

**Department of Geosciences  
Florida Atlantic University  
Strategic Plan 2020-2025**

**Background**

Florida Atlantic University's A Strategic Plan for the Race to Excellence 2015-2025 (<https://www.fau.edu/provost/files/approved.plan2015.pdf>) was approved by the FAU Board of Trustees in the spring of 2015. The university-wide strategic plan identifies 6 Goals, 4 Pillars, and 8 Platforms that provide a framework for achieving those goals:

- Goal I: Boldness - A uniquely competitive and globalized student body
- Goal II: Synergy - Prominent teams of researchers and scholars
- Goal III: Place - Deep engagement with South Florida's global communities
- Goal IV: Quality - Continuously-assessed and evolving best practices
- Goal V: Brand - National reputation for excellence
- Goal VI: Strategy - Wise and innovative allocation of resources

4 Pillars:

- Healthy Aging
- Neuroscience
- Ocean Science and Engineering/Environmental Sciences
- Sensing and Smart Systems

8 Platforms:

- Big Data Analytics
- Community Engagement and Economic Development
- Diversity
- Global Perspectives and Participation
- Healthy and Environmentally Sustainable Campus
- Leadership, Innovation and Entrepreneurship
- Peace, Justice, and Human Rights
- South Florida Culture
- Undergraduate Research and Inquiry

The Charles E. Schmidt College of Science (CESCOS) at FAU developed a college level strategic plan for implementation from 2018-2022 (<http://www.science.fau.edu/2018-strategic-plan.pdf>). CESCOS began the process in the Fall of 2017 with a broad strategic planning committee from across departments and faculty levels, and completed a plan that included 5 college priorities: 1) Support Student Success, 2) Increase Extramural Funding, 3) Grow Interdisciplinary Collaboration, 4) Embrace Faculty Diversity, and 5) Build Infrastructure, and 3 overarching themes: 1) Increase Research-Active Tenure Faculty, 2) Innovation, and 3) Support Network.

The Department of Geosciences developed a strategic plan during the 2019-2020 academic year that aligns with that of both the university and college level plans. The department appointed a committee to evaluate our strengths and weaknesses, building on the vision of the previous department

strategic plan effective 2013-2018, and envision a path of continued development and enhanced success over the next 5 years. The following strategic plan, endorsed by the Department of Geosciences faculty and the Dean of CESCOS, will be implemented from the 2020-2021 through the 2024-2025 academic years.

### **Mission Statement**

The Department of Geosciences will provide students with a high-quality scientific education and mentor them in professional practices and research centered on Earth Systems Science, Human-Environmental Interactions, and Geospatial Information Sciences. The Department aims for excellence in teaching, research and creative activity, and strives to service the university, local, regional, national, and global communities through its research, degree programs, certificates, course offerings, professional training, mentoring, outreach, and creativity.

### **Department Overview**

The Department of Geosciences has expertise in both basic and applied sciences focusing on issues related to Earth's diverse processes and environments in the areas of Earth Systems Science, Human-Environmental Interactions, and Geospatial Information Science. Research is conducted internationally and nationally, while also leveraging FAU's regional proximity to a number of unique Florida environments. Examples include Everglades wetlands, estuaries and lagoons, the Kissimmee River and Lake Okeechobee, endless miles of beaches, and the Florida Reef Tract. The proximity of these unique environments to the densely populated Southeastern Florida Metropolitan Region provides the opportunity to address globally relevant issues that include rapid population growth, climate change, sea level rise, tropical cyclones, and their synergistic environmental effects in Florida's human and natural systems. Geoscience faculty research informs and improves science, management, and society's understanding of Earth's natural and human systems at multiple temporal and spatial scales. In addition, our instructional offerings provide an appropriate mix of theoretical and practical training to prepare students for careers with academia, state and federal agencies, businesses, consultants, and municipalities working to address complex environmental issues. The Department of Geosciences currently possesses expertise in the following research and instructional areas:

#### Earth Systems Science

- Biogeography
- Coastal Geology
- Hydrogeology
- Near-surface Geophysics
- Paleo-Environments and Climates
- Sedimentology

#### Human-Environmental Interactions

- Climate Change

- Ecological Restoration
- Ethnobotany
- Sustainability Science
- Water Resources

#### Geospatial Information Science

- Geovisualization
- Multi-sensor Systems, Hyperspectral, and LiDAR Remote Sensing
- Spatial Modeling and Data Analysis
- Unmanned Aerial Systems and Drone Technology
- Applied GIS

### **Building our Future: Geosciences Goals and Strategies, 2020-2025**

#### Goal 1: Increase Research and Scholarship Activity

##### Strategies for Success

- a. Increase the amount of extramural funding from international, federal, state, local, and non-governmental sources
  - i. Double grant submission rate to 2 proposals per faculty per year, and the request amount to \$300,000 per faculty per year
  - ii. Enhance internal, external, and interdisciplinary collaboration to increase competitiveness for funding
- b. Increase publication quantity and quality
- c. Increase faculty and student presentations at local, regional, national, and international conferences and symposia
- d. Attract high quality graduate students and Post-docs
  - i. Seek opportunities to increase or supplement stipends
  - ii. Increase grant-based funding for research assistants and Post-docs

##### Resources needed to implement strategies

- a. Faculty hires, with appropriate salary, start-up funding, and laboratory space support, that complement our existing strengths and expand opportunities for collaboration, including hires with expertise in the following areas:
  - i. Climatology and Global Change
  - ii. Natural Hazards
  - iii. Environmental Science and Policy/Management
  - iv. Director, Center for GIS
  - v. Unmanned Aerial Systems (UAS) Applications
  - vi. Spatial Data Analysis, Big-data, and Process Modeling
- b. Support staff positions
  - i. On behalf of the faculty, train department secretary to handle grant documents submission to Sponsored Programs for approval (e.g., through GrantsERA) as well as standard government submission portals (e.g., NSF Fastlane)

- ii. Laboratory, field equipment, and IT management and maintenance for research and instructional purposes, along with field trip, field course, and field sampling coordination and support
- c. Continue to advocate for increased stipend support from the College and University levels and pursue external or internally derived supplemental support
- d. Continue and increase support, policy, and availability transparency for departmental and field research equipment and resources, such as current technology, software, trucks, sea-worthy vessels, and airboats
- e. Earmark department funds to offset research related costs that may not be covered with grants or in the absence of grants, e.g. publication page costs, conference registration and travel for presentations, pilot studies
- f. Adjust annual assignments for some faculty to increase their research load, by reducing the service load of some Faculty and Scientists; and periodic course releases should be considered.

Goal 2: Enhance Instructional Experience, Experiential Learning, and Increase Majors

Strategies for Success

- a. Offer online courses face-to-face on a rotating basis
- b. Increase the number of Quality Matters certified online courses
- c. Increase undergraduate research participation and scholarship in support of FAU's Office of Undergraduate Research and Inquiry (OURI) Platform
  - i. Promote the Honors designation to increase student and faculty participation
  - ii. Increase the number of Research Intensive (RI) courses offered
  - iii. Increase the use of Directed Independent Research (DIR)
  - iv. Increase grant-based funding for undergraduate research assistants by increasing proposal submissions to the OURI
  - v. Seek opportunities to incorporate research into existing undergraduate courses and develop new courses that emphasize research techniques, e.g. a drone course
- d. Increase undergraduate and graduate student enrollment numbers in both courses and degree programs
  - i. Rebrand the department to include terms such as earth, environment and/or geospatial sciences that better represent the current expertise in our department
  - ii. Develop and offer a BS in Environmental Science or a new focus within our existing BS in Geosciences called Environmental Science
  - iii. Develop and offer a BS in Climate Change Science or a new focus within our existing BS in Geosciences
  - iv. Rebrand and better communicate the purpose of the BA in Geology for future educators

- v. Evaluate degree requirements and field experiences in the context of best utilizing our existing faculty and planning for future hires, long-term sustainability of course offerings, relevancy to industry needs, curriculum needs, enhancing experiential education, and increasing completion rates and the number of majors
- e. Expand student field experiences and exposure to research methodology in courses at graduate and undergraduate levels, and in coordination with FAU's OURI
  - i. Implementation of alternative Field Camp model in addition to traditional model to incorporate local field opportunities, and ensure majors are not delayed in graduating in 4 years. Evaluate degree requirements so Field Camp can potentially be offered more sustainably with a team-taught format. Reduce each participating faculty member's teaching load and shift the load balance to research or other assignments
  - ii. Identify additional opportunities for incorporating field experience in existing and future courses, and inclusive of all department majors
  - iii. Identify and develop opportunities for field and project experiences that link across individual classes, e.g., projects that require students to collect field data in one class and conduct spatial analysis of the field data in another class
- f. Encourage faculty and students to work with Academic Service-Learning and the OURI offices at FAU. Enhance and expand internship opportunities, at the undergraduate and graduate levels, using the Tech Runway, FAU Research Park, and local, state, and national research institutions

Resources needed to implement strategies

- a. Faculty hires with expertise to instruct courses in the department's focal areas that dovetail with strategic planning foci, complement and expand our existing instructional offerings, and prepare students for future career opportunities
- b. Hire at least 1 full-time instructor to cover more undergraduate courses and relieve pressure on faculty with increasing service loads; adjust teaching loads to benefit Field Camp revisions, and greater research assignments
- c. Adequate vehicles and equipment for field-based instruction to take advantage of FAU's close proximity to the diverse and unique South Florida environments
- d. Adjust assignments for instructing introductory courses in the department to take advantage of personnel skilled in exciting and attracting students to the discipline
- e. Create flight plans for our degrees for our various concentrations and for students interested in particular career paths; clearly post these plans online with relevant degree and career information, and provide the plans to the College advisors to properly advise our majors
- f. Discuss and evaluate methods for enhancing our student advising

### Goal 3: Expand Regional, National, and International Collaboration and Educational Opportunities

#### Strategies for Success

- a. Build on existing regional, national, and international relationships, and pursue additional sustainable regional, national, and international collaborations that provide research and education opportunities for faculty and students
- b. Offer additional study abroad courses, international field experiences within our degrees and courses, and pursue student exchange programs
- c. Seek more grants that support regional, national, and international collaboration and education

#### Resources needed to implement strategies

- a. Support from the Center for Global Engagement on study abroad programs and agreements with international institutions
- b. Train staff, i.e. secretary and budget coordinator, to assist with international program coordination and execution
- c. Funding from internal sources for exploratory activities and collaboration building with current and potential international partners
- d. Sabbatical and teaching load support to free time for regional, national, and international collaboration

### Goal 4: Augment Strengths in FAU's Ocean Science and Engineering/Environmental Science Pillar

#### Strategies for Success

- a. Build upon efforts to work with internal, e.g. Harbor Branch Oceanographic Institute, and external partners concerning science and management in Lake Worth and Indian River Lagoons, Everglades National Park, and other regional estuarine and coastal/nearshore systems
- b. Build on research strengths in the Greater Everglades system, including:
  - i. Human-environment interaction in the context of global climate change and the effects of sea level on natural areas, the densely populated urban South Florida metropolitan area, and their interdependencies
  - ii. The application of geospatial and remote sensing techniques in marine and coastal environments
  - iii. Restoration monitoring
- c. Host and participate in symposia with other departments, colleges, institutes, and centers to discuss linkages, commonalities, and potential synergisms for collaboration

#### Resources needed to implement strategies

- a. Faculty hires in all of the research areas enumerated under Goal 1, with appropriate start-up funding and laboratory space
- b. Funding from internal sources for exploratory activities and collaboration building with internal and external partners

## Goal 5: Improve Department Visibility and Outreach

### Strategies for Success

- a. See Goal 2 about rebranding the department
- b. Develop Alumni organization invested in promoting and advancing the department, supporting student achievement and activities, and organizing events and fund raising
- c. Reinvigorate GeoClub and improve student community
- d. Increase outreach efforts to local agencies, organizations, and commercial entities for collaborative opportunities, internships, knowledge transfer, and alumni employment
- e. Improve our website and publicity information to emphasize research opportunities and successes, student and faculty endeavors and achievements, and employment opportunities and salaries possible with Geosciences degrees
- f. Produce fall and spring department newsletters to showcase department activities and connect with alumni
- g. Hold an annual Geoscience Career Day, when graduates are invited to come back and make presentations and have Q&A sessions
- h. Target events at local secondary schools and on campus to encourage and facilitate recruitment of new students
- i. Exhibit departmental brochure, flyers, equipment (e.g., drones), achievements, strengths, and offerings in various medias (e.g., Facebook, Twitter, and Research Gate), and conferences

### Resources needed to implement strategies

- a. Create Geosciences advisory board composed of local stakeholders and interested parties
- b. Create a department level Outreach, Social Media, and Recruitment Director as a service assignment for one faculty member
- c. Develop accurate tracking mechanisms to figure out what both our undergraduate and graduate alumni pursue and where they settle in order create an alumni association, contact alumni, and to provide our students with career mentoring resources and contacts for possible employment
- d. Assistance from departments and personnel at the College and University levels with internal and external public engagement, information sharing, and publicity
- e. Funding from internal and external sources for faculty, staff, and students to travel to regional, national, and international conferences and symposia, and for informational booths/promotional materials at outreach events, conferences, and symposia

## Goal 6: Enhance the Role of the Center for GIS in the Department and University

### Strategies for Success

- a. Strive to become the Center for GIS for the entire FAU community. Coordinate across campus with Geomatics and Urban and Regional Planning
- b. Provide leadership in marine and coastal remote sensing and GIS, and be a visible contributor in FAU's Ocean Science and Engineering/Environmental Science Pillar

- c. Collaborate externally and obtain funding with business and government
- d. Improve the visibility of the Center, GIS and remote sensing at FAU, and the Department of Geosciences on and off campus
- e. Strengthen the department's UAS/drone research activity, and collaboration across the university with said technology
- f. Expand opportunities for experiential learning and GIS and remote sensing training, including short and professional courses.

Resources needed to implement strategies

- a. Reallocate annual assignment loads to facilitate CGIS enhancement plan
- b. Investment of additional departmental resources in UAS research
- c. See suggested faculty hires under Goal 1 concerning CGIS Director and UAS tenure-track faculty positions

Goal 7: Enhance the Role of the Water Analysis Lab (WAL) in the Department and University

Strategies for Success

- a. Strive to become recognized as the core facility for environmentally focused research for the entire FAU community
- b. Capitalize on opportunities for WAL to increase the visibility of the Department's research strengths at the College, University, regional, and national level
  - i. Coordinate WAL's ongoing rebranding effort with Department's so both brands synergistically communicate strengths in environmental research and education
  - ii. WAL will be working with DOR to develop a new website and promotional materials. Coordinate with the Department to ensure the website and promotional materials communicate the Department's association with WAL
  - iii. Explore WAL-offered workshops (i.e. on environmental sampling or analytical techniques) that would simultaneously promote WAL and highlight some of the Department's research strengths
  - iv. Increase recognition among Department faculty of WAL as a resource to put multiple Department services under one umbrella that can be branded and promoted both inside the University and externally
- c. Identify and develop opportunities for the WAL to provide broader support for the Department's research efforts. Possibilities include:
  - i. Increase recognition among Department faculty of the WAL as a resource for generating funds to cover the long-term operational and maintenance costs associated with research equipment and instrumentation
  - ii. Identify opportunities for Department faculty to leverage WAL's existing structure for managing research instrumentation in grant proposals whose budgets include instrumentation purchases
  - iii. Increase Department use of WAL's existing rate and billing structure for hourly labor as a streamlined way to charge clients and pay OPS wages to students for

their work on projects (especially for non-sponsored research with private businesses or local agencies)

- iv. Strategically invite potential Department research collaborators to serve on WAL's advisory board

Resources needed to implement strategies

- a. Train Department Budget Coordinator in policies for cores
- b. Increase awareness among Department faculty about the philosophy behind core facilities (perhaps through having DOR's Director of Core Facilities talk at a faculty meeting)
- c. Increased coordination between WAL manager and Department chair to recognize and act on synergistic opportunities
- d. Increased recognition of the time commitment involved in managing a core facility in annual assignments and annual reviews