Appendix A4.8

School of The Environmental Sciences
October 25, 2011

Questions from Governor Rick Scott

Response Document for Academic Deans

Name of College or School: __School of the Environment_______

Note: The listing of questions A through Q has gaps in the lettering because they correspond to the Governor’s request, and the deans are not being asked to respond to every question. Please use the lettering as they appear below for each of your responses.

A) What studies has your university done in the last three years to ensure your graduates are meeting the needs of employers?

The following studies of the quality of the training for employment of students in the School of the Environment are available:
1) "Environmental Sciences Institute Comparative Analysis: Comparative Analysis - Institute for Environmental Sciences and the Environmental Sciences Degree Programs" by Shirley Vincent, Ph. D, Director of Educational Research, National Council for Science and the Environment, August 2010.

B) Do you have measurable goals to meet employers’ current needs? If so, please provide them. How often are these goals updated?

Some goals used to help ensure that graduates of the School of the Environment are meeting the needs of employers follow:
1) Internship requirements for undergraduate students
2) Thesis requirement for undergraduate students
3) Outside Supervisory Committee members for Doctoral Program students
4) Manuscript submission requirement for Doctoral Program students
5) National and International Science Meeting attendance requirements

These goals are revised about once every 5 years.

C) Do you have measurable goals for each graduate in the areas of writing proficiency and critical thinking? If so, please send them to me with the goals and include the results for the last five to ten years.

Writing and Critical thinking assessments follow:
1) Writing proficiency and Critical thinking is required for the preparation of theses, dissertations, and manuscripts.
2) Critical thinking is required to pass the Comprehensive Examination for Doctoral Program students.
In the last ten years two of about forty students have failed the Comprehensive Examination.

**Writing Proficiency and Critical Thinking Goals for the Bachelor of Science in Environmental Science**

**Effective communication**

**Goals**

**Effective written and verbal communication**

Students will demonstrate an ability to explain concepts and ideas related to the environment and its functioning to environmental science professionals, as well as to the general public.

**Critical thinking**

Students will demonstrate an ability to assimilate and critically evaluate facts and concepts related to environmental sciences, including a) biological, chemical, and physical responses at the ecosystem level; b) the relationships between smaller-scale systems (local, regional, and national) and the global environment, and c) the foundations of environmental policy and management and how science can support environmental decision-making.

**Direct Measures**

**Writing:**

a) 100% of ESI students will prepare a senior thesis prospectus approved by their thesis committee

b) 100% of ESI students will prepare a senior thesis approved by their thesis committee

c) 50% of ESI students will prepare abstracts for poster and oral presentations at local/regional/national scientific meetings (undergraduate section)

d) 50% of ESI students will deliver poster and oral presentations at targeted local regional/national scientific meetings

e) 25% of ESI students will prepare and submit a manuscript of their senior thesis research for publication

f) 10% of ESI students will succeed in publication of their manuscript.

**Verbal:**

a) 100% of ESI students will receive a passing evaluation on their senior thesis prospectus defense by committee members

b) 100% of ESI students will receive a passing evaluation on their senior thesis defense by committee members.

**Indirect Measures**

a) Advisor meetings

b) Senior thesis committee meetings

**Critical thinking**

**Direct Measures**

a) 100% of ESI students will achieve grades of “C” or better in required courses

b) 100% of ESI students will receive a passing evaluation on their senior thesis prospectus defense from their committee

c) 100% of ESI students will receive a passing evaluation on their senior thesis defense from their committee

d) 25% of ESI students will successfully prepare and submit manuscripts for publication

e) 10% of ESI students will succeed in publication of their manuscript

f) 50% of ESI students will be accepted for, and deliver, oral and poster presentations at local/regional/national scientific meetings.

**Indirect Measures**
a) 100% of ESI students will demonstrate progress in their program as documented by advisor’s comments

b) 100% of ESI students will demonstrate an ability to apply critical thinking skills to design, carry out, and analyze of their research projects as documented by the students progress in the ESI program.

Writing Proficiency and Critical Thinking Goals for the Master of Science in Environmental Science

Effective communication
Goals
Effective written and verbal communication
a) Students will develop a comprehensive written and oral vocabulary to communicate effectively with environmental science professionals, as well as with the public at large

b) Students will be able to describe and explain environmental processes, environmental impacts, environmental change, environmental management and environmental regulation

Critical thinking
a) Students will demonstrate an ability to critically evaluate information in popular, research, and policy literature

b) Students will demonstrate an ability to understand and assimilate new ideas

Writing Proficiency and Critical Thinking Goals for the Doctor of Philosophy in Environmental Science

Effective communication
Goals
Effective written and verbal communication
a) Students will develop an extensive written and oral vocabulary to communicate effectively with environmental science professionals, as well as with the public at large

b) Students will be able to communicate a detailed understanding of the concepts of environmental processes, environmental impacts, environmental change, environmental management and environmental regulation.

Critical thinking
a) Students will demonstrate an ability to comprehend, dissect and critically evaluate the research literature in a chosen area of the environmental sciences

b) Students will demonstrate an aptitude for logical and analytical thought when reviewing current scientific and regulatory approaches to environmental problems.

Direct Measures

Writing:

a) 100% of ESI PhD students will have a research prospectus approved by their committee

b) 100% of ESI PhD students will prepare and submit abstract(s) for posters/oral presentations at local/regional/national/international scientific meetings

c) 100% of ESI PhD students will prepare a dissertation approved by their committee

d) 100% of ESI PhD students will prepare and submit manuscript(s) for publication in peer-reviewed literature (rigorous outside review by peers in scientific community)

e) 100% of ESI PhD students will have manuscript(s) accepted for publication in peer-reviewed literature

f) 100% of ESI PhD students will pass all sections on the written portion of the comprehensive exams.

Verbal:
a) 100% of ESI PhD students will deliver oral presentation(s) at local/regional/national/international professional meetings
b) 100% of ESI PhD students will receive a passing evaluation on their prospectus defense by committee members
c) 100% of ESI PhD students will receive a passing evaluation on their dissertation defense by committee members
d) 100% of ESI PhD students will pass all sections on the oral portion of the comprehensive exams.

Indirect Measures
a) advisor meetings
b) committee meetings

Critical thinking

Direct Measures
a) 100% of incoming ESI PhD students will receive a passing evaluation from faculty and peers for presentation(s) in the ESI Reading Roundtable (discussion of seminal books and articles in the environmental sciences assigned as required reading)
b) 100% of ESI PhD students will design a protocol for their research program and prepare a prospectus approved by their committee
c) 100% of ESI PhD students will receive a passing evaluation on their prospectus defense by their committee members
d) 100% of ESI PhD students will pass all section of the comprehensive exams
e) 100% of ESI PhD students will prepare and submit abstract(s) for presentation of poster/oral presentation(s) at local/regional/national/international scientific meetings
f) 100% of ESI PhD students will deliver poster/oral presentation(s) at local/regional/national/international professional meetings
g) 100% of ESI PhD students will prepare a dissertation approved by their committee, and will receive a passing evaluation on their dissertation defense by committee members
h) 100% of ESI PhD students will prepare and submit manuscript(s) for publication in peer-reviewed literature (rigorous outside review by peers in scientific community)
i) 100% of ESI PhD students will have manuscript(s) accepted for publication in peer-reviewed literature.

Indirect Measures
a) 100% of ESI MS students will successfully execute research program (demonstrated by progress reports completed by students and advisors)
b) 100% of ESI PhD students will demonstrate the ability to develop hypotheses, and to analyze data using quantitative and qualitative methods, as demonstrated by meetings with advisor and dissertation committee.

E) Are professors required to integrate writing proficiency and critical thinking into all courses? If so, what oversight is provided to ensure that these skills are being taught? How are these skills integrated into course assessments?

School of the Environment requirements for Writing Proficiency and Critical Thinking are in the Learning Compacts for the degree programs. The degree of fulfillment of these requirements is assessed each year.
F) Do you have measurable goals for student success after graduation? If so, please send me the goals and the results for the last five to ten years.

The major measure of success for graduates of the School of the Environment are whether or not the graduate is employed or is involved in graduate or professional studies. Very few graduates of the School of the Environment are unemployed.

M) What programs do you have to educate students regarding job opportunities? What are your measurable goals for each program? Do you use information similar to the data available from the Florida education and Training Placement Information Program (FETPIP) to prepare students prior to admission and prior to selection of major? Please provide me the results for the last five to ten years.

Students are kept informed about employment opportunities through: Career fairs; Internships; Research experiences; Participation at professional meetings; Weekly seminars; Colloquia, and by fulfilling the requirements of some fellowships (for example, Doris Duke and NOAA fellowships).

The data on the employment of graduates of the School of the Environment are collected through interviews. The data do not include salaries. The FETPIP uses a different method to gather employment information and the FETPIP database has more employment information.

Q) Please provide me with any additional information you think may be helpful, including your thought process to make sure we are headed in the right direction.

The School of the Environment is developing three new curricula in response to the needs of employers. These new programs are in the following areas: Environmental Health, Environmental Studies, and Sustainability Science.