University of Puerto Rico
Río Piedras Campus
College of Natural Sciences
Environmental Science Department
Graduate Program

REGULATIONS

These rules apply to studies directed toward the master's and doctoral degree in Environmental Science. These regulations have been approved by the Graduate Affairs Committee of the Environmental Science Program on September 16th, 2014 and are based on Certification 38 (2012-2013) of the Academic Senate of the University of Puerto Rico, Río Piedras Campus. The most recently updated regulations will always apply to all students admitted in Environmental Sciences Graduate Program. The latest version of these regulations is available in the "Graduates" section of our website http://envsci.uprrp.edu/ .

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I. Contact Information

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II. Mission and Profile of the Graduate Program in Environmental Science

A. Program Mission

The Graduate Program in Environmental Science at UPR – Río Piedras (UPRRP) is directed towards preparing scientists and researchers with a profound and integrated knowledge of the environment via a rigorous and comprehensive education with a strong emphasis in research. The Graduate Program strives to include diverse scientific disciplines combined in innovative ways to understand and manage the environment, encompassing various interactions among the physical, chemical, and biological components of the biosphere as well as social, economic, and biomedical sciences and planning and legal studies related to environmental science. Environmental science in the Graduate Program at UPRRP is designed to provide an integrated, quantitative, and interdisciplinary focus to the study of coupled human-natural systems, as opposed to studies of environmental issues *per se*. The Program will provide the student with a solid scientific basis related to natural and anthropogenic processes which affect the environment and will also prepare them to define and analyze environmental problems, apply advanced methods and techniques in environmental analyses, create new knowledge and make decisions directed towards achieving a sustainable society.

B. Profile of Graduates from the Program

Graduates from this Program will have a solid conceptual base pertaining to environmental processes and problems associated with islands and tropical regions, as well as theoretical and practical command of the most modern methodologies for scientific analyses and research on the environment. The Program enables students to define and identify complex environmental problems composed of multiple variables, apply and develop research methodologies, use analytical instruments to obtain data, analyze critically the obtained data with an integrated vision of the environment, construct models that recreate the behavior of environmental systems and provide intelligent solutions that will ultimately address present and future environmental needs. In addition, students need to learn effective communication and teaching skills to disseminate their research and learning. This can be achieved by presentations at scientific meetings as well as working closely with faculty in classes and teaching independently in different settings. Students will work closely with their faculty advisor throughout this learning process and also meet regularly with their thesis/dissertation committee to encourage diverse perspectives on experimental questions and approaches.

C. Student Expectations and Responsibilities

1. Departmental Activities

Seminars

The seminar series is considered an integral part of the graduate program and graduate students are expected to attend program seminars as well as those offered by other programs that are relevant to their area of specialization.

Departmental Committees

Two graduate student representatives will attend all Graduate Affairs Committee meetings. The student representatives will have a voice, but not a vote. They can request, with reasonable advanced notice, that topics of interest to the graduate students be included in the agenda for the graduate faculty's future meetings. The student representatives may be asked to leave the meeting when confidential matters pertaining to a graduate student are discussed. An open meeting of all graduate students from the Program will be announced at the beginning of each academic year. The student representatives will be elected for that year at this meeting. The student representatives may call for graduate student meetings during the year to discuss problems or plan activities.

2. Honor Code

The institutional policy of the UPR Rio Piedras campus is to maintain the highest norms of intellectual and scientific integrity and to denounce all the violations of the same. Violations include plagiarism, falsification, false attribution and all the violations of the canons and practices of honesty accepted generally by the academic community, excepting those that result from involuntary errors or legitimate differences in the interpretation or handling of data or information. The norms, responsibilities and procedures for dealing with possible violations of the principles of intellectual and scientific honesty summarized above are detailed in Circular Letter no. 17 (21 May 1990), signed by the Chancellor of the Rio Piedras campus of the University of Puerto Rico. The disciplinary procedures are detailed in Chapter VI of the *Student Regulations of the Rio Piedras campus.*

D. Graduate Program Coordinator and Graduate Affairs Committee

The Graduate Program Coordinator and Graduate Affairs Committee are appointed by the Director of the Environmental Science Department. The Graduate Program Coordinator will lead the Committee and the Director will serve as *ex-officio* member. Members of the Graduate Affairs Committee shall be five and may be drawn from all members of the Graduate Faculty, but a majority of members must be from the Department of Environmental Science. This Committee evaluates the academic progress of all graduate students each academic semester together with the Coordinator of the Graduate Program, and decides on matters related to compliance with these regulations. Quorum for committee meetings will be 50% of the members plus one.

The Graduate Program Coordinator will met with students collectively and individually to provide orientation about the program requirements, courses, selection of graduate advisor , funding opportunities, among other subjects related to the students' effective progress.

III. Admission to the Graduate Program in Environmental Science

A. *Eligibility and Admission Process*

Students will only be admitted to begin the Graduate Program in August (Fall semester) of each year. To be admitted to the Environmental Science Graduate Program, the applicant must fulfill the following requirements:

- A Bachelor's or Master's in Science degree (or its equivalent) with a major in Environmental Science, Biology, Computer Science, Physics, Mathematics, Chemistry, or Engineering from an accredited university. Students that do not have a Bachelor's degree in Environmental Science may be admitted conditionally until approval of the undergraduate Introduction to Environmental Science course with a minimum grade of B during their first semester. This does not apply to students who have taken the course (or equivalent) as part of their previous degrees.

  Students with a Bachelor's or Master's from an accredited university but not majoring in any of the previously mentioned disciplines, can apply for admission to the graduate program once they have met the following requirements with a minimum 3.0 grade point average: one year of General Biology, one year of General Chemistry, Calculus I, one year of Physics with Calculus, one semester of statistics for science majors and the Introduction to Environmental Science course. **However, satisfactory approval of these courses does not guarantee admission to the program**.

- A minimum general grade point average (including all courses taken) of 3.00 (on a scale of 0-4) and a minimum grade point average in science of 3.0 at the undergraduate level.

- Two official copies of their most recent academic transcript.

- Three letters of recommendation from professors with whom they have conducted research or taken science courses.

- A statement of research interests that mentions a specific research question and a potential advisor from the Department of Environmental Sciences. Students are expected to contact Environmental Sciences professors during the admission process. Visit the website for updated information on ES faculty (http://envsci.uprrp.edu/)

- Results from the Graduate Record Examination (GRE) or the Examination for Admission to Postgraduate Studies (*Examen de Admisión a Estudios de Posgrado*; EXADEP) or evidence of having taken these exams.

- Basic knowledge of English and Spanish in both written and oral form.

- Results from the TOEFL exam (foreign students only).

- Attend an interview, if required by the Graduate Affairs Committee.

In special situations, the Program's Graduate Affairs Committee may award **conditional admission** to students with a Bachelor of Science (or its equivalent) from an accredited university, but who for some reason do not fulfill any of the admission requirements, including the required grade point average. Conditionally admitted students must fulfill all of the requirements of the Program's retention index (and any other imposed by the Committee depending on the case) and their continuation in the Program will be evaluated at the end of the second semester of their conditional admission.

B. *Financial aid*

The Graduate Program will make every effort to provide financial support (stipend and tuition) for full-time students accepted into the program who are making satisfactory progress toward degree completion. Master's students can receive institutional funds through DEGI for a maximum of two years and doctoral students for a maximum of three years. Support is in the form of either a teaching or research assistantship. The assistantships are assigned by the Director of the Department in consultation with the Graduate Program Coordinator and are subject to availability of funds and supervisors. Different research projects in the Department or in other departments might have funds to support students. Information about these and other types of assistance can be obtained from the Graduate Program Coordinator and the Dean of Graduate Studies and Research (DEGI).

All students are strongly encouraged to apply for outside fellowships for which they are eligible such as NSF, DOD, Ford Foundation, etc. Deadlines for these fellowships are generally in November. Contact Maria Ramos at DEGI (ext. 3654) or Lillian Cordero (ext 7611) at the Office of the Dean of Natural Sciences information about specific fellowship opportunities.

C. *Transfer of Credits*

As per Certification Num. 38, 2012-2013 of the Academic Senate, only graduate courses (or their equivalents) approved with a minimum of B-, taken within five years of the date of entrance to the ES Graduate Program can be considered for transfer credits. A maximum of a fourth (1/4) of the course credits required for the corresponding M.Sc. or Ph.D. (8 and 10 credits, respectively) that were earned at another institution (i.e., validation) or in the UPR system (i.e., substitution) can be accredited. This certification applies to students admitted on August 2013 and thereafter. To apply for the acceptance of transfer credits the student must first successfully approve 12 course credits, and then submit to the Graduate Program Coordinator an official copy of their academic record (if it is not already on file) and a copy of the form "Request for Transfer of Credits" (**Form 1**), as well as a description of the courses according to the University catalog where the graduate courses were taken, and a letter from their advisor justifying the need to transfer credits for specific courses as part of the student's emphasis area, especially if equivalent courses are not offered by the Environmental Sciences Program. Upon approval by the Graduate Coordinator, a formal request will be sent to the Dean of Graduate Studies and Research (DEGI) in support of the course validation or substitution.

IV. Degree requirements

A. Courses

This section briefly describes general course requirements for the Master's and Doctoral Degrees. Beyond the first year of core courses, in consultation with their Graduate Advisor, students pursue individualized course selections depending on their emphasis area (list) and additional requirements determined by the Graduate Advisor or externally-funded training programs. Consult Appendix A or the Graduate Program Coordinator for additional details on these offerings and requirements.

Master's Degree: Environmental Science Master's students must complete a total of 38 credits. Of this total, 18 credits (47%) will correspond to core courses. Typically, an additional 6 credits (16%) will correspond to emphasis areas, 2 credits (5%) to a graduate seminar, 6 credits (16%) to elective courses, and 6 credits (16%) to graduate research leading towards a Master's thesis.

Doctoral Degree: Environmental Science Doctoral students must complete a total of 60 credits. Of this total, 18 credits (30%) correspond to core courses. Typically, 9 credits (15%) will correspond to emphasis areas, 2 credits (3%) to a graduate seminar, 4 credits (7%) to an emphasis area seminar, 9 credits (15%) to elective courses, and 18 credits (30%) to graduate research leading towards a Doctoral dissertation.

B. Selection of the Graduate Advisor

The student should select a Graduate Advisor that is a full-time member of the Faculty of the Environmental Science Graduate Program. The list of faculty currently in the Graduate Program is provided in Appendix B; an updated list will be maintained on the departmental website. A student that wishes to do their research with an advisor outside the Environmental Science Graduate Program must chose a member of the Faculty of the Environmental Science Graduate Program who will be designated to serve as the student's co-advisor. The choice of (co-) advisors will be approved by the Graduate Affairs Committee at the time the student forms a Student Advisory Committee (SAC; next section). At the beginning of their second semester, the student will formally select their Graduate Advisor and inform it to the Graduate Program Coordinator.

The Graduate Advisor will meet regularly with the student and will provide effective guidance to help him/he succeed in graduate school. The Graduate Advisor will be involved in the decisions the student makes regarding all degree requirements including course selection, selection of Student Committee, Teaching requirement, Qualifying Exams, Proposal and Thesis or Dissertation defense. Additionally, the Graduate advisor should provide guidance regarding funding opportunities, networking opportunities, development of oral and written communication skills, scientific creativeness, and critical thinking.

C. Selection of the Student Advisory Committee (SAC)

The student's committee will consist of three (for MS students) or five (for Ph. D students) members including the student's Graduate Advisor who will serve as the SAC Chair. All committee members must be actively and constantly involved in all evaluation activities regarding the student, including but not limited to Exam B, Proposal defense and Thesis/Dissertation defense. Students have to formalize the selection of their Advisory Committee by submitting Form 2 to the Graduate Affairs Coordinator for approval of committee members **before the end of the second semester of study in the Graduate Program**. Students who do not submit Form 2 by the beginning of their third semester will be at risk of being placed on probation. Any change in the Student's Committee requires the approval of the Graduate Affairs Committee (see section D).

Students must pay careful attention to the following rules when forming their Advisory Committee:

1. Their Graduate Advisor must be from an Internal faculty member (See Appendix B) or if the student would like one of the External faculty to supervise their research, then one of the internal faculty must be chosen as a Co-Advisor.

2. One member of the committee MUST be and Environmental Sciences Core Faculty Member

3. The SAC must be composed of a majority of members from the internal faculty (see Appendix B). For MS students, two members must be internal and one member may be external. In the case of Ph.D. student, three members must be internal and two may be external.

4. In the case of students that select the interdisciplinary option, at least one committee member should be from outside the Environmental Sciences Graduate Department.

In the event that the student or the Graduate Advisor requires the participation of a SAC member who is not in Appendix B, the student should provide evidence that the proposed committee member is an "active researcher". Evidence for this is provided in the form of the researcher's curriculum vitae. Exceptions to the "active researcher rule," as approved by the Graduate Affairs Committee, may include committee members who are not active researchers but yet who provide expertise critical to the student's research goals, or any other scientist who provides critical knowledge for the development of the student's research program. However, no more than one exception may be granted in the formation of any one SAC. A copy of the Graduate Program's Regulations will be provided to all committee members.

D. Change of Advisor and/or Research Area

If a student decides to change research projects and at the same time change their research advisor, he or she should complete **Form 3**, which must be approved by the Graduate Affairs

Committee. If the change of graduate advisor involves a significant change in the research area, the change will not be approved until the Graduate Program Coordinator and the Graduate Affairs Committee complete an analysis of the student's academic file regarding qualifying exams and courses to guarantee that the student qualifies for the new area.

E. Qualifying Examinations

1. Qualifying Examination (Part A): After the first year as a graduate student, students will be required to take Part A of a qualifying exam integrating knowledge acquired in the core courses (CIAM 6115, 6117, 6118 and 6256). The examination will be offered during the summer of the first year.
The student will have two opportunities to pass the examination. The first opportunity will be a written examination based on the course content mentioned above in which the students are presented four questions written by the faculty teaching the core courses. The students choose two questions to be answered in a single eight-hour period. Questions are then graded by faculty on a 0-100 scale, with an 80 or above signifying "Pass" and 90 or above signifying "Exceptional." Any student which fails to achieve an average grade of 80 or above on the written portion of the examination will then go on to an oral examination. The oral examination, directed at the content of all four courses mentioned above, will be given by the four faculty teaching the core courses. The examination committee will have up to three hours to examine the student, at which point they will vote "Pass" vs. "Fail" on the student's performance. Failure to approve the oral examination by a supermajority vote (no more than one member voting "Fail") will result in dismissal of the student from the Graduate Program.

2. Qualifying Examination (Part B): During their fifth semester, students who wish to continue in the doctoral program must successfully complete the qualifying exam (Part B) prepared by the student's advisory committee (SAC) consisting of both a written and oral portion directed at the students' understanding of coursework and additional written material related to the student's research topic. The student should meet with each committee member to discuss the dissertation research topic so that the written material assigned is relevant to the student's interest and provides insight into their proposal development. Therefore, by the time the student takes Exam B, he/she should have a good idea of what the objectives and structure of the research proposal are.

The student and the SAC Chair should work a schedule together for both the written and oral portions of the Qualifying Examination (Part B). Once the schedule is defined and before the written portion of the exam begins, **Form 8** must be filled, signed by all committee members and submitted by the student to the Graduate Coordinator. The schedule must consider that the student has a maximum of ten (10) calendar days to answer the written exam, the committee has seven (7) calendar days to evaluate the written portion and send their evaluations and comments to the SAC Chair, and then the SAC Chair must send the evaluations and comments from the committee a minimum of three (3) calendar days before the oral portion of Exam B.

The written portion consists of five questions (one per each member of the committee) based on assigned literature by each committee member, of which the student must answer four. The SAC Chair should collect the questions and send them to the student, who will have a maximum of ten (10) calendar days to answer them. The exam is open book (students can use any books or other written or online resources), but students cannot consult with any person in answering the questions. The Committee expects the responses to be more than a mere review of the literature on the subject and should demonstrate critical thinking, original thought and effective communication (for more information see section *K. Criteria for evaluating Qualifying Examinations, Proposals and Thesis or Dissertation p. 14 and Appendix C***).** Each Committee member then receives from the student the response to the question they asked and has seven (7) calendar days to evaluate it and send their evaluation and comments to the SAC chair. The chair will collect the evaluated questions from all committee members and will send them to the student and the Graduate Coordinator to keep in the student's records. The student will have three (3) calendar days before the oral exam to review the evaluated questions.

The oral portion of Exam B should be taken ten (10) calendar days after the student hands in the answers to the written portion, and no less than three (3) calendar days after the student receives the evaluation and comments of the written portion from all committee members. The purpose of the oral portion is to emphasize the topics of the assigned literature but is not limited to them. The Evaluation Table (**Appendix C**) must be submitted by the SAC Chair to the Graduate Coordinator within seven (7) calendar days of the oral Exam B.

The assessment of the Exam B (written and oral portions) is: Approved, Action Requested for Approval, or Fail.

- If the student approves the exam, he/she can continue with the preparation and defense of their dissertation proposal.

-If action is requested for approval, the student must address the actions requested, to the satisfaction of the committee. The student will have a period of no more than one month from the day the SAC Chair submits to the student and the Graduate Coordinator a written document explaining the specific actions requested and the process of evaluating these actions. This document must be submitted within seven (7) calendar days of the oral Exam along with a report of the student's performance during the Oral exam B.

- Failure to approve the examination by a supermajority vote (no more than one member voting "Fail") will result in dismissal of the student from the Graduate Program. If the student fails, she/he cannot continue in the doctoral program but can, upon the recommendation of the SAC and with the approval of the Graduate Affairs Committee, complete the Master's program. This request must take the form of a letter submitted by the student to the Graduate Program Coordinator with the signature of all committee members.

Upon completion of the Qualifying Examination Part B, the student must submit a completed **Form 4** to the Graduate Coordinator.

Students who have not taken Exam B by the end of their fifth semester, must submit to the Graduate Coordinator a letter to fully justify their delay and a schedule showing the steps they are taking in preparation for the exam and the date they will take it. This letter must have the approval of the SAC and must be submitted a month before the end of the aforementioned fifth semester. A student who has not successfully approved Exam B by the end of their fifth semester nor submitted the letter described above, will be placed on probation.

F. *Teaching Requirements*

For all master's students a teaching experience of one semester is required, while for doctoral students, a minimum of two semesters is required. Students who have previous teaching experience may apply in writing to the Graduate Program Coordinator for an exemption from that requirement. The fulfillment of this teaching experience should be completed by the end of the third year and can be met in several ways:

1. Hold a TA position at the College of Natural Sciences or at another campus in the UPR system (with the approval of the Graduate Program Coordinator).
2. Hold a teaching assistant position in a NSF funded (e.g., "GK-12") or other K-12 program devoted to environmental education, subject to approval by the Graduate Program Coordinator
3. Effort equal to a TA in another position. The student must submit a letter requesting approval to the Graduate Coordinator.

Typical TA responsibilities include grading exams, holding regular office hours, preparation of course handouts and presentations, attending lectures, or for lab courses, setting up equipment and supervising cleanup. Students who wish to teach beyond the requirements may ask to be considered, however, first priority will be given to students who have not yet met their requirement. If you are offered institutional support in the form of a PEAF (this does NOT include Title V fellowships), you are expected to teach in a course or a lab during the semester even if you have already fulfilled your TA assignment.

G. *Language Requirements*

All students registered in the Program should have a working knowledge of both Spanish and English. This is recommended since most teaching is done in Spanish, while the textbooks, scientific articles, and references are in English. Moreover, most of the undergraduate teaching is done in Spanish. A student with a language deficiency can be admitted to the Program with the condition that he or she takes language courses that will help the student surmount this deficiency during their first year of studies. The Environmental Science Program can coordinate these courses with the Colleges of Humanities and/or General Studies.

H. Advancement to Candidacy

A student who wishes to obtain a graduate degree must first be admitted as a candidate for the degree by the Environmental Science Graduate Affairs Committee. Advancement to candidacy means that the student has demonstrated that he or she is capable of fulfilling the requirements for the degree and has sufficient training to pursue independent research.

Evaluation of Master's candidacy promotion will be carried out after the first year of graduate studies. In order to be promoted as a Master's degree candidate, academic performance, results of Qualifying Exam Part A and the Graduate Affairs Committee's decision are taken into consideration. In practice, once the Graduate Affairs Committee approves the first Annual Progress Report of the student, following successful completion of the Qualifying Examination Part A, the Graduate Program Coordinator will issue a letter promoting the student to Master's candidacy.

Evaluation of Ph.D. candidacy promotion will be carried out within three years of having been admitted to the Program. In order to be promoted as a Doctoral degree candidate, academic performance, Qualifying Examinations Part A and B, and the Graduate Affairs Committee's decision are taken into consideration. In practice, once the Graduate Affairs Committee approves the second (or, if necessary, third) Annual Progress Report of the student, following successful completion of Qualifying Examination Part B, the Graduate Program Coordinator will issue a letter promoting the student to Ph.D. candidacy.

I. Research Proposal

Students are required to prepare a written original research proposal explaining their plans for research within a year of passing qualifying exam Part A for Master's and Part B for Doctorate. Preparation of the proposal is done with the aid of the student's Graduate Advisor and the input from the student's committee. The student and his/her advisor should work a date together for the proposal defense considering the availability of all committee members. Once the date is defined, **Form 8** must be filled, signed by all committee members and submitted to the Graduate Coordinator. The proposal is then defended at a meeting with the student's committee. The written proposal must be presented to the committee members no less than one week before the proposal defense. The student must demonstrate critical thinking, original thought and effective communication in their written proposal and defense (for more information see section *K. Criteria for evaluating Qualifying Examinations, Proposals and Thesis or Dissertation P. 14 and Appendix C)*.

At the defense, the assessment is: Approved, Approved with Clarifications, or Fail. Any clarifications must be resolved within no more than two months. How and when the clarifications are addressed is at the discretion of the committee, but they can require that the student meet with the full committee for a second time. Upon successful defense of their proposal, students should submit a completed **Form 5** to the Graduate Program Coordinator.

Students must successfully defend their proposal during their fourth semester (M.S) or seventh semester (Ph.D.). Students who have not defended their proposal by then must submit to the Graduate Affairs Committee a letter to fully justify their delay and a schedule showing when they will be defending their proposal. This letter must have the approval of the student's thesis or dissertation committee and must be submitted a month before their proposal defense date. A student who has not successfully defended their proposal before the end of their fifth semester (M.S) and eighth semester (Ph.D.), nor submitted the letter described above, will be placed on probation.

J. Graduate Research

The student must prepare, present, and defend a Master's thesis or Ph.D. dissertation as a final requirement of the degree.

1. Thesis or Dissertation manuscript: Once the student has completed a written draft of their thesis or dissertation with the aid of their advisor(s), they will submit a copy to each committee member no less than two weeks in advance of the oral defense (see below).

The students have two options of format for the thesis or dissertation.

A) Journal thesis format:
   - Introduction, chapters are stand-alone publications, conclusion.
   - All articles must be related to the main thesis objective stated in the Introduction and to the final remarks in the conclusion to create a cohesive document.
   - Students must be first author in all articles included in their thesis or dissertation.

B) Classic thesis format:
   -Introduction, Theoretical and/or Empirical Chapters, Conclusion.

The dissertation must also conform to the format required by DEGI and Certification #38, 2012-2013 Academic Senate.

2. Oral defense: Immediately prior to the oral defense of the thesis or dissertation and after handing in the written draft of the thesis or dissertation to the committee, the student should present a public seminar in Natural Sciences based on their research. The date selected for the oral defense of the thesis or dissertation will be established by unanimous agreement between the student, the Graduate Advisor, and the remaining committee members. Once the date is selected, **Form 8** must be filled, signed by all committee members and submitted to the Graduate Coordinator. The seminar time and place should be publicly announced one week in advance of the presentation. Following the seminar, the public in attendance will be allowed to ask questions to the student. Thereafter, the student will meet privately with the committee to address additional

questions. At the conclusion of the questions, the committee will meet privately to determine if the student's thesis or dissertation is: Approved, Approved with Conditions, or Fail. If the student committee finds that the defense has not been done at the expected level for the master's or doctoral degree (Approved with Conditions), the student will be granted no more than three months to rectify the problems and defend it in front of the committee for the second and last time. Once the student has successfully defended the thesis or dissertation, they should submit a completed **Form 6** to the Graduate Program Coordinator.

The Committee expects both the thesis or dissertation and the oral defense to be more than a mere review of the literature and should demonstrate critical thinking, original thought and effective communication (See section below K. *Criteria for evaluating Qualifying Examinations, Proposals and Thesis or Dissertation and Appendix C*).

3. Requirement for publications: All doctoral students must present evidence of at least one publication or manuscript submitted for publication in a peer reviewed journal in which they were the major contributor before conducting the oral presentation and defense of the dissertation. The publication must contain all or part of the results obtained by the students during their dissertation work. Evidence of publication(s) should be submitted with **Form 6**.

K. Criteria for evaluating Qualifying Examinations, Proposals and Thesis or Dissertation

a. Critical Thinking

Identifies and appropriately formulates the problem, question, or topic: Clearly identifies the challenge and the intrinsic or implicit aspects of the subject. Identifies and explains essential relationships between and among concepts.

Presents, evaluates, analyzes, and uses data / evidence properly: Demonstrates that he/she has selected and evaluated the information. Examines the evidence and the sources from which it was obtained, questions the accuracy and relevance of the data or information gathered. Demonstrates clear organization of ideas according to the importance and impact that each entails.

Develops the argument using other perspectives and positions: Integrates perspectives from a variety of sources to justify the analysis. The analysis of other positions is accurate. Is immersed in a complex process of assessment and justification of challenging ideas.

b. Original Thought:

Develops, presents, and communicates own perspective, hypothesis or positions: Presents and justifies his/her own view or hypothesis while integrating contrary interpretations. Properly identifies own posture, applying experience and data/information gathered.

c. Effective communication:

The language communicates ideas clearly and efficiently. Words are consistent and orderly so that the approach can be understood easily. Uses language appropriate to the

discipline. Communication is rich and eloquent. The style is appropriate for the audience and the subject. The organization is clear, the transitions between ideas are smooth. Supports arguments with valid statements and sources. Sources are cited correctly, showing understanding of the concepts discussed.

L. Program Timeline

The Environmental Science Graduate Program expects that the students complete all requirements for the Master's degree in a period of 3 years or less. However, the general UPR M.S degree has a term not exceeding 4 years from the date of admission to meet degree requirements including defense and submission of thesis (Certification No.38 of the Academic Senate). This period may be extended by one (1) additional year. This extension will be regarded as exceptional and as such must be justified to the Graduate Affairs Committee, which notifies the applicant of the final decision. For more information on extensions to complete a graduate degree, please refer to Certification No. 38, 2012-2013 Academic Senate)

The Environmental Science Program expects that the students complete all requirements for the Ph.D. degree within a period of 6 years or less. For the doctoral students who entered the program with a bachelor's degree, the student must complete all requirements for the degree including the successful defense and submission of the dissertation within a maximum of 9 years from the date of admission (Certification No. 38 of the Academic Senate). For the doctoral students who entered the program with a master's degree, the student must complete all requirements for the degree including the successful defense and submission of the dissertation within a maximum of 7 years from the date of admission (Certification No. 38 of the Academic Senate). These terms can be extended for a period of one year at a time for a total period not to exceed two additional years. These extensions will be regarded as exceptional and as such must be justified to the Graduate Affairs Committee, which notifies the applicant of the final decision. For more information on extensions to complete a graduate degree, please refer to Certification No. 38, 2012-2013 Academic Senate). All courses officially expire five years after they have been taken (Certification No. 38 of the Academic Senate).

V. General Procedures

A. Orientation for New Students

New students will attend the Graduate Program's orientations before the beginning of their first semester. During this period, the student will receive an academic program based on their interests and the requirements of the Program. All students must attend the training for teaching assistants offered annually during July. They also should attend safety trainings for the chemistry laboratories that are offered annually by authorized personnel from the University of Puerto Rico. Students that will be working with human subjects (including conducting interviews) need to have a certificate of ethical conduct from NIH (http://phrp.nihtraining.com/users/login.php)

B. Registration

The registration of all environmental science graduate students (and other students who are taking environmental science graduate courses) will be done by the Graduate Program Coordinator. To avoid late registration problems, all entering graduate students will follow the procedure that will be described during the orientation period. Students continuing in the Program should do pre-registration. The Environmental Science Graduate Program will announce the courses that will be offered, place, and dates for pre-registration. Before pre-registration each student will:

1. Discuss their academic program with their Graduate Advisor. The Graduate Coordinator will serve as an advisor to new students that have not officially selected their Graduate Advisor. All questions or problems related with their program should be discussed with the Graduate Advisor, the Graduate Environmental Science Program Coordinator, and/or the Graduate Affairs Committee.

2. Obtain from the Graduate Program Office the form for pre-registration and fill it out.

3. Each form must be signed by the student's Graduate Advisor.

4. On the day assigned for the pre-registration process each student will submit the requested forms containing the signatures of the Graduate Advisor and the student to the Graduate Coordinator.

5. During the period of registration at the beginning of each semester, the student should pick up their registration materials according to the schedule announced by the College of Natural Sciences and complete their registration with the Registrar and Treasurer.

6. Changes in registration: Changes in registration are discouraged. A graduate student should plan their program carefully so that changes will not be necessary. If a student finds that it is essential to make a change to their schedule, he or she should consult the University calendar for the dates assigned for adding or dropping courses. The Graduate Program Coordinator will make the registration changes with the authorization of the student's Graduate Advisor.

C. Annual Progress Report

Students must meet with their Advisor each year to complete an Annual Progress Report, beginning in their 2nd st Semester of their first year. See **Form 7**. Each report should be a complete record of the student's progress at the date that the form is completed. This should be submitted to the Program Coordinator for approval by the Graduate Affairs Committee.

D. Research Thesis/Dissertation

A graduate student, either master's or doctorate, who has fulfilled all the requirements of the degree and has completed the experimental part of their research work, will be able to enroll in the Thesis/Dissertation Continuation course, CIAM 6896 (master) or CIAM 8996 (doctoral), in order to be a student of the University of Puerto Rico when applying for graduation.

E. Academic Progress

To be considered as a fulltime student, a student must be registered in at least nine credit hours during a regular semester, unless registered in Thesis or Dissertation(CIAM 6999 or 8999), or Continuation of Thesis or Dissertation (CIAM 6896 or 8996). It is expected that a first year student will take three graduate courses and a graduate seminar each semester.

The student's academic average is computed using course grades as a base, except those that the student has repeated, and in this case the best grade will be used to compute the average. A student is considered *bonafide* if their academic grade point average (GPA) is 3.00 or higher at the end of each semester. If a student receives a grade of C or less in any course, it cannot be used to satisfy the graduation requirements, even though the grade is included in their academic average. Any course with C, D or F grade can be repeated when the course is offered again. If the academic average is lower than 3.00 the student goes on probation at the beginning of the next semester at the discretion of the Graduate Program Coordinator and with the approval of the Graduate Affairs Committee. The student will be asked to explain in writing the reasons for their poor performance prior to any determination of their academic status.

By dropping a required course the student will enter probationary status. The student will remain on probation until he or she repeats and passes the required course the next time it is offered.

Any other significant violation of the regulations contained in this document will be considered sufficient reason to place a student on probation.

A student with probationary status will not be eligible for financial support, taking the qualifying exams, or be able to fulfill other degree requirements. Nevertheless, the student will be able to continue taking graduate courses and working on research at the discretion of their advisor. A student is removed from this probationary status as soon as they raise their academic average above 3.00, or, if placed on probation for other reasons, their situation is resolved to the satisfaction of the Graduate Affairs Committee. Requests for removal from probationary status must be made in writing by the student to the Graduate Program Coordinator. If a student remains on probation for one year, he or she will be dropped from the Program.

Any student dropped from the Graduate Program may apply for readmission only after having satisfied the deficiencies. Therefore, the student can continue to take graduate courses with the

approval of the Graduate Program Coordinator. The student should then follow the normal procedures to apply.

Readmission to the Graduate Program will not be considered if the student has been dropped from the Program as a result of:
1. Not passing the required qualifying exam.
2. Not fulfilling the admission requirements for candidacy in the time limit specified.
3. Not passing the proposal defense.
4. Not satisfying the thesis or dissertation requirements in the time limit specified.
5. Academic dishonesty

If a student decides to leave the Graduate Program before completing the degree, he or she must advise the Graduate Program Coordinator in writing of this decision. Similarly, if the student resigns from a teaching or research assistantship, he or she must submit their resignation by letter to the Graduate Program Coordinator.

Any student who fails to register for a semester must request readmission to the Graduate Program and to the University. Students can request, in writing, a leave of absence from the graduate program by submitting a letter to the Graduate Program Coordinator, co-signed by the Graduate Advisor, at least one week prior to registration. A leave of absence can be approved for up to one year, renewable for a second year. Beyond two years, the student must request readmission to the Graduate Program and the University.

F. Appeals

Requests to appeal any decision made under these regulations should be sent to the Graduate Affairs Committee by the student in written form. The reasons for appeal should be substantive and documented with additional materials as necessary and sent to the Committee no later than six months after the decision was taken. Once the request has been received, the Committee will have one month to investigate the reasons for the appeal and respond to the student. If the student is not satisfied with the decision, he or she may follow standard University of Puerto Rico appeals procedures.

G. Graduation

The student will fill out the graduation application in the Registrar's Office during the first week of the semester in which he or she expects to complete all requirements of the degree. At the time of applying for graduation, the student is responsible to have already applied for reclassification, validated courses, or has an extension for the validation of these courses if necessary. It is recommended that the student requests an evaluation of their academic record and status in the Graduate Program from the Graduate Program Coordinator at least one year before graduation. The student is responsible for removing any deficiencies and holding a 3.00 GPA at the time of graduation. Three bound copies and one electronic copy in pdf format of the thesis or dissertation should be handed into the Environmental Sciences Graduate Program no

later than four weeks before the semester ends. Two of these bound copies will be kept at the Library of Natural Sciences and the third one will be kept in the Environmental Science Graduate Program. An additional copy will be given to the Graduate Advisor. Additional electronic or bound copies can be distributed to the remaining committee members. It is the student's responsibility to be aware of and meet all the degree requirements. The Graduate Program Coordinator will advise the student on this. A Certification of Graduation will not be given until the student hands in the bound copies of the thesis or dissertation. It is a requirement of all doctoral students to register their dissertations in the international bibliography bank of University Microfilms Inc.

I. Review of this Document

This document must be reviewed by the Graduate Affairs Committee within three years of its approval. See cover sheet for date of last approval.

Appendix A. This section provides detailed information on course sequences based on emphasis area and program.

Core courses

The core courses will be taken both by Master's and Doctoral students in Environmental Science.

Code	Title	Credits	Hours
CIAM 6115	The terrestrial environment	3	45
CIAM 6116*	Tropical ecosystems	3	45
CIAM 6117	The coastal environment	3	45
CIAM 6118	The urban environment	3	45
CIAM 6235*	Remote sensing I	3	45
CIAM 6256	Methods for statistical analysis of environmental systems	3	45

* These courses (CIAM 6116: Tropical ecosystems and CIAM 6235: Remote Sensing I) are required for those students interested in completing a degree in Environmental Modeling and Spatial Analysis and in Sustainable Management of Islands and Tropical Regions. Students that wish to pursue an Interdisciplinary option are welcome to take CIAM 6116 and CIAM 6235 but can also take any other courses of content level 5000, 6000 or 8000 offered in any graduate programs of the College of Natural[1] Science or other graduate programs in the Rio Piedras Campus, with prior authorization of the Department Director or Environmental Science Program Coordinator. A few examples of these courses are:

BIOL 6145	Bioconservation
BIOL 6126	Population ecology
BIOL 6501	Cellular and molecular biology
BIOL 6360	Bioinformatics
BIOL 6367	Ecological genetics
BIOL 6996	Plant ecophysiology
BIOL 6995	Tropical biology
BIOL 6999	Special topics in modern biology
BIOL 5565	Fungi biology
BIOL 5548	Neurobiology
FISI 6441	Nuclear physics
FISI 6407	Advanced laboratory
MATE 6601	Probability and statistics I
MATE 6602	Probability and statistics II
MATE 6685	Computer applications
MATE 6686	Experimental design and advanced analysis
MATE 8990	Statistical methods and bioinformatics

[1] Many of the courses offered by other graduate programs of the College of Natural Sciences require, as a prerequisite, undergraduate level courses. If a student is interested in taking a core course which has an undergraduate prerequisite, the prerequisite must be taken without these undergraduate credits counting towards the Master's or Doctoral degree.

QUIM 6215	Theory of analytical chemistry
QUIM 6225	Theory of instrumental analysis
QUIM 6811	Advanced biochemistry I
QUIM 6812	Advanced biochemistry II
QUIM 6990	Tropospheric chemistry
PLAN 6020	Geographic information systems for planning
PLAN 6098	Environmental economics for planning
PLAN 6117	Computer applications for planners
PLAN 6135	Society, Environment and planning
PLAN 6526	Urban Space Design
PLAN 6619	Environmental studies for planning
PLAN 6995	Environmental Justice
PLAN 6608	Environmental control technologies
PLAN 6617	Environmental politics and natural resources

Emphasis area courses: Option in Environmental Modeling and Spatial Analysis
Master's students with the option in Environmental Modeling and Spatial Analysis must take at least two of the following three emphasis courses, while Doctoral students in this emphasis must take all three emphasis courses.

Code	Title	Credits	Hours
CIAM 8225	Methods in spatial analysis	3	45
CIAM 8236	Remote sensing II	3	45
CIAM 8257	Techniques for construction of environmental models	3	45

Emphasis area courses: Option in Sustainable Management of Islands and Tropical Regions
Master's students with the option in Sustainable Management of Islands and Tropical Regions must take at least two of the following three emphasis courses, while Doctoral students in this specialization must take all three emphasis courses.

Code	Title	Credits	Hours
CIAM 8425	Environmental geology	3	45
CIAM 8435	Environmental hydrology	3	45
CIAM 8445	Environmental meteorology	3	45

Emphasis area courses: Interdisciplinary option
Master's students in the interdisciplinary option, with prior authorization from the thesis advisor, may take any two courses in the Environmental Modeling and Spatial Analysis emphasis or Sustainable Management of Islands and Tropical Regions emphasis or substitute these for an equal amount of credits in level 6000 or above courses offered by other graduate programs in the College of Natural Sciences of the campus. Doctoral students in the interdisciplinary option, with prior authorization from the dissertation advisor, may take any three courses in the Environmental Modeling and Spatial Analysis or Sustainable Management of Islands and Tropical Regions emphasis or substitute these for an equal amount of credits in level 8000 courses offered by other graduate programs in the College of Natural Sciences or other graduate programs on campus. Among these courses are:

MATE 8990	Topics in applied mathematics I
MATE 8995	Topics in applied mathematics II
QUIM 8211	Advanced analytical chemistry I
QUIM 8212	Advanced analytical chemistry II
QUIM 8992	Special topics in analytical chemistry
QUIM 8996	Special topics in physical chemistry
QUIM 8998	Special topics in biochemistry
FISI 8105	Topics in materials science

Electives

Considering their research interest, students may take any graduate level course to fulfill their elective course requisite. Decisions on which electives to take must be taken with the help of their Graduate Advisor.

Students who which to rotate in a laboratory of interest or who which to start working on their research before defending their proposal may take **CIAM 6910** Supervised Graduate Research (Rotation) which counts as an elective course. This course may be taken up to two times for a maximum of 6cr for MS students and up to three times for a maximum of 9cr for Ph.D. students. This course is evaluated through the **Research Course Evaluation Form** found at the end of this document. This form has two section: one to be filled by student and research supervisor at the beginning and the other at the end.

Seminars

Code	Title	Credits	Hours	
CIAM 8901	Graduate seminar I	1	15	
CIAM 8902	Graduate seminar II	1	15	
CIAM 8205	Seminar in environmental modeling and spatial analysis I	2	30	
CIAM 8206	Seminar in environmental modeling and spatial analysis II		2	30
CIAM 8405	Seminar in sustainable management of tropical islands I		2	30
CIAM 8406	Seminar in sustainable management of tropical islands I		2	30

All Master's or Doctoral students will take the Graduate Seminar courses I and II during their first year (CIAM 6901). Doctoral students with an option in Sustainable Management of Islands and Tropical Regions and in Environmental Modeling and Spatial Analysis will take the topical seminars corresponding to their emphasis option. Doctoral students in the interdisciplinary option, with prior authorization from the dissertation advisor, can take any of these two seminar courses or substitute them for an equal amount of credits in advanced seminars offered by other graduate programs in the College of Natural Sciences or other graduate programs on campus. Among these are found:

BIOL 8368	Seminar in population biology
QUIM 8205	Seminar in analytical chemistry I
QUIM 8206	Seminar in analytical chemistry II
QUIM 8801	Seminar in Biochemistry
QUIM 8901	Graduate Seminar
QUIM 8205	Seminar in Analytic Chemistry
QUIM 8405	Seminar in Organic Chemistry

Research credits

Students who have defended their proposal, may take CIAM 6999 Graduate Masters Research (MS Students) or CIAM 8999 Graduate Doctorate Research (Ph.D. students) to work on their research thesis or dissertation respectively. MS students need to complete six (6) research credits while Ph.D. students need to complete eighteen (18).

These research credits are evaluated through the **Research Course Evaluation Form** found at the end of these regulations. This form has two section: one to be filled by student and research supervisor at the beginning and the other at the end. The first section of the form must be completed, signed by both student and graduate advisor, and submitted to the graduate coordinator during the first two weeks of the beginning of the semester the course is registered in. The second section must be completed, signed by both student and graduate advisor, and submitted to the graduate coordinator by the end of the semester the course is registered in.

Appendix B. Current faculty members of the Environmental Science Graduate Program (September 2014). Note: This list is subject to change. Yearly revisions are made to account for changes

The following are consider INTERNAL faculty members of Environmental Sciences

NAME	EMAIL ADDRESS	DEGREE AND SPECIALTY	AFFILIATION	RESEARCH AREA
James Ackerman	ackerman.upr@gmail.com	Ph.D. Taxonomy, plant ecology	UPR-RP Biology	Plant ecology, taxonomy, invasive plants
T. Mitchell Aide	tmaide@yahoo.com	Ph.D. Community ecology	UPR-RP Biology	Community ecology, socio-ecology
Rafael Arce	scoreupr@gmail.com	Ph.D. Physical chemistry	UPR-RP Chemistry	Photochemistry of atmospheric pollutants
Paul Bayman	bayman.upr@gmail.com	Ph.D. Botany	UPR-RP Biology	Mycology, plant pathology, biodiversity, secondary metabolism
Nicholas Brokaw	nvbrokaw@ites.upr.edu	Ph.D. Tropical forest ecology	UPR-RP Environmental Sciences	Forest ecology
Carlos Cabrera	carlos.cabrera2@upr.edu	Ph.D. Analytical Chemistry	UPR-RP Chemistry	Nanotechnology
Patricia Burrowes	paburrowes@uprrp.edu	Ph.D. Ecology, herpetology	UPR-RP Biology	Amphibian population dynamics
Nestor Carballiera	nmcarballeira@uprrp.edu	Ph.D. Biochemistry	UPR-RP Chemistry	Lipid chemistry, marine natural products
Carlos J. Corrada Bravo	carlos.corrada2@upr.edu	Ph.F. Electrical Envigeering	UPR-RP Computer Science	
Elvira Cuevas	epcuevas@gmail.com	Ph.D. Ecosystem Ecology	UPR-RP Biology	Terrestrial ecosystem processes, plant/soil interactions, nutrient cycling, and plant eco-physiology
Liz Díaz Vazquéz	lizvazquez8@gmail.com	Ph.D. Analytical chemistry	UPR-RP Chemistry	Semi-volatile pollutants in human sebum
Zomary Flores	zomary.flores@gmail.com	Ph.D. Microbiology	UPR-RP Biology	Bacterial genetics, symbiosis, host-microbe interactions, oxidative stress
Qiong Gao	shiqun.gao@gmail.com	Ph.D. Agriculture Engineering	UPR-RP Environmental Sciences	Ecosystem Modeling
Gary Gervais	ggervais@onelinkpr.net	Ph.D. Mircobiology	UPR-RP Environmental Sciences	Microbiology and Biofuels
Tugrul Giray	tgiray2@yahoo.com	Ph.D. Animal behavior	UPR-RP Biology	Animal behavior (bees)
Griselle González	ggonzalez@fs.fed.us	Ph.D. Ecology	UPR-RP Biology and ITTF	Soil ecology

William Gould	wgould@fs.fed.us	Ph.D. Landscape ecology	UPR-RP Biology and ITTF	Landscape ecology
Rosana Grafals-Soto	rosana.grafals@upr.edu	Ph.D. Geography	UPR-RP Environmental Sciences	Coastal Geomorphology, Spatial Analysis
Kai H. Griebenow	kai.griebenow@gmail.com	Ph.D. Biochemistry	UPR-RP Chemistry	Structure of proteins, bio-remediation, eco-physiology of marine marco- and micro-algae, bio-nanotechnology
Edwin Hernández*	coral_giac@yahoo.com	Ph.D. Marine ecology	UPR-RP Biology	Reef and coral ecosystems
Heera Lal Janwa	hjanwa@gmail.com	Ph.D. Mathematics	UPR-RP Mathematics	Coding theory; discrete mathematics, cryp-tography, number theory and algebraic geometry, bioinformatics, and ecological informatics.
Rafael L. Joglar	rjoglar@uprrp.edu	Ph.D. Ecology, herpetology	UPR-RP Biology	Herpetology
D. Jean Lodge	djlode@caribe.net	Ph.D. Mycology	UPR-RP Biology and ITTF	Mycology, phylogenetics, nutrient cycling
Clifford Louime	clifford.louime@upr.edu	Ph.D. Environmental Sciences	UPR-RP Environmental Sciences	Sustainable Production of Biofuels
Ariel Lugo	alugo@fs.fed.us	Ph.D. Tropical ecology	UPR-RP Biology and ITTF	Tropical forest ecology
Mariano Marcano	mmarcano@uprrp.edu	Ph.D. Applied mathematics and modeling	UPR-RP Mathematics	Numeric systems, linear and non-linear system optimization, mathematical modeling
Steve Massey	stevemassey@gmail.com	Ph.D. Biochemistry	UPR-RP Biology	Bioinformatics
Olga Mayol-Bracero	omayol@ites.upr.edu	Ph.D. Analytical chemistry	UPR-RP Environmental Sciences	Atmospheric Chemistry and Aerosols
Elvia Meléndez-Ackerman	elmelend@gmail.com	Ph.D. Plant ecology	UPR-RP Environmental Sciences	Endangered species, Conservation, Social-ecological Research
Gabriel Moreno	gmviquiera@prtc.net	Ph.D. Ecology and Evolution	UPR-RP Biology	Sustainable Cities, Environmental Design
Jorge Ortiz	jorgeortiz.ites@gmail.com	Ph.D. Hydrology	UPR-RP Environmental Sciences	Limnology, Hydrology
Luis R. Pericchi	luispericchi@yahoo.com	Ph.D. Statistics and applied mathematics	UPR-RP Mathematics	Statistics and mathematical modeling
María E. Pérez	maria.perez34@upr.edu	Ph.D. Mathematics	UPR-RP Mathematics	Bayesian Statistics, Biostatistics
Alonso Ramírez	aramirez@ramirezlab.net	Ph.D. Limnology	UPR-RP Environmental Sciences	Aquatic ecology

Carla Restrepo	crestre@hpcf.upr.edu	Ph.D. Landscape ecology	UPR-RP Biology	Landscape ecology, landslides
Rafael Ríos	rafaelrios00936@yahoo.com	Ph.D. Environmental health engineering	UPR-RP Environmental Sciences	Water Treatment and Pollution Control
Loretta Roberson	loretta.roberson@gmail.com	Ph.D. Marine ecology	UPR-RP Biology	Anthropogenic Impacts on Coastal Marine Communities
Osvaldo Rosario	rosario_o@msn.com	Ph.D. Organic chemistry	UPR-RP Chemistry	Methods in analysis of environmental pollutants, air pollution analysis, bioaccumulation of pollutants
Alberto Sabat	amsabat@gmail.com	Ph.D. Biology	UPR-RP Biology	Population and marine ecology
Arthur D. Tinoco	atinoco9278@gmail.com	Ph.D. Chemistry	UPR-RP Chemistry	Bioactivity of metals
Gary A. Toranzos	gatoranzos@uprrp.edu	Ph.D. Environmental virology	UPR-RP Biology	Environmental microbiology
Joseph Wunderle	jmwunderle@gmail.com	Ph.D. Ecology	UPR-RP Biology and ITTF	Avian ecology and management
Mei Yu	meiyupr@yahoo.com	Ph.D. Spatial analysis, modeling	UPR-RP Environmental Sciences	Environmental spatial analysis, GIS and remote sensing
Jess K. Zimmerman	jesskz@ites.upr.edu	Ph.D. Plant ecology	UPR-RP Environmental Sciences	Plant communities and response to disturbances
Xiaoming Zou	xzou2000@yahoo.com	Ph.D. Forest ecology	UPR-RP Environmental Sciences	Soil nutrients and biogeochemical cycles

The following are considered associated/EXTERNAL faculty to Environmental Sciences UPRRP

NAME	EMAIL ADDRESS	DEGREE AND SPECIALTY	AFFILIATION	RESEARCH AREA
Maritza Barreto	maritzabarretoorta@gmail.com	Ph.D. Oceanography	UPR-RP Geography	Coastal and beach geomorphology, and risk processes
Jorge Bauza	oceanus.bauza@gmail.com	Ph.D. Marine Sciences	Scientific Director The San Juan Bay Estuary Program	Water quality, Benthic mapping, aquatic ecosystem restoration
José A. Dumas-Rodríguez	jose_dumas@eea.uprm.edu	Ph.D. Analytical chemistry	UPR-RUM Experimental Sta. (Rio Piedras)	Organic, analytical, and environmental chemistry
Bruno Marie	brunomariemail@gmail.com	Ph.D. Biochemistry	Institute of Neurobiology, UPR	Cellular / molecular biology, biochemistry, neuroscience
Gustavo A. Martínez	tavomarti@hotmail.com	Ph.D. Soil chemistry	UPR-RUM Crop and Agro-environmental Science	Applied soil chemistry, limnology
William McDowell	bill.mcdowell@unh.edu	Ph.D. Aquatic ecology	University of New Hampshire	Limnology, watershed ecology

Mark W. Miller	mark.miller@upr.edu	Ph.D. Neurobiology	Institute of Neurobiology, UPR	Comparative neurobiology, environmental neurobiology
Ernesto Medina	medinage@gmail.com	Ph.D. Agronomy	Instituto Venezolano de Investigaciones Científicas	Tropical plant ecophysiology
Carlos E. Ramos Scharrón	cramos@irf.org	Ph.D. Geosciences	Geography and Environment University of Texas	Hydro-geomophology
Luis A. Ríos-Hernández	luis.rios5@upr.edu	Ph.D. Microbiology	UPR-RUM Biology	Biofilm communities, biodegradation, phylogenetics
Mario Rodriguez	mrodriquez@rcm.upr.edu	Ph. D. Ind.-Org. Psychology	UPR-RM Public Health	Organizational behavior, health services planning and evaluation, environmental health
Joshua J.C. Rosenthal	rosenthal.joshua@gmail.com	Ph.D. Biology	Institute of Neurobiology, UPR	Neurobiology, environmental neurobiology
Luis Santiago	luis.santiago47@upr.edu	Ph.D. Planning	UPR-RP Planning	Environmental Economy, Environmental Planning
Victor A. Snyder	victor.snyder@upr.edu	Ph.D. Soil physics	UPR-RUM Agronomy	Effects of soil physical environment on crop production, micro-irrigation
Steven N. Treistman	steven.treistman@upr.edu	Ph.D. Neurobiology	Institute of Neurobiology, UPR	Neurobiology, environmental neurobiology
Joseph H. Vogel	josephvogel@usa.net	Ph.D. Economics	UPR-RP Economics	Environmental economics
Guillermo A. Yudowski	gyudowski@gmail.com	Ph.D. Biochemistry	Institute of Neurobiology, UPR	Neurobiology, environmental neurobiology
Steven Zottoli	steven.j.zottoli@williams.edu	Ph.D. Physiology	Eugene Bell Center for Regenerative Biology, Woods Hole, MA	Marine Physiology

Appendix C:

Evaluation Table to be used in Exam B, Proposal and Thesis/Dissertation Defense

	Does not meet expectations	Meets expectations	Exceeds expectations
Research creation and original thought criteria:	Is unable to justify own perspective/opinion Arguments are simple or confusing.	Inconsistently presents and justifies own perspective Arguments are occasionally vague.	Presents and justifies own view while integrating contrary interpretations. Arguments are properly identified and incorporate experiences and information gathered.
	Does not meet expectations	**Meets expectations**	**Exceeds expectations**
Effective communication criteria	Language often difficult to follow and not appropriate to the discipline Grammatical mistakes are common and/or repetitive. Ideas are unorganized and lack focus. Vocabulary and style are not appropriate to the discipline Limited or no citations Shows absolutely no interest in topic presented. Tension and nervousness is obvious; has trouble recovering from mistakes.	Language does not interfere with communication most of the time. Occasional grammatical mistakes can cause style problems. Ideas are logically organized but lack specificity. Vocabulary and style are not entirely appropriate to the discipline Most sources are cited correctly Occasionally shows positive feelings about topic. Makes mistakes, but quickly recovers from them; displays little or no tension.	Language communicates ideas clearly and efficiently. Grammar and syntax is impeccable Ideas are clearly organized; transitions are smooth. Vocabulary and style are appropriate to the discipline. Sources are cited correctly. Demonstrates a strong, positive feeling about topic during entire presentation. Student displays relaxed, self-confident nature about self, with no mistakes.
	Does not meet expectations	**Meets expectations**	**Exceeds expectations**
Critical analysis criteria	Unable to effectively identify the challenge Does not identify the relationships between/among concepts. Evidence and/or sources of evidence, are simplistic, inadequate or not related to the challenge. Does not distinguish between facts and opinions. Does not distinguish between cause and correlation; presents disorganized ideas. Presents only one perspective of the challenge and avoids all the others without justification. Ideas are not integrated. The work seems disjointed or unfinished. Avoids challenging ideas.	Presents the challenge, but some aspects are incorrect or confusing. Identifies/explains relationships between/among concepts but lacks details Evidence/sources of evidence selected are adequate and selective. Differentiates fact from opinion, recognizes biases but may be mistaken in attributions. Differentiates cause from correlation though the argument may have flaws. Presents alternate points of view to support the analysis Grossly integrates and compares perspectives but lacks complexity. May exaggerate or underestimate the implications of the perspectives.	Clearly identifies the challenge and the intrinsic aspects of the subject. Identifies/explains essential relationships between and among concepts. Evidence and sources of evidence are examined carefully Demonstrates understanding of how the events lead to his/her opinion. Recognizes biases. Distinguishes the correlation between causal relations and demonstrates clear organization of ideas. Integrates perspectives from a variety of sources to justify the analysis. The analysis of other positions is accurate. Is immersed in a complex process of assessment and justification of challenging ideas.

FORM 1

UNIVERSITY OF PUERTO RICO
ENVIRONMENTAL SCIENCES GRADUATE PROGRAM
REQUEST FOR TRANSFER OF CREDITS

Student Name _____ Date _____

Student Number _____ □ MSc □ PhD

Official Transcripts: □ on file □ requested

INSTRUCTIONS: To apply for the acceptance of transfer credits the student should submit to the Graduate Program Coordinator an official copy of their academic record (if it is not already on file) and a copy of the form "Request for Transfer of Credits" (**Form 1**), as well as a description of the courses according to the University catalog where the graduate courses were taken. The student should also submit a letter from their advisor justifying the need to transfer credits for specific courses as part of the student's emphasis area. Upon approval by the Graduate Affairs Committee, a formal request will be sent to the Dean of Graduate Studies and Research (DEGI) in support of the course validation.

CURSOS REQUERIDOS		**CURSO SUSTITUIDO, CONVALIDADO**					**RECOMENDACIÓN**		
NUM Y TITULO CORTO DEL CURSO	CRS	NUM CURSO	TITULO CORTO	INSTITUCION	FECHA	NOTA	CRS	ELEC (x)	REQ (x)

Total Credits Requested _____ (10 max)

_____ _____
Student Signature Approval of Graduate Program Coordinator

_____
Date

FORM 2

UNIVERSITY OF PUERTO RICO
ENVIRONMENTAL SCIENCES GRADUATE PROGRAM

Application for Student Advisory Committee (SAC)

Student Name _____

Student Number_____

_____ Masters _____Doctorate

Date of Application _____

Area of interest / specialty :_____

Preliminary title of thesis / dissertation:

Proposed composition of Student Committee:

_____	_____	_____
Name of Advisor	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature

_____ _____

Signature of Student

Approval
Graduate Program Coordinator

FORM 3

UNIVERSITY OF PUERTO RICO
ENVIRONMENTAL SCIENCES GRADUATE PROGRAM

Change in the Constitution of Student Advisory Committee (SAC)

Student Name _____

Student Number_____

_____ Masters _____Doctorate

Date of Application _____

Area of interest / specialty :_____

Preliminary title of thesis / dissertation:

Proposed composition of Student Committee:

_____	_____	_____
Name of Advisor	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature

_____ _____

Signature of Student

Approval
Graduate Program Coordinator

FORM 4

UNIVERSITY OF PUERTO RICO
GRADUATE PROGRAM IN ENVIRONMENTAL SCIENCES

RESULTS OF QUALIFYING EXAMINATION PART B (PH.D)

Student Name _____ Date _____

Student Number _____

Decision:

□ Approved □ Action Requested for Approval □ Failed

Student Committee:

_____	_____	_____
Name of Advisor	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature

_____
Approval
Graduate Program Coordinator

Actions needed (continue on back as necessary):

FORM 5

UNIVERSITY OF PUERTO RICO
GRADUATE PROGRAM IN ENVIRONMENTAL SCIENCES

APPROVAL OF PROJECT PROPOSAL

____M.S. ____ PH.D

Student Name _____ Date _____

Student Number _____

Decision:

□ Approved □ Action Requested for Approval □ Failed

Title: _____

Student Committee:

_____	_____	_____
Name of Advisor	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature

_____
Approval
Graduate Program Coordinator

NOTE: This certification is a commitment between the student and their Committee. Any alteration or substantial change in the scope of the proposal must be done with the approval of the student's Committee.

Actions needed (continue on back as necessary):

FORM 6

UNIVERSITY OF PUERTO RICO
GRADUATE PROGRAM IN ENVIRONMENTAL SCIENCES

APPROVAL OF THESIS OR DISSERTATION DEFENSE

____M.S. ____ PH.D

Student Name _____ Date _____

Student Number _____

Decision:

□ Approved □ Action Requested for Approval □ Failed

Title: _____

Student Committee:

_____	_____	_____
Name of Advisor	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature

_____
Approval
Graduate Program Coordinator

Actions needed (continue on back as necessary):

FORM 7

UNIVERSITY OF PUERTO RICO
ENVIRONMENTAL SCIENCES GRADUATE PROGRAM

Annual Progress Report

Student Name:						
Student Number:						
Date entered into Graduate Program: Month _____ Year _____						
Date of meeting :						
Approval:						
Name of Advisor			Signature			
Committee Member			Signature			
Committee Member			Signature			
Committee Member			Signature			
Committee Member			Signature			
Summary of Accomplishments (give date):						
Approval of Student Advisory Committee:						
Approval of Qualifying Examination (indicate Part A or B or both):						
Approval of Project Proposal:						
Teaching conducted (list by Semester and Year):						
Economic Aid Received (list by Semester and Year):						
Courses	Credit	Grade	Courses	Credit	Grade	Annual Evaluation

Thesis/dissertation Credits						
Publications (specify if in preparation, submitted, or in press): Presentations at Conferences						
Proposals submitted:						
Honors received:						
Comments from Committee:						

Notes:

FORM 8

UNIVERSITY OF PUERTO RICO
ENVIRONMENTAL SCIENCES GRADUATE PROGRAM

REQUEST FOR FORMAL EVALUATION DATE

Student Name _____ Date _____

Student Number _____ □ MSc □ PhD

The committee herby understands that the student is prepared to (select one)

□ Take exam B

□ Defend proposal

□ Defend thesis/dissertation

The student will be evaluated on the following date: _____

Student Committee:

_____	_____	_____
Name of Advisor	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature
_____	_____	_____
Committee Member	Department	Signature

_____
Approval
Graduate Program Coordinator

ENVIRONMENTAL SCIENCES GRADUATE PROGRAM
COLLEGE OF NATURAL SCIENCES
UNIVERSITY OF PUERTO RICO
RÍO PIEDRAS CAMPUS

Research Course Evaluation

Introduction:
The purpose of this evaluation is to encourage communication between graduate students and their research supervisor and evaluate the results of the research experience provided by each research course. During the period of course registration, the research supervisor and the student will discuss the research goals they are planning to achieve during the semester and will create a list that they will use as their guide to make sure that those goals are met by the end of the semester. The student and the research supervisor will also consider the student's achievements based on the Environmental Sciences Graduate Program goals for graduate student's success (Note: Description of these goals is included with this form). Both student and research supervisor will sign this document at the beginning and end of the course. Completing this document is mandatory for any research related course (including, but not limited to, CIAM 6910, CIAM 6999 and CIAM 8999).

I. Data about the Student and the Research Supervisor
II. Goals and Meetings
III. Evaluation of student's achievements at the end of the semester
IV. Evaluation of research course by student
V. Comments and Certification

I. Data about the Student and the Research Supervisor

Student's name: _____ (Name) _____ (Last name)

Student Number: _____

Degree sought ☐ Masters ☐ Ph.D.

Supervisor's name _____

Department _____

Supervisor's Extension _____ Research Supervisor's e-mail _____

Course number: _____ Course name: _____

Academic Year 20____ - 20____ _____ 1st semester _____ 2nd semester _____ summer

Research Goals and Meetings

a) **Main goals of research course: Before the course starts, the student and his/her supervisor will discuss their goals for the semester to help the student advance in his/her academic development.**

Overall Goals:	
Specific Goals	
1	
2	
3	
4	
5	

b) Meeting times:

Write here how often during the semester the student and research supervisor will meet to be able to achieve the goals mentioned above:

_____

During course registration, student and research supervisor should verify that the goals for the semester are clear and achievable. Departmental goals of critical thinking, original thought and effective communication (Description included at the end of this document) should also be discussed so that the student understands what will be the evaluation criteria considered at the end of the semester.

B – Comments and Certification Before Beginning of Research Course

Student's Comments:	Supervisor's Comment:
_____	_____
_____	_____
_____	_____

We certify that we have discussed the expected goals before the beginning of the course:

_____	_____
Student's name	Supervisor's name
_____	_____
Student's signature	Supervisor's signature
_____	_____
Date	Date

III. Evaluation of student's achievements at the end of the semester

At the end of the semester, the research supervisor will evaluate the students achievements in the goals agreed upon during course registration before the course started.

A - Research Goals

Specific goals agreed upon before the course started		Evaluation to complete at the end of the semester				
		EXCELENT	GOOD	AVERAGE	POOR	VERY POOR
1.						
2.						
3.						
4.						
5.						

B - Evaluation of student's achievement's based on Departmental Goals

Goals*	Evaluation Method	Evaluation to complete at the end of the semester				
		EXCELENT	GOOD	AVERAGE	POOR	VERY POOR
Critical Thinking						
Research creation and original thought						
Effective communication						

*Meaning of these goals can be found at the end of this document

C – Additional Comments on Students Performance

IV. Evaluation of research course by student

	Yes	No
1. Did you discuss your goals with your supervisor before the start of the semester?	☐	☐
2. How often did you meet with your supervisor? _____		
3. Did you receive appropriate and sufficient guidance during the course?	☐	☐
4. Was your work periodically evaluated regarding its quality?	☐	☐

5. Mention your most important achievements during this research course? (for example: training in X skill, advancement in scientific writing and oral communication, improvement in critical thinking, developing a theoretical framework, advancement in proposal writing, publications, development of creative ideas, etc)

_____

_____

_____

6. How did this course help you advance your goals as a graduate student in Environmental Sciences?

_____

_____

_____

7. Mention here any suggestions to improve the experience of future students in a research course like this.

_____

_____

_____

V. Comments and Certification

B – Comments and Certification at the End of Research Course

Student's Comments:	Supervisor's Comment:
_____	_____
_____	_____
_____	_____

We certify that we have discussed these goals at the end of the course:

_____	_____
Student's name	Supervisor's name
_____	_____
Student's signature	Supervisor's signature
_____	_____
Date	Date

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Description of Environmental Sciences Graduate Program goals for graduate student's success

Critical Analysis Criteria

Identifies and appropriately formulates the problem, question, or topic: Clearly identifies the challenge and the intrinsic or implicit aspects of the subject. Identifies and explains essential relationships between and among concepts.

Presents, evaluates, analyzes, and uses data / evidence properly: Demonstrates that he/she has selected and evaluated the information. Examines the evidence and the sources from which it was obtained, questions the accuracy and relevance of the data or information gathered. Demonstrates clear organization of ideas according to the importance and impact that each entails.

Develops the argument using other perspectives and positions: Integrates perspectives from a variety of sources to justify the analysis. The analysis of other positions is accurate. Is immersed in a complex process of assessment and justification of challenging ideas.

Effective communication criteria

The language communicates ideas clearly and efficiently. Words are consistent and orderly so that the approach can be understood easily. Uses language appropriate to the discipline. Communication is rich and eloquent. The style is appropriate for the audience and the subject. The organization is clear, the transitions between ideas are smooth. Supports arguments with valid statements and sources. Sources are cited correctly, showing understanding of the concepts discussed.

Original thought criteria:

Develops, presents, and communicates own perspective, hypothesis or positions: Presents and justifies his own view or hypothesis while integrating contrary interpretations. Properly identifies own posture, applying experience and data/information gathered.