through teaching, research, mentoring students and community outreach, as well as by generating practical knowledge and developing innovative technologies, skills, and policies.

ADMISSION & GRADUATION

ADMISSION & GRADUATION

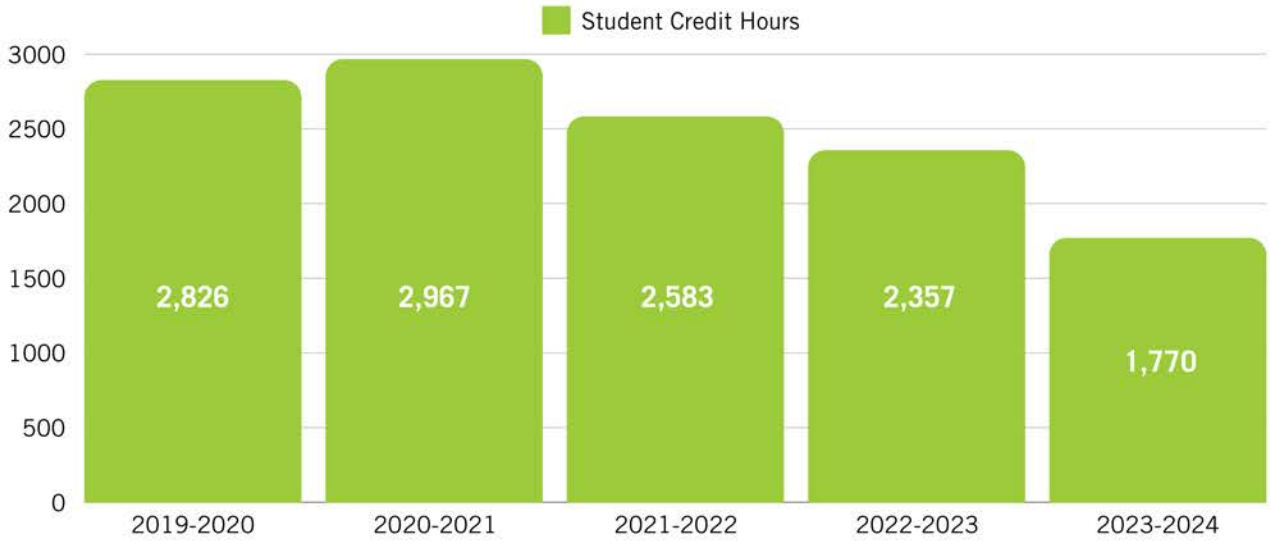
The Patel College of Global Sustainability successfully launched our new Master of Science degree in Global Sustainability in fall 2021 in five concentrations: Entrepreneurship, Food Sustainability and Security, Sustainable Energy, Sustainable Transportation, and Water Sustainability. The success of the MS program is readily apparent with more than 40% of our current active student body electing to study this degree option in just the first year, as well as comprising over 40% of admitted students.

Our Master of Arts degree in Global Sustainability was modified to include only the most relevant concentrations and it shares a similar degree structure and credit requirements as the new MS. The remaining four concentrations that comprise the MA degree include: Climate Mitigation and Adaptation, Sustainable Tourism, Sustainability Policy and Sustainable Business. We expect to discontinue Sustainable Tourism as it has not had consistent enrollment to justify the costs associated with instruction.

The new MS degree compliments the existing MA degree with a shared core of courses, and both the new MS and the MA require 36 credit hours to complete. Our graduate instruction for either degree is available in a traditional on-campus format, blended hybrid formats, or fully online.

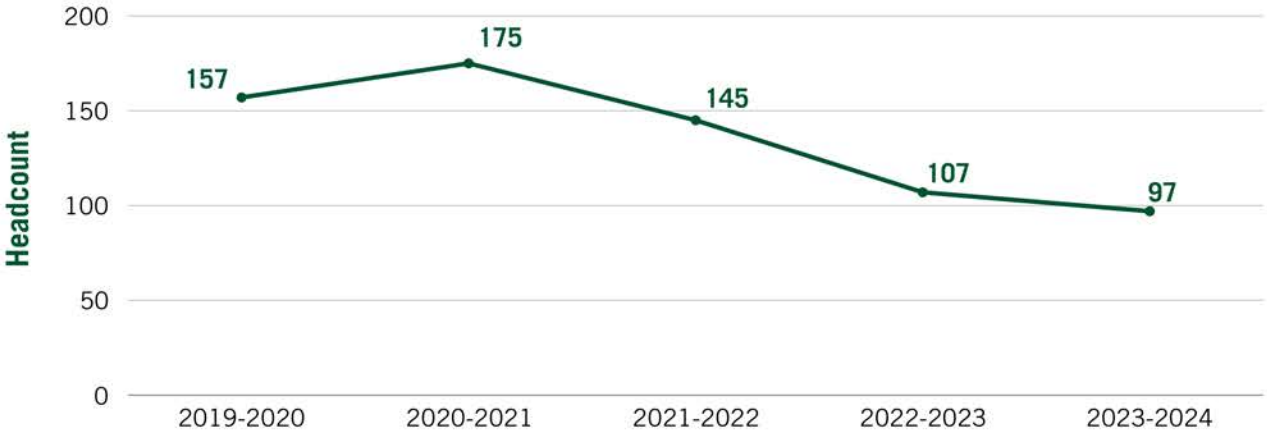
While the Patel College of Global Sustainability had maintained a consistent graduate student enrollment between 150-200 graduate students, over the last few years we have been experiencing reductions in both student enrollment as well as subsequent degrees awarded. We have consistently requested funding for additional faculty and staff to support recruitment and teaching efforts for our degree and certificate programs, with little to no increase. Additionally, we have regularly hosted graduate level courses in summer to reduce time to degree, and have needed to seek funding elsewhere to avoid over-capacity issues with our limited faculty. Lack of institutional funding to support faculty instruction is a constant threat, and the cancellation of those summer sections is likely without additional aid. Staff/faculty turnover and shortages caused the previous and current admissions cycle to remain flat, but new hires of qualified staff and faculty will hopefully cause a positive effect over the next 1-2 admissions cycles, with expected increases to occur likely by Fall of 2025.

Over the next section, we will illustrate the continuing need for staff and faculty growth during the 2023-24 academic year. Investments needed to sustain recruitment, admissions applications, enrollments and degrees awarded will be illustrated. While international applications have increased, financial support to qualified admits in the form of graduate assistantships, scholarships and similar funding opportunities cause many to cancel their admission in favor of other programs with deeper pockets. PCGS has endured numerous challenges the last several years. While we continue to produce needed SCH, an impressive time to graduation, as well as opportunities for instructors to develop and facilitate new courses and research, the replenishment of student numbers is a top priority requiring a more sustainable model, increased resources and further investment. The figures below indicate five years of student enrollment numbers at PCGS.



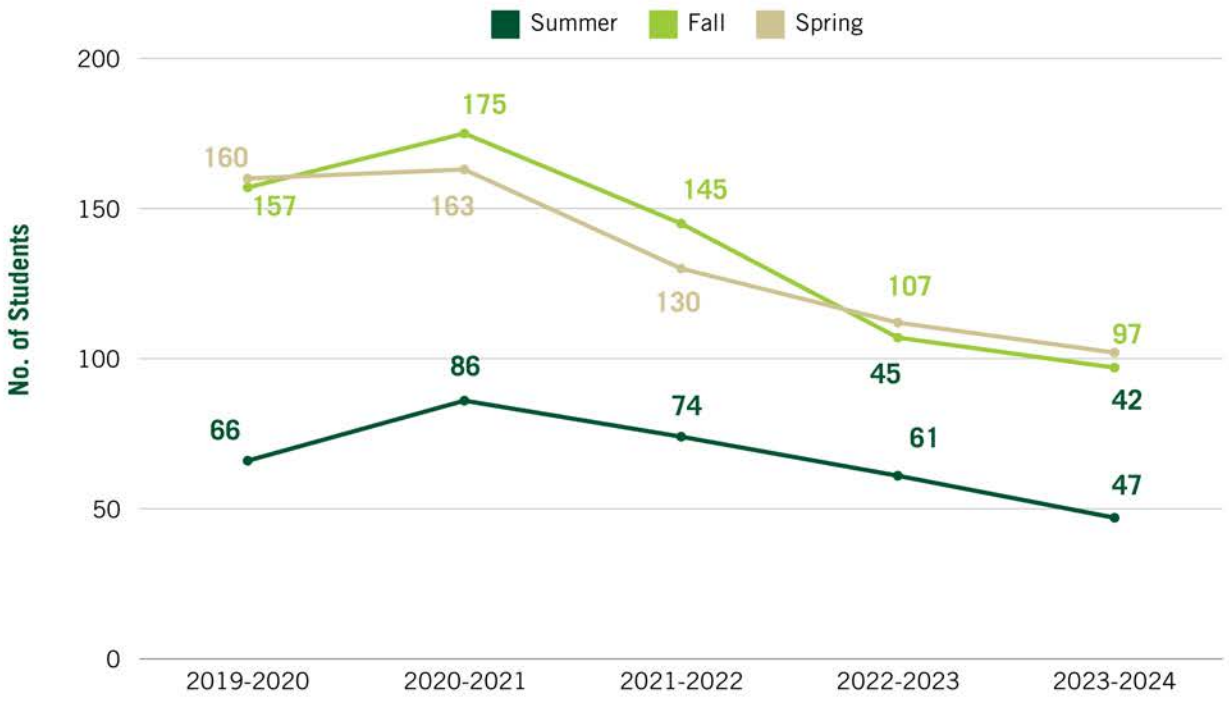
Academic Year	1-Lower	2-Upper	3-Grad I	4-Grad II	Total
2019-2020	21	45	2,706	54	2,826
2020-2021			2,905	62	2,967
2021-2022	75	51	2,396	61	2,583
2022-2023	66		2,249	42	2,357
2023-2024	45		1,707	18	1,770

GLOBAL SUSTAINABILITY, FALL GRADUATE STUDENT HEADCOUNT

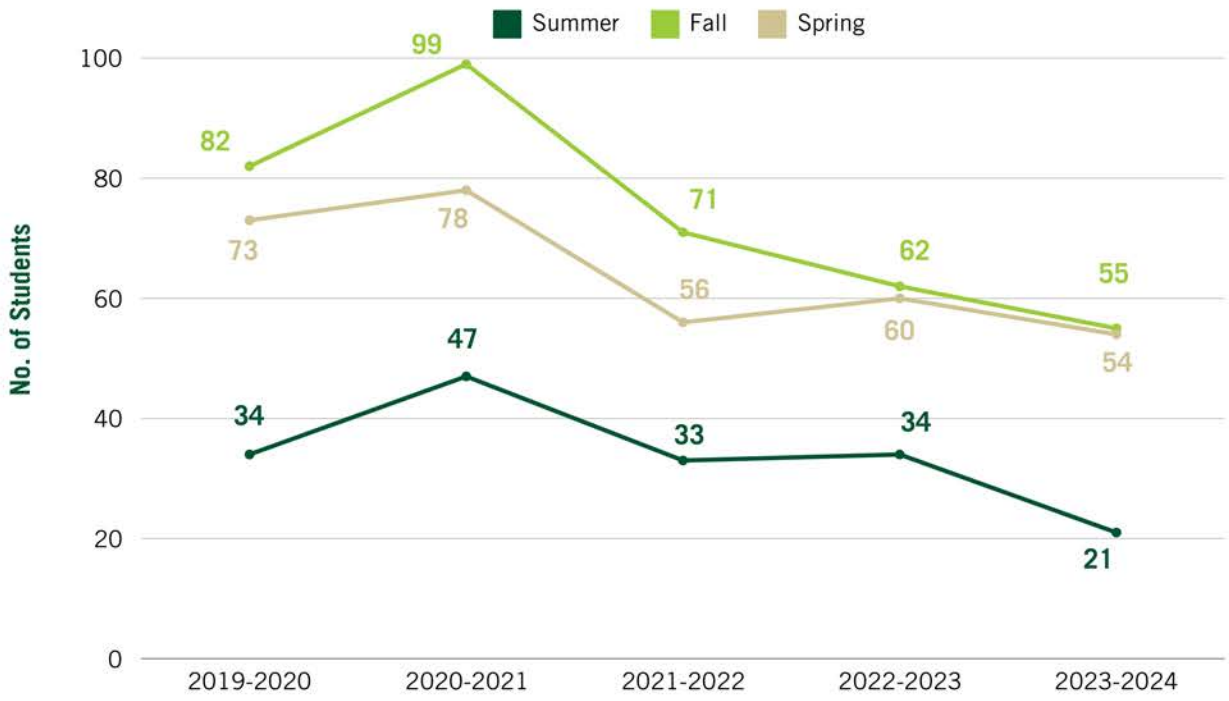


(Unduplicated student headcount for an academic year based on the most recent record of the student regardless of the number of terms attended during that academic year)

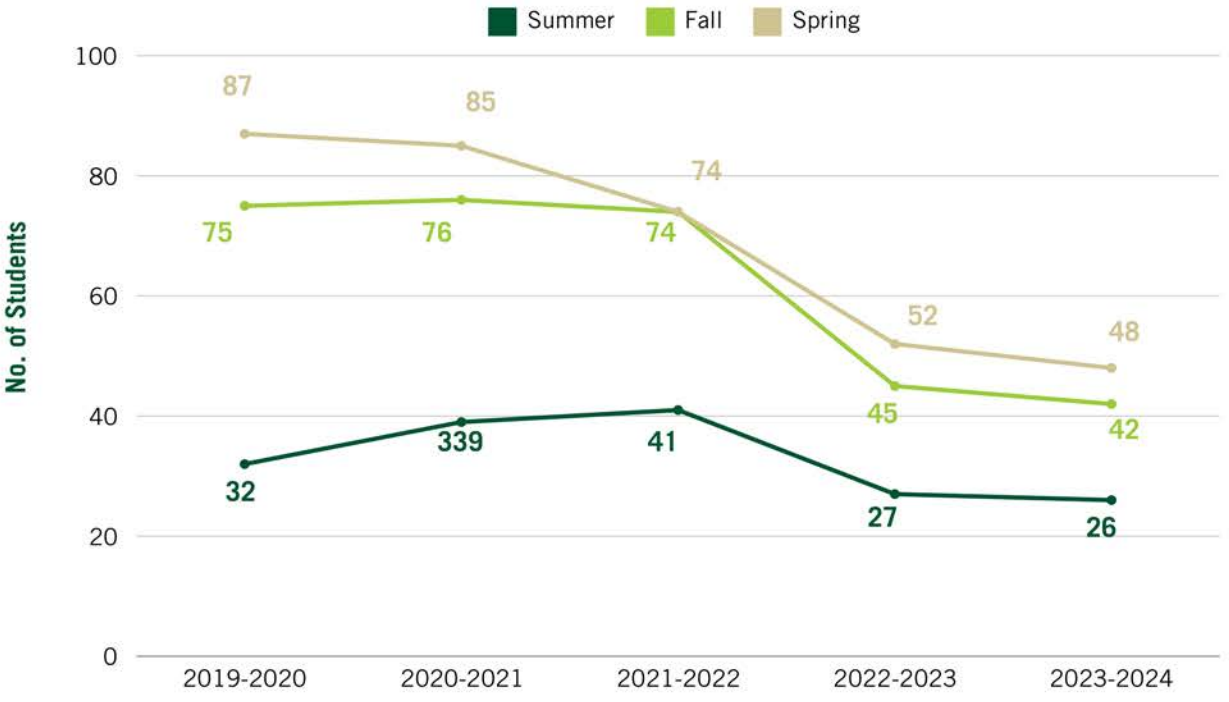
GLOBAL SUSTAINABILITY, TOTAL ENROLLMENT



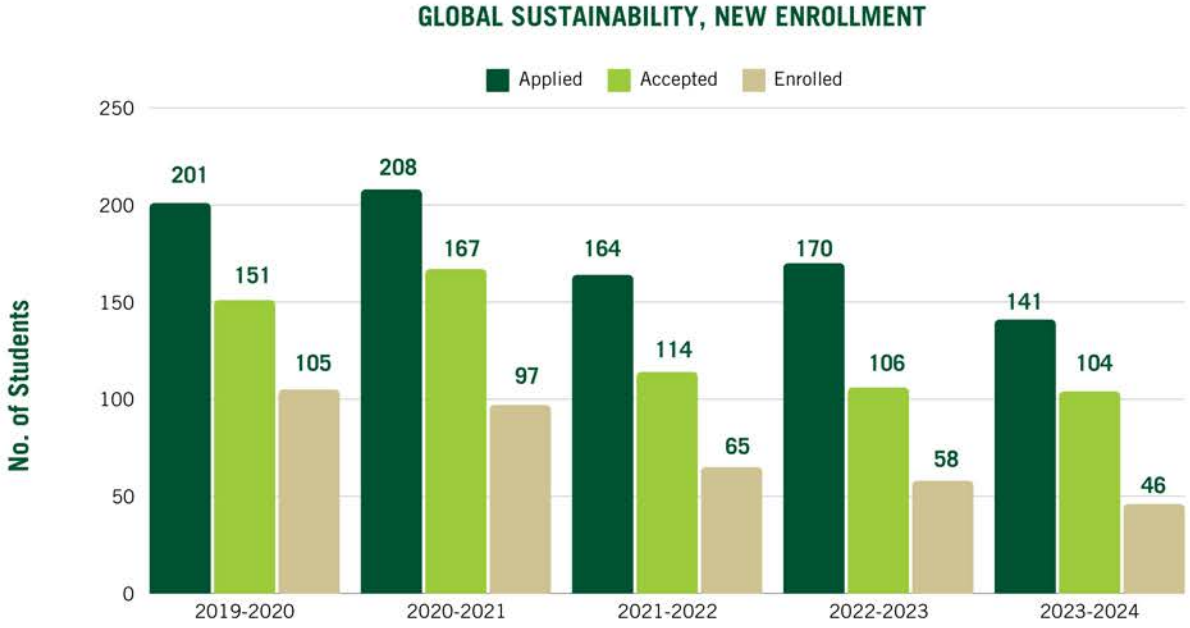
GLOBAL SUSTAINABILITY, FULL TIME ENROLLMENT



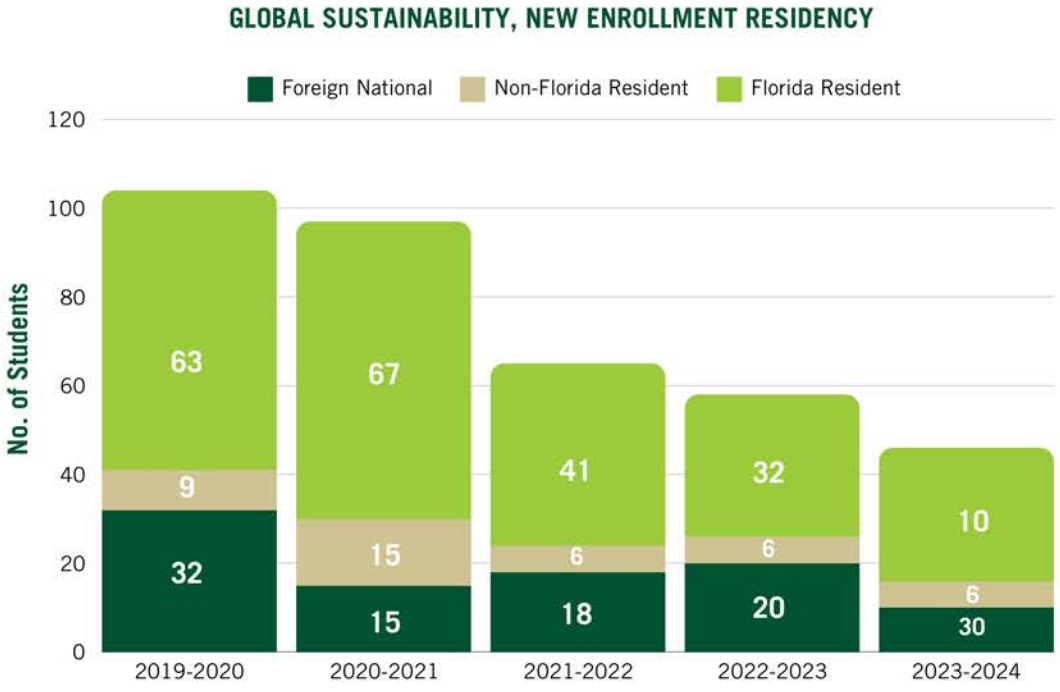
GLOBAL SUSTAINABILITY, PART TIME ENROLLMENT



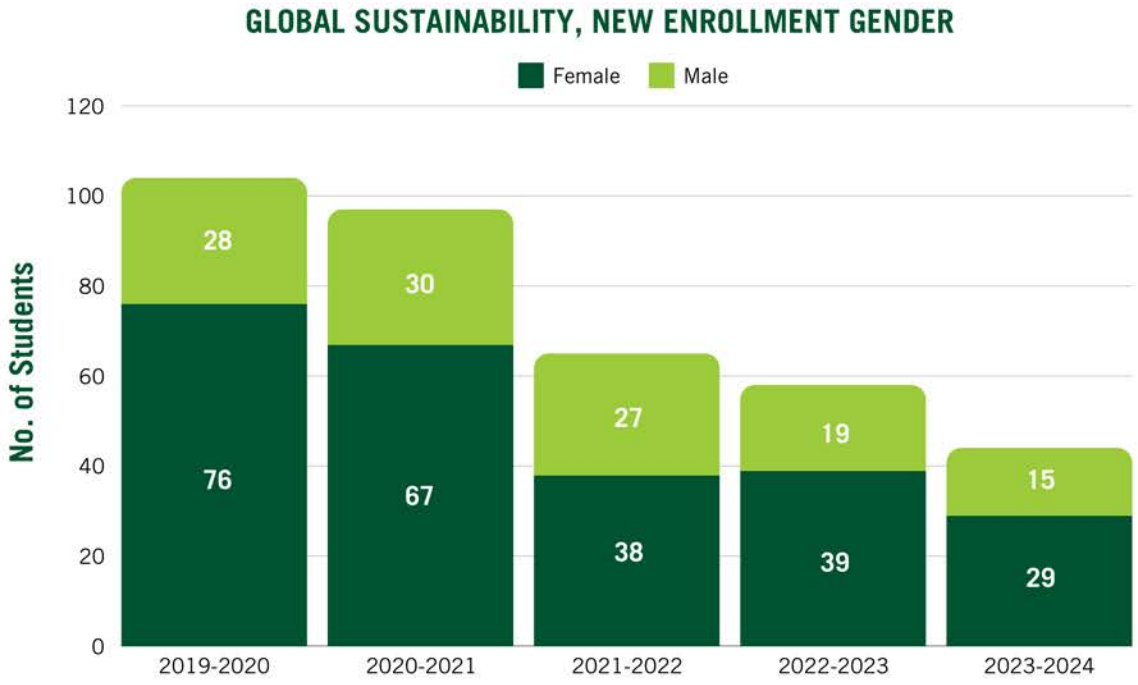
The below figure illustrates the admissions and enrollment trends over the last five years for new students.



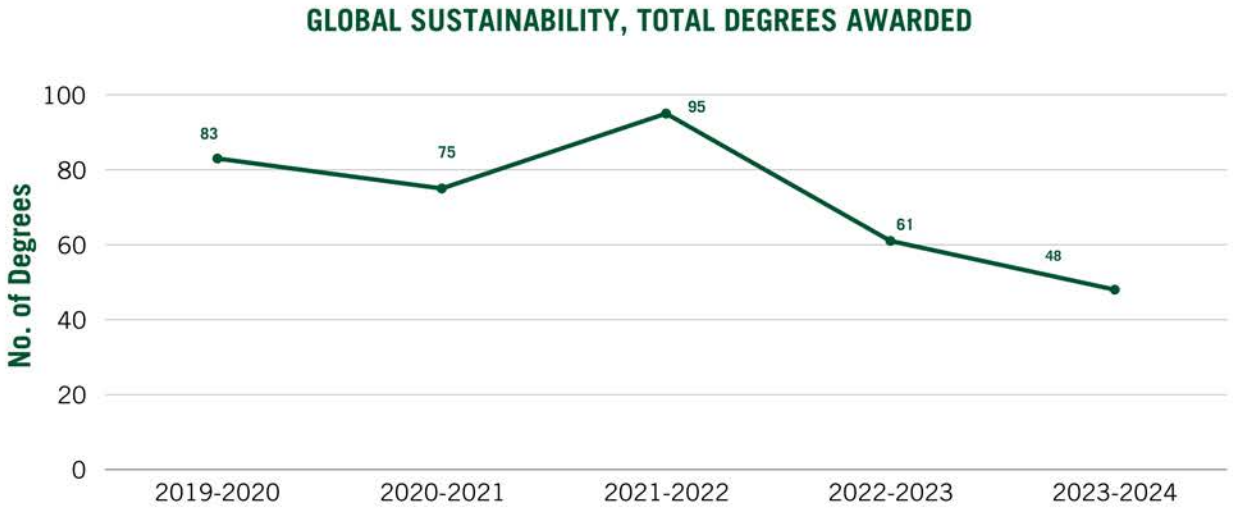
The below figure illustrates residency and enrollment trends over the last five years for new students at PCGS. A significant percentage of non-resident and especially international students enroll, currently almost 35% of our new student enrollment. International student enrollment declined during the pandemic (2020) to around 15% but rebounded to over 30% in subsequent years.



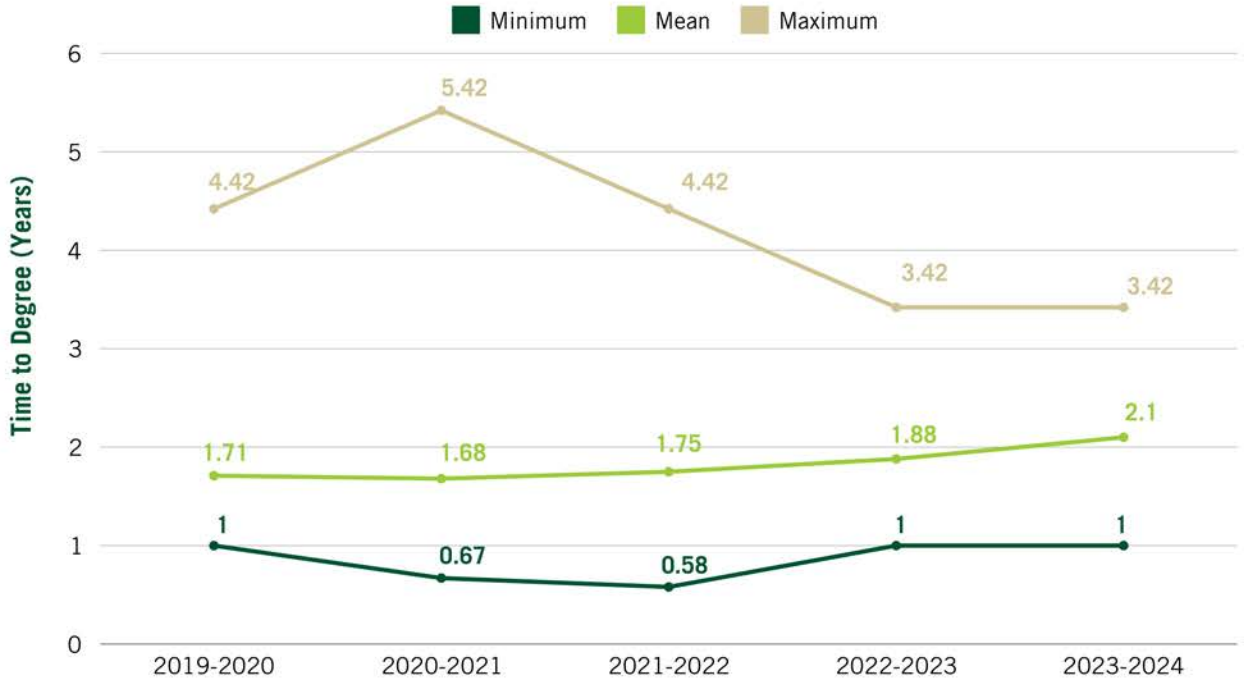
The below figure illustrates the gender distribution in enrollment trends over the last five years for new students. PCGS has a significant percentage of female students (over 50%) every year, with 2019-2020 being the highest at over 70% enrollment.



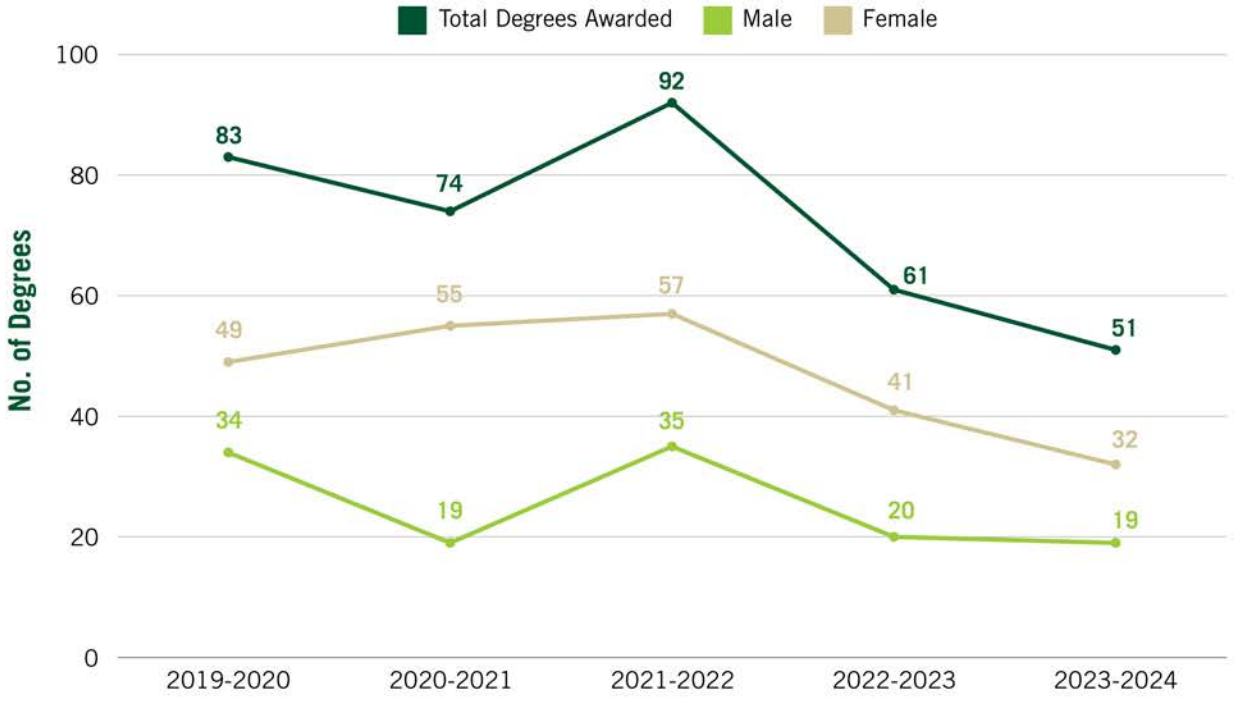
The below figures illustrate the degrees awarded trends across the last five years. The largest enrollment in 2017-2018 resulted in increased degrees in subsequent years. As anticipated, degree completions rose in 2021-2022, and declined subsequent years due to decreased enrollment.



GLOBAL SUSTAINABILITY, TIME TO DEGREE TRENDS



GLOBAL SUSTAINABILITY, DEGREES AWARDED - GENDER

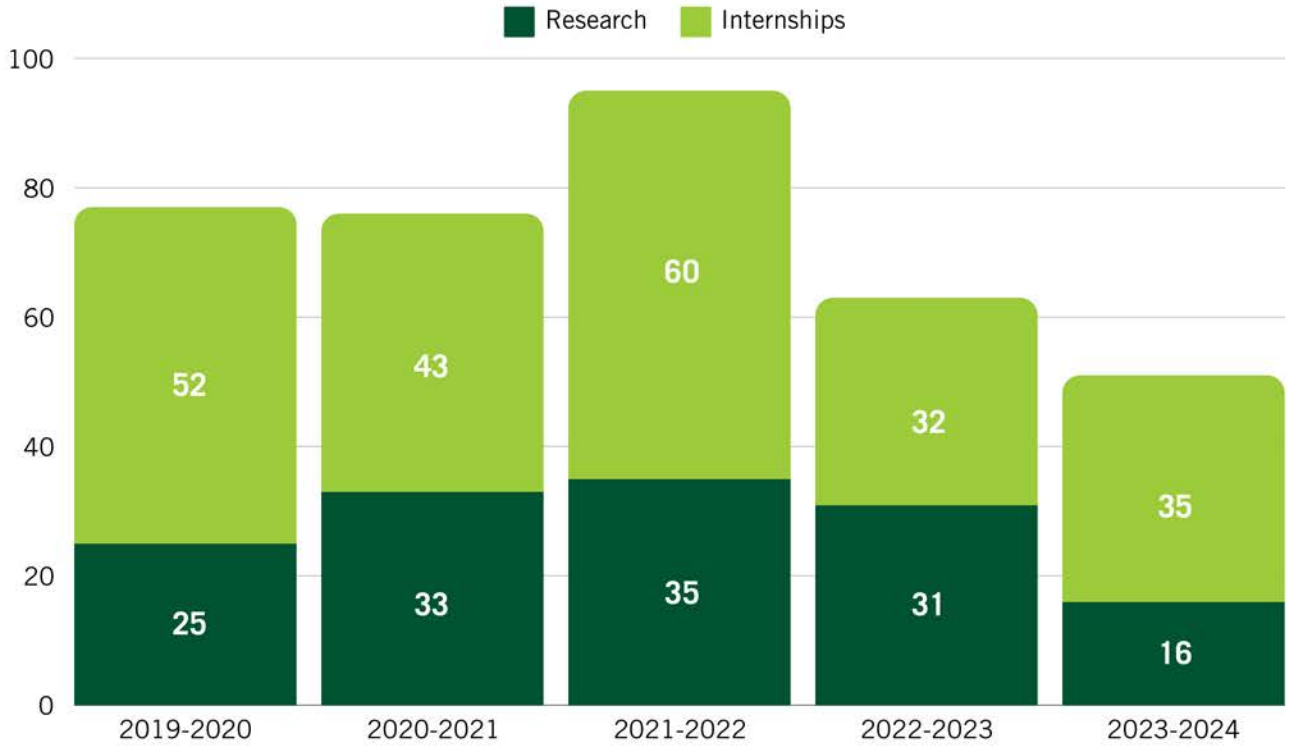


ACADEMIC CAPSTONE EXPERIENCE (ACE)

INTERNSHIPS & RESEARCH PROJECTS

The Patel College of Global Sustainability (PCGS) has a capstone program that allows students to gain both international, regional, and local perspectives on sustainability while implementing program knowledge and applications on-the-ground to solve real world problems. As part of their graduation requirements, all students in our program must complete a 3 to 6 credit hour capstone course as either an internship or research project.

The Academic Capstone Experience (ACE) program is typically completed the semester the student graduates. This capstone course can be completed during spring, summer or fall semesters. Normally a higher percentage of students elect to complete the final project as an internship with hands-on experience. PCGS students conduct these internship projects at many exciting places across the globe. There are also students who decide to conduct preliminary or basic research on a sustainability topic for their capstone based on scholarly interests, career goals, or preparation for doctoral work.



TEACHING & RESEARCH

EDUCATIONAL PROGRAMS

The Patel College of Global Sustainability offers two Masters degrees in Global Sustainability across eight concentrations. Our 36-credit program is designed to prepare students to address complex regional, national, and global challenges related to sustainability, and give them the ability to innovate in diverse cultural, geographic, and demographic settings. Most concentrations are offered in online, on-campus, and/or blended formats.

MASTER OF ARTS DEGREE

- Climate Change and Sustainability
- Sustainable Business
- Sustainability Policy
- Sustainable Tourism

MASTER OF SCIENCE DEGREE

- Sustainable Energy
- Food Sustainability & Security
- Sustainable Transportation
- Water Sustainability
- Entrepreneurship

GRADUATE CERTIFICATES

- Sustainable Business
- Climate Mitigation & Adaptation
- Energy Sustainability
- Food Sustainability & Security
- Global Sustainability
- Sustainable Transportation
- Water Sustainability

MASTER OF ARTS PROGRAM
BY CONCENTRATION

CLIMATE CHANGE AND SUSTAINABILITY

The Climate Change and Sustainability concentration emphasizes local bioregional applications of the hundred "Drawdown" solutions and better communication to the public of these and other best practices coherent with the UN Sustainable Development Goals, as well as the translation of policy and research into climate-smart mitigation and adaptation strategies that will yield sustainable and resilient communities.

Climate Mitigation and Adaptation is a no-nonsense action-oriented course focusing on how individuals, communities, and society can better implement the practical greenhouse gas "Drawdown" solutions that scientists and policymakers have agreed to. While emphasizing the urgency of the climate change problem, our course uses a hope-inspiring, real-world case study/field application and interdisciplinary approach that enables us to sidestep debate and delay, and focus on the strategic application of ancient and indigenous wisdom, good science, and both time-tested and emerging new technologies that bring all 17 UN Sustainable Development Goals within reach and can create a "just transition" to a net-zero circular economy.

The course uses state-of-the-art educational and data-visualization technologies, from Perusall to Multi- media Production to VR and AR, to help all students become powerful critical thinkers, science communicators and well-grounded science- and economics-informed climate activists.

SUSTAINABLE BUSINESS

The Global Sustainability concentration in Sustainable Business will provide a foundation for designing sustainable organizations and businesses and related concepts pertaining to sustainability. Organizations and businesses from all sectors need to develop sustainable practices and models to minimize their environmental footprint and maximize their social responsibility to all stakeholders to meet the requirements of a sustainable low carbon economy. The goal of this concentration is to provide participants with the knowledge, expertise, skills, and tools they need to create more sustainable business enterprises, and to understand evolving corporate social responsibility as well as environment, social and governance regulations.

SUSTAINABILITY POLICY

The Sustainability Policy concentration brings together courses and expertise from Patel College of Global Sustainability, School of Geosciences, and School of Public Affairs. The Sustainability Policy Concentration ties all other PCGS concentrations together, as policy (or lack thereof) directs all aspects of sustainability. Students will advance their knowledge of policy, public administration, governance, and sustainable development on an integrated platform. The demand for educated, certified, and informed professionals in areas of sustainability policy continues to grow. Private/public companies, federal and state government departments, United Nations agencies, international aid organizations, environmental NGOs, and city governments are keen to remain abreast of the ever-changing policies and governance issues related to sustainability.

MASTER OF SCIENCE PROGRAM
BY CONCENTRATION

SUSTAINABLE ENERGY

The Sustainable Energy Concentration uses classroom teaching, a team research project, student engagement through discussions, and experiential learning to prepare students for the growing field of renewable energy, which is expected to increase dramatically over the next decades, as the U.S. and other countries seek to reduce their carbon emissions by increasingly switching to renewable fuels and power.

Students are prepared for private and public sector positions of leadership and responsibility in the biofuels, solar, wind, biomass, and other renewable energy sectors. The concentration is designed for students from a wide range of backgrounds.

WATER SUSTAINABILITY

The Water Sustainability Concentration prepares students to find solutions to one of the greatest challenges on the planet, the availability of safe and clean water for sustaining life. It educates them to understand the complex local, regional, and global water-related sustainability challenges and to develop innovative and sustainable solutions. Students develop skills necessary for planning and management of sustainable water resources and green infrastructure systems. The program prepares students for careers in the public and private sectors in national and international organizations.

FOOD SUSTAINABILITY & SECURITY

The M.S. in Global Sustainability concentration in Food Sustainability and Security provides students with a solid understanding of key issues in food systems design, development, application, and management.

Focus areas include sustainable food production, food supply chains, food security and protection, food safety, health and nutrition, food waste management, and food resource development. The Food Sustainability and Security concentration also focuses on forward-thinking food systems research, developing ground-breaking food resource technologies, and fostering and strengthening collaborative partnerships with corporations, businesses, academic institutions, and not-for-profit organizations in local, regional, national, and global food system networks.

SUSTAINABLE TRANSPORTATION

The Global Sustainability concentration in Sustainable Transportation teaches methods for achieving a more sustainable transportation system and how that system fits into efforts to improve community design and the livability of urban areas. The predominant focus on automobile transportation has led to a variety of consequences that are less than sustainable such as urban sprawl, rising rates of obesity, growth in greenhouse gas emissions, habitat degradation, dependence on fossil fuels, and equity concerns. Students take concentration core courses offered by the College of Engineering.

ENTREPRENEURSHIP

The M.S. in Global Sustainability concentration in Entrepreneurship provides students with a comprehensive understanding of concepts, tools, and skills of sustainability and green technology. Focus areas include innovations and novel business opportunities in green technology, development, transportation, energy, and sustainable enterprise. The goal is to train the next generation of leaders with the ability to develop a strategic climate-focused vision, including market assessment, product design, financing, capital projects, net-zero supply chain, manufacturing operations, and talent strategy.

GRADUATE CERTIFICATES

Graduate certificates can be earned with 12 credit hours (four courses) and are perfect for professionals looking to enhance their skills and expertise, boost career advancement potential, and facilitate the advancement of new skills.

Certificates also function as a gateway into the Patel College M.A. and M.S. programs as all credits can transfer directly into the degree program.

The Patel College currently offers eight graduate certificate programs, all of which are offered fully online and on-campus.

CLIMATE MITIGATION AND ADAPTATION

The certificate program in Climate Mitigation and Adaptation is intended to prepare students to address complex regional, national and global challenges associated with climate change adaptation and resilience. This concentration/certificate program is unique as the curriculum is fully integrated to provide a systems perspective for learning and the development of an analytical perspective that will focus specifically on climate change, climate vulnerability, adaptive capacity and pathways of climate adaptation/resilience. The target student audience can come from a diverse array of backgrounds and career interests as the concentration/certificate program provides a sustainability framework to be used as a foundation for any career. The primary goal of the concentration/certificate program is to foster sustainability principles and critical thinking, equipping any student with the tools needed to enact sustainable change.

ENERGY SUSTAINABILITY

Concerns about future economic growth, standards of living, and environmental quality have made sustainable energy a top priority worldwide. The goal of this certificate program is to provide students with a solid understanding of the key principles of sustainability, its economics, and how it is practiced by the energy industry in the form of sustainable transportation fuels and electricity from natural resources with a small carbon footprint. The program will prepare students for careers in sustainability and sustainable energy.

The certificate program will provide a general foundation in sustainability and thorough understanding of all forms of energy that can support a sustainable economy. It is designed to appeal to an audience with a wide range of backgrounds and career interests by addressing energy from all angles (technology, business, economic, policy, social) unlike similar-sounding programs at other institutions, which are designed narrowly for engineering and hard science students.

SUSTAINABLE BUSINESS

The Sustainable Business graduate certificate will provide a foundation for designing sustainable organizations and businesses and related concepts pertaining to sustainability. Organizations and businesses from all sectors need to develop sustainable practices and models to minimize their environmental footprint and maximize their social responsibility to all stakeholders to meet the requirements of a sustainable, low carbon economy. The goal of this certificate is to provide participants with the knowledge, literacy, skills and tools they need to create more sustainable organizations.

FOOD SUSTAINABILITY & SECURITY

Concerns about population growth, human health, and environmental quality have made food sustainability and security a top priority worldwide. The goal of this program is to provide students with a general foundation of sustainable principles and economics and, within this context, with a specialized analysis of food systems, policy, and public health issues.

This certificate program will provide a general foundation in sustainability and a solid understanding of key issues in food systems and safety/security. The program will cover (1) the concepts, principles, economics, and finance of sustainability, as well as transition towards a green economy; (2) food production, distribution, marketing, disposal, and policy; and (3) food safety and security regarding biological, chemical, and physical threats.. It is designed for an audience of a wide range of backgrounds with career interests in the field of food sustainability and security.

WATER SUSTAINABILITY

Skilled sustainability professionals are needed in order to create effective solutions to the complex global water challenges. This certificate program will equip students with the theory, practice and skills to guide communities and the different sectors in issues of water management. It will enable students to understand the complex regional and global water-related challenges and to develop innovative and sustainable solutions. This program strives to meet the demand of graduates and professionals who would like to gain the necessary knowledge and skills to enhance their career opportunities in a reasonable time. The program is also attractive for many students who would like to use this as a path towards their master's program in global sustainability.

This certificate program is based on a multidisciplinary approach to sustainable water management. It will present water management issues from a technological, economics and policy perspective. The program will provide students with general knowledge on sustainability and deeper understanding of water management in a sustainable manner. It is open to students from multiple disciplines (Engineering, natural sciences and social sciences) and will build knowledge and skills for holistic and integrated approached to water management in the face of complex global challenges.

SUSTAINABLE TRANSPORTATION

The predominant focus on automobile transportation has led to a variety of consequences that are less than sustainable such as urban sprawl, rising rates of obesity, growth in greenhouse gas emissions, habitat degradation, dependence on fossil fuels, and equality concerns. The goal of this certificate is to provide students with the knowledge, literacy, skills, and tools they need to develop plans for sustainable transportation.

The certificate in Sustainable Transportation teaches methods for achieving a more sustainable transportation system and how that system fits into efforts to improve community design and the livability of urban areas.

GLOBAL SUSTAINABILITY

The certificate program in Global Sustainability ensures understanding of the principles of sustainability and the interdependence of the environment, the economy, and social systems to become effective stewards of natural resources and the environment. The program seeks to advance students' ability to understand and address real-world environmental problems; apply a systems approach to manage social- ecological systems; and develop critical thinking skills for affecting decisions involving environmental policy, resource management, biodiversity conservation, and human health. The program takes a pragmatic systems perspective and holistic approach to address issues of sustainability that consider water, energy, and food sustainability and security.

Students completing the certificate will achieve an advanced understanding of the sciences of sustainability and its real-world application and increase their opportunities for job advancement. The program will allow students from diverse backgrounds to pursue interests in sustainability sciences in some depth without requiring the breadth of course work and extensive research required for the master's degree.

INTERDISCIPLINARY RESEARCH AT PCGS

The Patel College of Global Sustainability conducts applied research that creates sustainable solutions for achieving sustainable development in a rapidly changing world. The research is based on USF's broad, interdisciplinary expertise in energy, water, food, public policy, global security, and social equity. This interdisciplinary approach provides a solid foundation for developing unique solutions to emerging and existing problems.

KEY RESEARCH AREAS

- Renewable energy, fuels, and products
- Red tide Mitigation
- Greenhouse Gas (GHG) Inventory, Planning and Reduction Measures
- Global climate change and the associated uncertainties
- Integrated urban water management, appropriate and low-cost technologies
- Urban agriculture and community gardens
- Food systems and sustainable diets
- Elimination of "wastes" through nexus thinking and circular economy best practices
- Nanotechnology and sustainable manufacturing
- Circular Economy

FOCUS AREAS

ALGAE TECHNOLOGY

Algae represents a promising source of alternative fuels and bioproducts, but with the added benefit of serving as a sink for carbon dioxide and wastewater. Using our experience in algae engineering for the production of chemicals and fuels, we use native algae strains in our lab and outdoor facilities to generate and commercialize algal products under real-world conditions.

Algae synthesizes omega-3 fatty acids, which are essential to human nutrition and health. Algal lipids can be converted to biodiesel and sustainable aviation fuel (SAF) via chemical processing, whereas phospholipids (found in algal cell membranes) are valuable in the cosmetics industry. Live algae fed to fish result in higher aquaculture production and algal protein can serve as animal feed and fish meal. Our applied research, supported by the private sector and the State of Florida, closes the gap between innovative ideas and the marketplace.

OUR EFFORTS ARE FOCUSED ON:

- Design of cost-effective cultivation platforms
- Scale-up and operation of algae production systems in water
- Nutrient and energy management
- Product development (fuels, cosmetics, nutraceuticals)
- Intellectual property management

BIOFUELS AND BIOPRODUCTS FROM BIOMASS

Biomass is an abundant and inexpensive domestic feedstock for biorefineries designed to produce value-added products and clean power. Florida generates sugar cane bagasse and yard waste in South Florida, citrus peel and agricultural residues in Central Florida, and wood biomass in Northern Florida. We test and optimize the conversion of various biomass species, such as sweet sorghum and sugarcane bagasse, to sugars in scalable and cost-effective ways through biochemical conversion. First, biomass is pretreated using mild conditions and green chemistry principles. Then, cellulase enzymes are employed to convert cellulose to simple sugars. Those sugars can form the basis of a sustainable green economy, as they are readily convertible via fermentation to a variety of chemical precursors, such as organic acids for manufacturing biofuels, plastics, resins, and other renewable products. In essence, biomass can replace oil as the source of chemicals essential for consumer products.

BIODIESEL AND SUSTAINABLE AVIATION FUEL (SAF)

Fuel diversification is needed for diesel and jet engines. The United States consumes 57 billion gallons of diesel and 20 billion gallons of aviation fuel annually, hence depending significantly on foreign oil. Such dependence renders the country vulnerable to political instability around the world. Domestic biofuels can make the country more energy self-sufficient.

We have technical and business expertise in biofuel production with a focus on sustainable technologies and resources:

- Biodiesel production using supercritical fluid technology
- Biodiesel from used vegetable oils
- Biodiesel from algal lipids
- SAF from the inedible cover crop Brassica carinata (supported by the USDA)

Production of biofuels is conducted in batch and continuous modes. We are available to assist entrepreneurs, companies, and communities in the production, distribution, and marketing aspects of their biofuel business.

WATER SANITATION AND HYGEINE

Funded by: National Science Foundation

This project engages USF faculty and U.S.-based students to conduct WASH research in partnership with faculty, students, and communities in Ghana. The project includes research activities in water treatment, sanitation and community engagement. In the summer of 2023, they worked with faculty at the University of Cape Coast and high school students at the Ghana National College in authentic science research using biodigesters as a wastewater treatment technology. The project developed teaching and research materials used as part of the school curriculum for science teaching.

ONGOING AND PLANNED ACTIVITIES

Based on the project outcome of summer 2023, they have been working on two publications that involved the students and the partners in Ghana. In preparation for the summer 2023 activities, they advertised the applications for participation and updated the website with the latest information about the project (https://www.usf.edu/nsf-ires/).

In 2023, the faculty at PCGS along with colleagues at Civil and Environmental engineering and college of education partnered with collaborator at Shippensburg University, Pennsylvania and were awarded funding from another NSF-IRES project. The project will involve 15 students over a period of three years, and they will travel to West Africa for international research experience on the impact of onsite sanitation and saltwater intrusion on shallow ground waters in coastal communities. This project will be implemented over the next three years.

GREENHOUSE GAS EMISSIONS IN TAMPA BAY

Funded by: US EPA

This project engages PCGS faculty and students to analyze GHG emissions in the Tampa Bay region (which includes four counties) and develop climate action plan. Faculty at PCGS were funded by USEPA for Climate Pollution Reduction Grant. This project is funded from 2023-2027. It involves at least two graduate assistants every semester to conduct data collection and analysis.

ELIMINATION OF "WASTES" THROUGH NEXUS THINKING AND CIRCULAR ECONOMY BEST PRACTICES

2023 was a watershed year for our "trashcrete" upcycling research project as we were able to go beyond past limitations and upgrade our smaller single axis "Precious Plastics Shredder" to a double-axis unit more than 4 times the size. The funding came from the Elizabeth Moore Foundation. The Rosebud Continuum also responded to the call to eliminate wastes and move toward a circular economy and the home and community scale by purchasing a recycled glass bottle crusher to create useful cullet out of discarded beer and wine containers and glass jars, and our graduate student Kailyn Lawson was able to do her capstone on the tangible effects that local waste size reduction creates. She recruited 4 other students to create a group project for the ASU Ten-Across Student Climate Solutions Competition and while we did not win, we were runners up for the popular vote.

Having a robust plastic and glass shredding solution enabled students and alums this year to go into high gear in our work to further solve the "waste" issue at the "think locally and thereby act on the global" level by creating a best practice use for otherwise "useless" materials. We continue to prove the utility of "organic residuals" (i.e. food and toilet wastes) through our robust biodigester research and were even able to export the solution in 2023 with builds of local biodigesters and composting toilets with the Muscogee indigenous people (May 2023), Ukrainian refugees in rural France (Summer 2023) and for an NGO kitchen in Medellin Colombia. Now, through the upcycling practice of making "trashcrete" decorative and permeable paving stones (helping to improve the greenscape, aid in ground water recharge and mitigating flooding) and iconic Florida Wildlife sculptures, we are close to a 100% domestic garbage solution on the technical level (sociopolitical barriers continue to be studied).

FLORIDA WILDLIFE CORRIDOR CURRICULUM PROJECT WITH NATIONAL GEOGRAPHIC EXPLORER JOHN FRANCIS "THE PLANETWALKER"

The Trashcrete Wildlife sculptures are part of an ongoing project our students are involved with run in conjunction with the Florida Wildlife Corridor commission and a team of National Geographic and University educators put together by NG Explorer in Residence John Francis (PlanetLines WI, Leslie College MA, University of Idaho, Purple Mai'a Foundation, Hawaii) who made repeated visits to PCGS and Rosebud throughout 2023 to meet with faculty and students and officials and connect us with indigenous Seminole leaders and the FWC. In addition to the STEAM project sculptures, the initiative this year has involved the creation of wildlife murals by our students at Rosebud (the hub for the meetings) and participation and presentations at the Disney Nature Reserve with the Nature Conservancy and the Girl Scouts, and at the Florida Wildlife Corridor Connect conference in Orlando.

The work we have been doing in digital twin XR (VR/AR extensible reality) "world building" in our Envisioning Sustainability and Sustainability Design Laboratory courses was featured at the conference and our students served as docents in the technology display room, introducing the public to wildlife planning improvements by taking them on a journey through the history of the I4 highway and the salubrious impacts of the new wildlife underpasses, visualized in VR, using the 6 Oculus Quest headsets provided to PCGS by Debbie Kozdras from a grant she wrote for us with the Stavros Center for Economic Development.

NEW PCGS CAREER PREPARATION COURSE: "SUSTAINABILITY DESIGN LABORATORY"

A direct result of the collaboration with the PlanetLines/FWC project with the Nat Geo Educators was our collaboration with the talented production team at USF Innovative Education studios to create and launch a new hands-on skill building course for careers in sustainability called the "Sustainability Design Laboratory." In this course, which extends the Envisioning Sustainability communications course into the digital creation space, students work on state-of-the-art data visualization computers with Dr. Culhane in the USF 3D Access Lab to master audio-visual, GIS and XR production skills used by urban planners and architects, museums, zoos and aquaria, environmental NGOs, news agencies and film, television and game producers to bring landscape changes, environmental effects and data visualizations (for example climate effects) to life.

ONGOING AND PLANNED ACTIVITIES WITHIN THE F-E-W NEXUS

As a result of 2023 summer research visits, Dr. Culhane conducted to work with Ukranian refugees in rural France and peasant families in the highlands outside Medellin, Colombia he and his students have been researching and developing the "function stacking" use of Solar CITIES IBC tank biodigesters (which Culhane innovated in Egypt in 2006) to treat climate change affected fruit and vegetable harvest waste while at the same time acting as anchors for "mobile garruchas".

Garruchas are "ziplines" that farmers use to radically lower the labor and costs associated with transporting water to an agroforestry plantation and produce from the farm to distribution areas. In the case of the cacao famers of Colombia (as we both witnessed first-hand in-situ and as described by our two PCGS students who are from family smallholder farms in Colombia) the global cacao economy and the survival of farming families is being severely impacted by at least 3 species of Moniliophthora and Phytophthora fungi. Culhane and students from the Waste Not Want Not and Climate Mitigation classes have teamed up with students from Johns Hopkins University and Mercy University to demonstrate the efficacy of this low-cost technique for providing infrastructure and fertigation and waste elimination in the difficult mountainous regions where cacao and coffee and other important crops are grown. Culhane intends to work with Dr. Kebreab Gebremichael and students working with him in Ghana (the world's second largest chocolate producer) to integrate their Slow Sand Schmutzedecke filter into the biodigestion arsenal for more effective water treatment, creating a long-term research project with Food, Energy Water Nexus applicability around the world. Initial tests at Rosebud using biodigesters as garrucha anchors have proved successful and because Dr. Gebremichael's students already built a slow sand filter at Rosebud, 2024 will be the year to refine the hypotheses here at home before bringing them out into the field next year.

URBAN AGRICULTURE AND COMMUNITY GARDENS:
CITY OF TAMPA'S GROWING COMMUNITY GARDENS AND EDUCATION INITIATIVE
Funded by: United States Department of Agriculture (USDA), Natural Resources Conservation Services (NRCS), Grant Agreement: $300,000

This research project is intended to build upon connections between partners by providing comprehensive, practical applications to expand community gardens through sustainable urban agricultural initiatives. The City of Tampa will reorganize community gardens into "urban clusters" to increase efficient service delivery of community-level food distribution by integrating innovative urban agricultural education and technology into local food systems. As a sub-recipient of the grant, the Patel College of Global Sustainability will conduct research to analyze and evaluate the grant outcomes and monitor indicators of the project. Compensation for evaluative services will be capped at $9,000.

FOOD SYSTEMS AND SUSTAINABLE DIETS:
BOOK CHAPTER: Chapter 17 in Routledge Handbook of Sustainable Diets (2023)

Breastfeeding: The Foundational Strategy to Strengthen Sustainability in Infant Nutrition and Development.
Joseph W. Dorsey, Ph.D. and Marian E. Davidove, M.A., RDN

This chapter illuminates how breastfeeding can contribute to sustainable diets for infants and children. We offer insights with parent(s) building a holistic approach and strategies for introducing solid food. Breastfeeding, more than using formula, can be a substantial foundation as part of sustainable diets as it enables lactating mothers, those who are able to use this method, to provide bonding time with the child, along with a cost-effective source of nutrition. This inquiry considers ways to promote and sustain breastfeeding over time. This chapter considers the complexity and nuances that can be involved with breastfeeding. We include the biological, economic, societal, cultural, and environmental aspects of breastfeeding. Ways to foster social arrangements and community norms for experienced breastfeeding women and parents to offer coaching for new parents are encouraged. We conclude with descriptions of the long-term implications of sustainable diets in early childhood nutrition and human development.

ELECTRIFICATION PROJECTS WITH TAMPA INTERNATIONAL AIRPORT

Collaboration with Tampa International Airport to research, evaluate and recommend sustainable practices for implementation that included back-up power for airsides, deployment of EV charging stations and Automation of Water and Energy Meters using IoT sensors.

GREENHOUSE GAS EMISSIONS IN TAMPA BAY

Funded by: US EPA

This project engages PCGS faculty and students to analyze GHG emissions in the Tampa Bay region (which includes four counties) and develop climate action plan. Faculty at PCGS were funded by USEPA for Climate Pollution Reduction Grant. This project is funded from 2023-2027. It involves at least two graduate assistants every semester to conduct data collection and analysis.

USF SUSTAINABILITY PITCH COMPETITION

The Nault Center for Entrepreneurship had the USF Sustainability Pitch Competition in which a PCGS student won first prize (Dylan Wilbur – Spiral Farms). The USF Sustainability Pitch Competition gives students the opportunity to pitch their businesses and rewards active identification and validation of sustainable business models.

Participants in the competition have an opportunity to define their ideas in commercial terms and to compete for substantial cash prizes that could be used to further the commercialization of their business ideas.

MS & PHD RESEARCH

Dr. Kebreab Ghebremichael collaborated with faculty at the College of Engineering as a co-supervisor of masters and Ph.D. students. One of the Ph.D. researchers focuses on a systems thinking approach to conducting life cycle analysis of multifunctional plants. The study involves life cycle assessment and systems modeling. The second PhD student is studying the resilience of water utilities in the Tampa Bay Area under the threats of climate change with a particular focus on saltwater intrusion associated with sea level rise. The PCGS faculty secured $80,000 for this Ph.D. study from Tampa Bay Water.

Dr. George Philippidis served as co-major advisor of a Ph.D. student from Chemistry (graduated December 2023) and as a member of the dissertation committees of 4 students from Civil and Environmental Engineering, Integrative Biolog, Education, and Chemical Engineering. He also mentored a postdoctoral fellow (Bioinformatics) and two undergraduate students (Chemistry, Integrative Biology) in his Biofuels & Bioproducts Lab.

Dr. Dorsey served as a member of the dissertation committee for a Ph.D student in Geography in the School of Geosciences. The student is tentatively studying racial capitalism, racial urbanism, and public parks as a historical-geographical exploration of environmental justice in St. Petersburg, Florida. He is also a member of the thesis committee for a master's degree student in Anthropology in the College of Arts and Sciences. The student is tentatively studying how garden and food literacy expands understanding of self-efficacy and personal power in school-aged children.

Dr. Ghebremichael collaborated with **Dr. Haldar** in a project that was funded by USEPA. The project aims to develop GHG inventory and projections for 2050 from the Tampa Bay Region (Hernando, Hillsborough, Pasco and Pinellas). The project also identified key GHG reduction measures and developed climate action plan for the region. The project involved two PCGS graduate students. Based on the climate action plan developed in this project, the Tampa Bay Regional Planning Council has led several Metropolitan Statistical Areas (MSAs) in Florida and submitted for the implementation grants in the amount of $200 million from EPA. The participating MSAs are Sarasota and Manatee County, Jacksonville, Orange County and the Tampa Bay region.

COMMUNITY ENGAGEMENT & OTHER ACTIVITIES

COMMUNITY ENGAGEMENT & OTHER ACTIVITIES

Dr. George Philippidis co-mentored a team of 7th-graders from a Sarasota middle school, whose algae project was selected by NASA in a national competition for execution at the International Space Station in 2023. He also continued to serve in the steering committee of the Tampa Bay Clean Cities Coalition and USF's Student Green Energy Fund.

Dr. Thomas Culhane "leveled up" the ongoing commitment to community engagement with the Rosebud Continuum Eco-Science center in Land O Lakes (now in its 8th year!) by helping to garner funding for, installing and training PCGS students and community members in the use of a recycled glass bottle crusher and a large two-axis plastic shredder. Together they researched, developed and tested a community formula for "trashcrete", a 1,2,3 blend of portland cement, #7 ostensibly "unrecyclable" plastic shred and waste glass cullet. From this material they created two large "trash art" sculptures of local wildlife (a giant gopher tortoise and iconic Florida black bear) and multiple types of decorative and useful paving stones, including permeable pavement for the solar golf carts they've created in previous projects. These "upcycling" projects, which look indistinguishable from sculptures made from "virgin materials" were featured on WMNF Public Radio and in an upcoming WEDU documentary film.

Dr. Kebreab Ghebremichael worked with schools in Ghana on a water, sanitation and hygiene project that was funded by NSF. The project resulted in authentic science research applications for high schools. Booklets and multiple supplementary documents were prepared to help teachers and students use them in their research and curriculum.

Dr. Pradeep Haldar participated in Tampa International Airport and Raymond James Earth Day Expo events. He also worked with students as consultants-in-training on practical hands-on projects with TD Synnex, Masonite, and Tampa International Airport. He completed the Priority Climate Action Plan for the Tampa Bay Region in collaboration with Tampa Bay Regional Planning Council, facilitated the signing of an MOU with Tampa International Airport, participated as judge in reviewing applications for the Sustany Foundation's annual Sustainable Business Awards, and moderated a panel discussion that included students from PCGS at the Florida Recycles Day conference organized by Florida Recycles Partnership Foundation.

10TH ANNIVERSARY CELEBRATION

The USF Patel College of Global Sustainability celebrated its 10th Year Anniversary Celebration and All-Class Reunion and Alumni Conference with honored guests including Tampa Mayor Jane Castor; PCGS founders Drs. Kiran C. and Pallavi Patel, who received the Global Sustainability Award for Decades of Service to Humanity; oceanographer and explorer Dr. Sylvia Earle, who received the Lifetime Achievement in Sustainability award; and Maryann and Sonny Bishop of Rosebud Continuum, who received the Esteemed Sustainability Partner Award. The anniversary sustainability conference included alumni and current student keynotes, as well as panels featuring PCGS alumni working in various sustainability fields.

STUDENT DEVELOPMENT

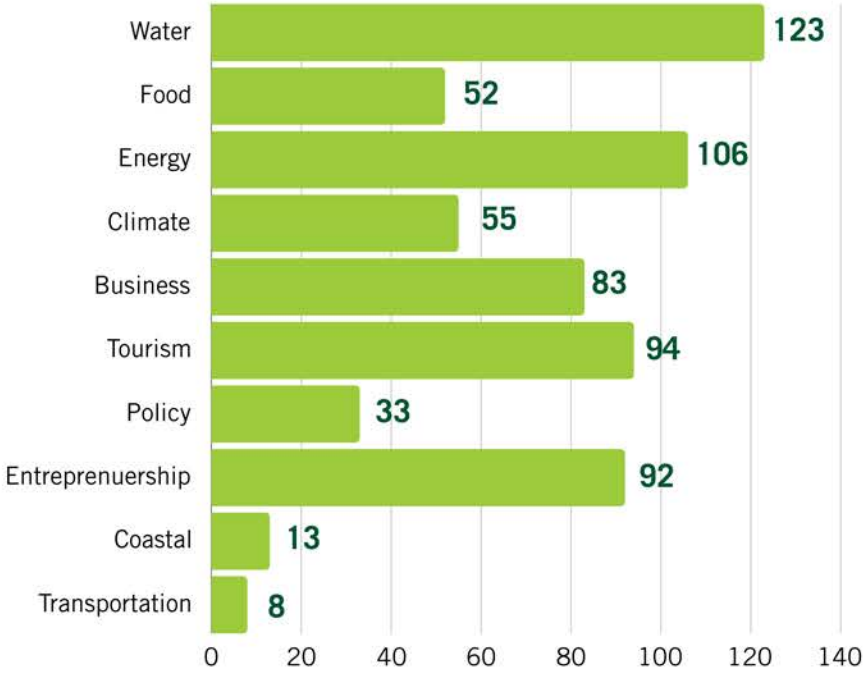
OFFICE OF STUDENT DEVELOPMENT

The Office of Student Development at PCGS offers student development advising to all students and alumni to prepare them for careers in the sustainability field. These personalized advising sessions include crafting Student Action Plans, which highlight particular skill sets that can be acquired during the student's time at the College. Students are provided with a PCGS Student Development Handbook, which includes details about suggested certifications, relevant professional organizations, and specific companies that are hiring graduates in the field of sustainability, as well as information about the University's Career Services—all of which are accessible via the college's website. The Office of Student Development offers several workshops each semester that focus on building students' professional skills. The program hosts a Sustainability Speaker Series each semester, bringing sustainability professionals to the College. Speakers have represented a variety of organizations, such as Coca-Cola Florida, Jacobs Engineering, MOSAIC, Duke Energy, Tampa Electric, Florida Fish and Wildlife Conservation, NOAA, and the local Environmental Protection Commissions, among others. The Student Development program also organizes training at the College for relevant environmental and sustainability certifications, such as LEED GA, Envision ENV SP, WELL AP and courses in Lean Sigma Six.

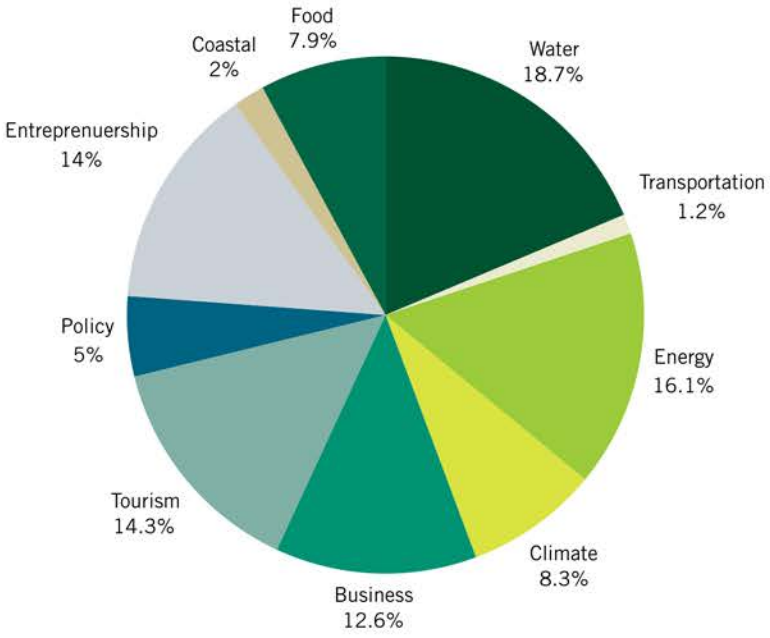
RECENT ALUMNI HIRES

- Sarah Hiscock—Water Quality Environmental Specialist—Charlotte County Utilities
- Savannah White—Senior Planner, CFM—Monroe County BOCC
- Dorothy (Dot) Bourgeois—Operations coordinator—The Center for Planning Excellence
- Tyrek Royal—Planner II—Hillsborough County Planning Commission
- Jessica Piñeros—Learning & Member Engagement Manager—Sustainable Purchasing Leadership Council
- Austin Smith—Zero Waste Specialist—City of Gainesville
- Victoria Hart—Navigator for Southeast Florida—Pilot Project facilitated by Geos Institute
- Berta Garcia Girones—Zero Waste Outreach & Engagement Program Manager— Apple
- Angela Fama—Environmental Scientist—EPC of Hillsborough County

GRADUATE NUMBERS BY CONCENTRATION



GRADUATE PERCENTAGES BY CONCENTRATION



SUSTAINABILITY SPEAKER SERIES

FALL 2023

- September 9—Michael and Deborah Kozdras—Renewable Energy
- October 4—Maryann and Sonny Bishop—Rosebud Continuum
- October 11—Buck Rollings—Expert Arborist
- November 13—Cassie Cordova—Sustainability Division Manager—City of Clearwater

SPRING 2024

- February 7—Frank Nunez—Program Planner—USF Nault Center for Entrepreneurship
- March 26—Neil Beckingham—Senior Manager, Sustainability—Mosaic Company
- April 3—Lauren Monti—Senior Marketing Coordinator—Iconergy

FACULTY PUBLICATIONS, PRESENTATIONS, AND GRANTS

FACULTY PUBLICATIONS

1. Arora, N., Lo, E., Legall, N., Philippidis, G.P. (2023) "A Critical Review of Growth Media Recycling to Enhance the Economics and Sustainability of Algae Cultivation", Energies 16, 5378, https://doi.org/10.3390/en16145378.
2. Merz, C.R., Arora, N., Welch, M., Lo, E., Philippidis, G.P. (2023) "Microalgal Cultivation Characteristics Using Commercially Available Air-Cushion Packaging as a Photobioreactor", Scientific Reports 13, 3792, https://doi.org/10.1038/s41598-023-30080-6.
3. Arora, N., Philippidis, G.P (2023) "The Prospects of Algae-Derived Vitamins and Their Precursors for Sustainable Cosmeceuticals", Processes 11(2), 587, https://doi.org/10.3390/pr11020587.
4. Martin, J., Philippidis, G.P. (2023) "Mixotrophic cultivation of Chlorella vulgaris in Brassica carinata meal hydrolysate for enhanced lipid and lutein production", Biomass Conversion and Biorefinery, https://doi.org/10.1007/s13399-023-03854-1.
5. Dorsey, Joseph W. and Marian E. Davidove (2023) "Breastfeeding: A Foundational Strategy to Strengthen Sustainability in Infant Nutrition and Development." Chapter 17 in Routledge Handbook of Sustainable Diets. Kathleen Kevany and Paolo Prosperi (Eds.), Routledge Press.
6. Arora, N., Lo, E., Legall, N., Philippidis, G.P. (2024) "Incorporation of chemical modulators to enhance algal biomass and bioproduct synthesis", Biocatalysis and Agricultural Biotechnology,Volume 58, 2024, 103145. ISSN 1878-8181. https://doi.org/10.1016/j.bcab.2024.103145.
7. Tsarpali, M., Kuhn, J., George P. Philippidis. Activated carbon production from algal biochar: Chemical activation and feasibility analysis. Fuel Communications, Volume 19, 2024, 100115, ISSN 2666-0520. https://doi.org/10.1016/j.jfueco.2024.100115.
8. Vicario, E., Ortiz, R., Acheaw Owusu, K., Feldman, A., Ghebremichael, K., & Ergas, S. J. (2024). Engaging Students in Waste-to-Energy Research Using Model Biodigesters. The Science Teacher, 91(1), 22–30. https://doi.org/10.1080/00368555.2023.2292331
9. Tang Wang and Dirk P. Libaers and Xiaoming Yang and Lingshu Hu.Top Entrepreneurship Research in the Past 20 years: Topics and Impacts. Academy of Management Proceedings. August 1, 2023. https://doi.org/10.5465/AMPROC.2023.17523abstract

FACULTY PRESENTATIONS

1. Philippidis, G.P., "Climate Economy Innovations", Florida Climate Conference, Sarasota, FL (Feb. 9, 2023).
2. Arora, N., Lo, E., Philippidis, G.P., "Algal Strain Development Assisted by Multi-omics", New Horizons in Biotechnology International Conference, Trivandrum, India (Nov. 27, 2023).
3. Dorsey, J. W., Panelist: Food Insecurity in the US: A Domestic Policy Challenge, Policy Dialogues: "Hunger as a Weapon", Sponsored by Global and National Security Institute, University of South Florida, Tampa, Florida (May 24, 2023).
4. Pirasaci, T., Philippidis, G., Sunol, A. "Thermal Control of an Enclosed Photobioreactor (PBR) for Algae Cultivation." AIChe Annual Meeting, Orlando, FL. November 5-10, 2023.
5. Philippidis, G. "Biofuels and Updates." BABIEC Miami Conference, Miami, FL. April 10-12-2024.
6. Dorsey, JW. "Developing Tomorrow's Leaders in Urban Agriculture." 6th Annual Grow Gardens Conference. Tampa, FL. April 6, 2024.
7. Dr. Dorsey – Expert Panelist. "Climate Change Impact on Urban Agriculture: Water Conservation and Usage." Kansas State Gaining Ground Webinar Series. April 3, 2024.
8. Feldman A, Ortiz R, AmRhein N, Wright D, Ghebremichael K. Food Waste – to Energy: Using Anaerobic Biodigesters for Authentic STEM Research in the Classroom. FAST Conference: Creating Curiosity. Tampa, FL. October 19, 2023.
9. Libaers, D. "Scaling Unlocked." Event two: Growing Into Success.Pathways of Success Workshop Series presented by CareerSource Suncoast. January 31, 2024.

OTHER FACULTY MEDIA & AWARDS

Dr. George Philippidis

- University of Miami European Union Center https://miamieuc.fiu.edu/eu-portal/fiu-research-on-the-eu/interview-with-george-philippidis.pdf

Dr. Pradeep Haldar

- Tampa Bay Regional Planning Council – Clean Air Tampa Bay Priority Action Plan. March 29, 2024 https://stpetecatalyst.com/local-agency-unveils-vast-clean-air-initiative/
- The Times of India https://timesofindia.indiatimes.com/nri/us-canada-news/growing-interest-among-indians-to-study-sustainability-at-us-colleges-feels-indian-american-professor/articleshow/101522154.cms
- New Hydrogen, Inc. Podcast with CEO Steve Hill December 5, 2023 https://newhydrogen.com/single-news.php?id=48 https://www.sec.gov/Archives/edgar/data/1371128/000149315223044028/ex99-1.htm https://hydrogen-central.com/newhydrogen-ceo-steve-hill-discusses-green-hydrogen-potential-with-sustainability-and-clean-energy-expert/#google_vignette
- Florida Recycles Day https://flrecycling.org/florida-recycles-day-celebrates-environmental-sustainability-and-community-engagement/
- Spectrum Bay News 9 https://baynews9.com/fl/tampa/news/2024/04/22/usf-helping-to-develop-long-term-plans-to-combat-greenhouse-gases-in-tampa-bay-area-
- Project Team Member, Clean Air Tampa Bay Priority Climate Action Plan. Prepared by Tampa Bay Regional Planning Council. https://www.qeios.com/read/R8UYCN
- Association of American Universities https://www.aau.edu/research-scholarship/featured-research-topics/usf-helping-develop-comprehensive-plan-reduce
- Tampa Bay Business Journal https://www.bizjournals.com/tampabay/news/2024/01/16/usf-tpa-leaders-sign-mou.html

Dr. Joseph Dorsey

- Tampa Bay Times August 2023 https://www.tampabay.com/news/business/2023/08/08/years-after-joe-redners-fight-voters-could-decide-growing-marijuana-home/

OTHER FACULTY MEDIA & AWARDS

Dr. TH Culhane

- Awards at 2023 Anaerobic Digestion and Bioresources Association (ADBA) and Biogas Industry Awards: AD Hero of the Year https://www.usf.edu/pcgs/publications-and-events/2023/dr-th-culhane-and-solar-c3ities-win-multiple-awards.aspx
- WMNF Sustainable Living Podcast https://www.wmnf.org/recycling-glass-into-trash-crete-with-th-culhane/
- Mercy University students in Colombia https://www.mercy.edu/news-events/news/mercy-students-explore-history-culture-and-sustainable-future-colombia
- Fox 13 Rosebud Continuum becomes recycling utopia Dec 2023 https://www.fox13news.com/news/land-o-lakes-property-rosebud-continuum-becomes-recycling-utopia

Dr. Kebreab Ghebremichael

- Clean Air Tampa Bay: Priority Clite Action Plan https://www.epa.gov/system/files/documents/2024-02/tampastpeteclw-msa-pcap.pdf
- Association of Eritrean Studies. October 14, 2023. https://www.youtube.com/watch?v=F45mB48tPJ0
- Association of American Universities, WTSP Tampa Bay 10 March 2024 https://www.aau.edu/research-scholarship/featured-research-topics/usf-helping-develop-comprehensive-plan-reduce ; https://www.wtsp.com/article/news/regional/usf-greenhouse-gas-emissions/67-90dd7d1f-5d8c-4b28-8999-bf4d23e56775
- Ghebremichael, K. Open per review on Qeios, Review of Chipatiso, E. Examining Water Use and Sanitation Practices in Rural Schools of Chegutu District, Mashonaland West Province, Zimbabwe, https://doi.org/10.32388/R8UYCN. October 2023. https://www.qeios.com/read/R8UYCN

Dr. Dirk Libaers

- The Work Ethic podcast. Episode 81: Educating for Entrepreneurship and Innovation https://podcasters.spotify.com/pod/show/theworkethic/episodes/Ep-81-Dirk-Libaers--Educating-for-Entrepreneurship-and-Innovation-e20fnoo/a-a93sne6
- Driving Sustainability Transitions 2nd International Workshop on Global, Sustainable Innovation. University of Vassa, May 22-23, 2023. “Driving Sustainability Transitions.”

FACULTY GRANT AWARDS

1. Philippidis, G. P.I. October 2023. Field Deployment of Low-Energy Electromagnetic Treatment for Ted Tide Mitigation, funded by Mote Marine Laboratory and Aquarium/Florida Fish & Wildlife Conservation Commission (FWC), $126,699.

2. Haldar, P. (PI) and Ghebremichael, K. (Co-PI) October 2023. Tampa Bay Region's Climate Pollution Reduction Grant (CPRG) for Planning, funded by Tampa Bay Regional Planning Council/Environmental Protection Agency (EPA), $74,653.

3. Ghebremichael, K. (PI) February 2024. IRES TRACK 1: US-Ghana Student Research Experience: Understanding and conceptualizing threats and solutions of onsite sanitation and sea level rise on coastal groundwater resources funded by Shippensburg University/National Science Foundation, $27,973.

4. Dorsey, J. P.I. May 2024. City of Tampa's Growing our Community Gardens and Education, funded by the City of Tampa/US Department of Agriculture, $9,000

2023-2024 FUNDING OVERVIEW

FUNDING OVERVIEW

Funding Sources	Total FY 2023-2024 Allocation/Revenue	Total FY 2023-2024 Projected Expenses
E&G	$1,235,855	$1,234,605
Carryforward	$37,068	$17,592
Auxiliary	$26,180	$285
Research F&A	$58,650	$7,979
Contracts & Grants	$278,689	$209,123
Federal Work Study	$31,500	$31,500
Endowment Earnings and Gifts*	$949,110	$524,277

*Total market value of endowments as of 12/31/23 is $9.5M

ALLOCATION/REVENUE