

**PROGRAM REVIEW REPORT**  
**MASTER OF ENVIRONMENTAL SCIENCE PROGRAM**  
**(ES)**

**FLORIDA ATLANTIC UNIVERSITY**

**SUBMITTED: FEBRUARY 23, 2015**

**PROGRAM REVIEW TEAM**

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## **INTRODUCTION**

This Program Review Report (hereafter PRR) on the Master of Environmental Science program at Florida Atlantic is based on a Self-study Report (SSR) and program review site visit on February 9 and 10, 2015. Ms. Lynn Sargent provided a detailed itinerary and exemplary logistical support. We, the three-member Program Review Team (hereafter PRT), were asked to review only the ES degree program. The Program Director, Dr. Dale Gawlik is tenured in Biology.

The following subjects are addressed in the ES SSR:

1. Mission and Purpose of the ES Program
2. Previous External Reviews
3. Instruction
  - a. Baccalaureate Programs: Undergraduate Certificate in Environmental Science
  - b. Graduate Programs: Master of Science in Environmental Science
4. Faculty
5. Research
6. Service/Community Engagement for Department/School
7. Other Program Goals for School or College
8. Strengths and Opportunities that Support Achievement of Program Goals
9. Weaknesses and Threats that Impede Progress for School or College
10. Resource Analysis for School or College
11. Future Directions for School or College
12. Student Feedback
13. Appendices:
  - a. Undergraduate Environmental Science Certificate Curriculum
  - b. Master of Science in Environmental Science Curriculum
  - c. Abbreviated Environmental Science Faculty CVs
  - d. Environmental Science Graduate Student Survey: 2013-2014.

The Preview Review Team met the following individuals on February 9 and 10, 2015.

1. Russ Ivy, Interim Dean, College of Science and Associate Provost for Programs and Assessment
2. Dale Gawlik, Professor and Director Environmental Science Program Department of Biological Sciences
3. Diane Owen, Coordinator, Environmental Science Program
4. Charles Roberts, Associate Dean for Graduate Studies
5. Ingrid Johanson, Senior Associate Dean for Student Affairs
6. Evonne Rezler, Assistant Dean for Assessment
7. Camille Coley, Associate Vice-President for Research and Co-Administrator, Southeast National Marine Renewable Energy Center
8. Michelle Hawkins, Associate Provost for Planning and Budget
9. Susan Fulks, Associate Dean, Graduate College
10. Debra Szabo, Assistant Director, Degree Completion Services, Graduate College
11. Zhixiao Xie, Associate Dean for Research and Partnership Initiatives, College of Science
12. Faculty Members: The PRT members also met with many faculty members participating in the Environmental Science Program including: Scott Markwith, Sarah Milton, Daniel Meeroff, Tobin Hindle, Diana Mitsova, Evelyn Frazier, Deborah Louda, Jon Moore, Katy Detweiler, Colin Polsky, Nate Dorn, Tara Root, John Baldwin, and Brian Benscoter.
13. Students: The PRT met with a group of students including Michelle, Corey, Kristina, Chris, Allison, and others.

**Mission and Purpose:**

As noted in the SSR:

*The mission of the Environmental Science Program at Florida Atlantic University is to educate and support students who are motivated to reach the highest level of professional achievement in environmental science, and to facilitate a robust research climate for faculty and students.*

*The undergraduate program promotes a broad, integrated understanding of the interdependencies of humans and their environment and prepares students for diverse career paths related to environmental science. At the graduate level, the ES Program fosters leadership and provides students with in-depth knowledge and training in the natural and social sciences, preparing them to develop and implement solutions to complex environmental problems.*

We read the SSR prior to arriving for on-campus interviews. The SSR provided information on a number of topics discussed above. While at the Boca Raton campus, we met with a diversity of people who are familiar with the program, including students, faculty and administrators. Based on our conversations and our reading of the report, we provide responses to the questions posed to the reviewers at the end of the SSR and we provide our recommendations.

The PRT was asked to consider and provide the following:

1. Responses to the questions at the end of the self-study that the ES Program requested the PRT to address.
2. A set of recommendations and actions plans to be considered to take the program to the next level of standing. Some recommendations are embedded into the answers to the questions as well as discussed in the recommendations section.

These issues are discussed below.

### ***Responses to Questions for Reviewers***

- 1. What kind of incentives can be created for departments to include interdisciplinary program needs when making strategic faculty hires?***

See below for recommendations and action plans.

- 2. What are the most effective strategies for building deeper faculty expertise on wetland and estuary restoration and management?***

- Continue to develop a cadre of professionals in the region to serve as adjunct faculty. Working professionals who participate in the program are likely to seek other ways to

build connections with its students and faculty.

- Prioritize the faculty expertise for new hires to match strategic priorities of the University in the environment area. It is important to plan faculty recruiting around areas of scholarship that are consistent with and enable university strategic directions rather than simply plugging holes in the teaching program. The teaching program should reflect chosen areas of strength rather than perpetuating historical patterns of instruction.
- Establish Visiting Fellows program as discussed in the SSR. The PRT agrees that this would be a good option and that such a program would bring in senior researchers and faculty who could benefit from FAU's location and faculty expertise, and who would in turn contribute through discussions and collaborations. A positive side benefit is increased exposure of FAU for graduate student recruitment.

**3. *How can the FAU administration most effectively help the ES Program attract top-tier graduate students?***

- Increase baseline graduate stipends. This must be done to be competitive with other programs regionally and nationally. In addition, student support must also include health insurance. Without adjustments in these areas of student support, it will be extremely difficult for FAU to build a competitive graduate program in Environmental Science.
- Create a sense of community among the students and faculty:
  - Create a colloquium or seminar series on a year-around basis (maybe expanding the Fall colloquium series to a full academic year program) aimed at faculty and students. There needs to be a regular event (weekly seminar, at a fixed time is optimal) around which a culture develops where everyone participates (faculty and students). This can serve as the venue for student thesis presentations, faculty research talks, job candidate presentations, visiting speakers, etc.
  - Current information on all participating faculty and students in the ES Program needs to be readily available (can be on the Program website). This will be important to current and incoming students, other faculty at FAU and outside "visitors" interested in the participants in the Program.

- Regular communication with students in the program. Open and regular communication with all participants in the Program can help strengthen the sense of shared purpose and avoid feelings of alienation. An effective Program website can serve this function very well.

**4. *Should the ES Program evaluate the feasibility of a BS in Environmental Science?***

- FAU should evaluate this and explore options including the use of cross-listed courses as a way to ensure a more robust set of class options. This would improve accountability and planning. Having a BS program would bring increased visibility to the environmental programs more broadly. It would also align well with the state-wide performance metrics by increasing the number of undergraduate degrees and providing an additional STEM program. It could also feed into the Master's ES program.
- FAU should also explore the possibility of an accelerated BS-MS program. While SACS accreditation requires 150 credits for these programs, it might still be attractive to the students.

**5. *Should the ES Program evaluate the feasibility of a PhD in Environmental Science, using the PhD in Integrative Biology with emphasis in Environmental Science as a model?***

- This initiative may be a lower priority than the development of the Master's program and even the undergraduate program. There may be a concern about the allocation of Teaching Assistants (TAs). Additional doctoral students might impact available TA slots for MS students. This decision may need to be made as part of a process of identifying priorities for ES graduate education – M.S. vs. Ph.D. Ph.D. programs are also more resource intensive overall.

**6. *How can the FAU administration help the ES Program broaden faculty participation in the program?***

- See below for recommendations and action plans.
- The FAU administration should address and provide clear information about the metrics used for allocation of resources to departments.
- The FAU administration should facilitate offering additional outreach education that

attracts outside funding. Options to be explored could include offering short courses and workshops to industry, agencies, non-profits and other interested individuals through CES. These offerings might capitalize on FAU's video conferencing capabilities to expand reach over time. Revenue can return to the Program to cover faculty time.

- The FAU administration should emphasize the ES program in administration- directed development and fund-raising efforts.

## **RECOMMENDATIONS AND ACTION PLANS**

Based on our conversations during the site visit and on the issues raised in the self-study, the PRT has the following recommendations:

1. **Recommendation 1:** Explore the creation of a School of Environmental Sciences, which would contain or include the ES Program, CES, Harbor Branch Oceanographic Institute (HBOI), and participation from relevant academic units.

This would provide opportunities to:

- a. Bring more visibility to the environmental sciences
- b. Address challenges with regard to faculty hiring
- c. Help build inter-disciplinary interactions
- d. Help build the program and aid in fund-raising and development efforts
- e. Help FAU develop environmental sciences as a key pillar of the university and build recognition both regionally and nationally for the university
- f. Provide students with educational opportunities in a key growth area in the 21<sup>st</sup> century.

2. **Recommendation 2: Capitalizing on the Multi-Campus Structure**

Currently the ES program is being offered on three different campuses: Boca, Davie, and at HBOI. Each of these campuses offers a distinct set of resources that add value to

the ES Program.

- The Boca campus houses the administration and a large number of faculty from Geosciences and Biology who participate in the ES Program. There are also faculty from other departments, labs, students and access to other administrative units. It also houses the preserve, which serves as an on-campus teaching resource.
- The Davie campus houses a number of faculty, labs, and the greenhouse. It is also housed on the same campus or in close proximity to major federal agencies such as USGS, Fish and Wildlife Services, National Park Service, University of Florida extension, etc.
- HBOI has key faculty with related research grants, labs, and students that specialize in marine sciences.

There is a need to ensure and build a critical mass at both HBOI and Davie in order to facilitate interaction between faculty, students, and researchers. The ES Program needs to maintain a presence on the Boca campus in order to sustain critical administrative connections and to facilitate interaction with relevant faculty from other colleges and schools.

From conversations we also recognize that the multi-campus situation poses a challenge. To address these challenges, the PRT recommends the following:

- a. Build faculty and student critical mass at each of these campuses
- b. Hold a semi-annual retreat that draws from all campuses to one location (revolving to each campus) that would include faculty and graduate students and would provide the opportunity for research presentations, discussion of new initiatives, and other community building activities.
- c. Continue to maintain, expand and improve distance learning capabilities. Include TAs onsite at each campus to support faculty from any given campus who offer distance learning courses.



### **3. Recommendation 3: Graduate Programs**

- a. Increase baseline graduate stipends. This must be done to be competitive with other programs. The FAU ES stipends are so low that we understand that some of the students are on food stamps.
- b. Stipends must include health insurance benefits.
- c. Improve communications with ES students about Program expectations through effective use of email and the Program website. This could also be accomplished by distributing an up-to-date program manual/handbook. This handbook should be made available online to all students and faculty.
- d. Hold orientations at the beginning of the fall and spring semester every year and provide key critical information in a program manual/handbook.
- e. Include in the program information a rolling two-year class schedule that includes relevant classes from all departments offering courses in the ES Program.
- f. Revisit terms and conditions of teaching assistantships at HBOI for work load equity across the different campuses.

### **4. Recommendation 4: Undergraduate Programs**

- a. As noted above, the Program should evaluate offering a BS degree. Options such as cross-listing of courses should be explored as a way to ensure a robust set of class options. This would improve accountability and planning. Having a BS program would bring increased visibility to the environment initiatives at FAU. It would also align well with the state-wide performance metrics by increasing the number of undergraduate degrees and providing an additional STEM program. The BS degree could also feed into the Master's ES program.
- b. The Program should also explore the possibility of an accelerated BS-MS program. While SACS accreditation requirements require 150 credits for these programs, this option might still be attractive to the students.
- c. The program should explore stand-alone Certificate programs that are not linked to degree program. This option may be both a revenue stream and a means of attracting students.

## **5. Recommendation 5: Development and Outreach**

- a. As noted above, the Program should explore outreach education options that attract outside funding. These could include offering short courses and workshops to industry, agencies, non-profits and other interested individuals through CES. The revenue could return to the Program to cover faculty time.
- b. CES could be the outreach and education arm of any newly created School of Environmental Sciences.
- c. The Program could explore further collaboration with the College of Education and the Pine Jog Environmental Education Center for K-12 education opportunities, keeping in mind constraints on faculty time for service.
- d. We urge the FAU administration to include “environment” as a pillar for the university. Such a statement should be accompanied by a focus on fundraising efforts in this area, taking advantage of FAU’s natural strengths, both in location between the Everglades and the coast and in faculty and students.

## **COMMENDATIONS**

This Program Review Report necessarily focuses on areas and strategies for improving the ES program. When focusing on improvements, an inevitable side consequence is a report that dwells on problems and needs for change. Therefore, the PRT concludes this Program Review Report with a few commendations. While this section cannot do justice to everything that warrants approbation, several issues invite acclamation.

1. Outstanding Master’s students with an excellent job placement rate.
2. Faculty who are well-connected to regional and federal partners.
3. Strong interest in inter-disciplinary work by participating faculty.
4. Overall, good laboratories and facilities with the exception of space for outdoor experimental facilities.
5. Strong interest and recognition from the university-level administration in building the program and making it a key growth area.

## **CONCLUSION**

The ES Program is doing a very good job overall in educating master's students and fostering faculty collaborations. There are further excellent opportunities available to FAU for research and education in the environmental science arena. Creation of a School of Environmental Sciences, which would contain or include CES, HBOI, and participation from academic units, provides a mechanism for pursuing these opportunities into the future.