SECTION I: Mission and Student Learning Outcomes (Graduating Student Profile)

DMS MISSION

The mission of the Department of Marine Sciences is to promote a greater understanding of the marine environment within the core disciplines of biological, chemical, geological, and physical oceanography, and related areas. The specific goals of the department are to increase knowledge in the marine sciences, educate graduate students in the marine sciences, and serve the community. Original research by both faculty and students is the central focus of the department's program, and emphasizes the complementary and mutualistic relationship among these goals. The Department offers Master of Marine Science and Doctor of Philosophy degrees in marine sciences encompassing both the full breadth of these disciplines and the specialization needed to develop specific technical and analytical skills within a larger scientific context. The program seeks to produce graduates with a strong background in marine sciences able to critically analyze problems and offer solutions through the application of scientific knowledge and research. Students are prepared for careers in teaching, research, industry, as well as resource and environmental management.

By the time of graduation, students that meet the PhD Program graduating student profile will have:

- A strong fundamental understanding of the physics, biology, chemistry, and geology of the oceans
- A rigorous, in-depth knowledge of their specialty; understanding of the principles that guide the design and execution of high-quality research;
- The Capacity to search, understand and interpret scientific works and theories within the context of the discipline
- An updated knowledge of major advances in their field of expertise and related fields and their implications in the development of scientific knowledge.
- The ability to apply a multidisciplinary approach to the solution of research questions
- Experience in the design and execution of original research. Graduates will be able to teach and to communicate scientific issues to the public.
- Excellent Oral and written communication skills
  - Capacity to present work to the scientific community via publications and presentations
  - Capacity to present important facts to the general community via publications or oral presentations
  - Capacity to write research proposals to maintain research activity.
- Critical thinking and problem recognition and solving skills through the scientific method
- Significant collaborative and team working skills
- Significant awareness of social and ethical implications of their work
- A commitment to knowledge and learning.

By the time of graduation, students that meet the MMS Program graduating student profile will have:

- Graduates will have a strong fundamental understanding of the physics, biology, chemistry, and geology of the oceans
- Comprehensive knowledge of their specialty
- Understanding of the principles that guide the design and execution of quality research
- Significant research experience.
• Good oral and written communication skills.
• Awareness of contemporary issues in Marine Sciences
• Awareness of social and ethical implications of their work
• Committed Self-learners
• Critical thinking and problem recognition and solving skills through the scientific method
• Capacity to search and understand scientific works and theories within the context of the discipline
• Ability and experience in the design and execution of research
• Computer literacy in field pertinent programs

SECTION II: Department Student Learning Assessment Project

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<th>Sub-section</th>
<th>Content</th>
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<td><strong>Focus of Assessment Project</strong></td>
<td><strong>Student Learning Outcomes In Current Issues In Marine Sciences.</strong></td>
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<td>The DMS Assessment Program establishes that the graduates will be well rounded professionals with broad knowledge in their area of expertise and their field in general.</td>
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<tr>
<td></td>
<td>1. It is expected that graduating students from the PhD program will have an updated knowledge of major advances in their field of expertise and related fields and their implications on development of scientific knowledge.</td>
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<td>2. It is expected that graduating students from the MS program will have an awareness of contemporary issues in Marine Sciences</td>
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<td><strong>Justification</strong></td>
<td>From departmental meetings and various committee meetings it became obvious that the DMS faculty was strongly concerned about the following facts and observations:</td>
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<td>1. An apparent decline on the quality of the students applying to the DMS programs (based on applicants GPA, Institutions of origin, overall performance in core courses).</td>
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<td>2. A decline in the quality of the students performance in general oral exams (MS) and oral comprehensive (PhD).</td>
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<td>3. Lack of student assistance to the Departmental Seminar Series (academic activities not related to formal course work).</td>
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<td><strong>POPULATION</strong></td>
<td>• This project impacts all the faculty members and students of the Department of Marine Sciences. All the students impacted were majors in one of the four cores within Marine Sciences</td>
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<td><strong>Student Faculty</strong></td>
<td>• The pre-intervention included an exam concerning several specific current issues in Marine Sciences. The tool was designed as a series of questions that could be properly responded with a sentence or even a phrase. Good, concise and simple responses were indicative of the level of student awareness in the issues presented. The students were also requested to mention issues not included in the exam which they consider as important</td>
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### RESULTS:

DMS students did not demonstrate a good awareness on important, contemporary issues in Marine Sciences.

PhD Students did not show a different (higher) level of awareness in these issues than MS students.

Lack of awareness on contemporary issues in Marine Sciences affects early students as much students close to graduation.

The DMS strategies to provide our students an awareness of contemporary issues are not being effective.

| Intervention | 1) Establishment of a Journal Club in which a member of the Faculty will lead the students through the analysis of publications dealing with current issues in Marine Sciences. Classic papers will also be included if they relate to current issues or to the development of knowledge towards the understanding of the underlying concepts etc.  
2) Organization of a reading source in WebCT to promote student’s reading not associated with formal coursework.  
   - Provide access to this site to all DMS students  
   - Provide an actual set of articles dealing with contemporary issues (broad comprehensive views) in the field.  
   - Request the students a list of their readings from that bank, before the oral general exam for MS students or the Comprehensive for PhD Candidates. (~15 articles for MS and ~24 for MS). (PENDING FOR APPROVAL)  
   - Change the format of the Seminar course to include assigned presentations on contemporary issues in Marine Sciences.  
3) Request to the DMS faculty to include in their courses the discussion of current topics in Marine Sciences within the context of their disciplines. |
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<td>Post-intervention</td>
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   - Test student awareness in current topics in marine sciences at the end of the semester with the group registered in the modified seminar course.  
   - Repeat the “Awareness in Current Issues in Marine Sciences Assessment Test in year 2008.” |
| Results | Short term results include:  
The commitment from the faculty to include in their courses more readings, aimed at improve general knowledge of the students.  
Departmental awareness of the need to increase efforts to assure that the finishing students actually meet the DMS graduating student profile |
Awareness in the students of their shortcomings in terms of their lack of reading in non course related issues.

What results were obtained? What do the results imply about the intervention? Was the intervention effective? What effect did the intervention have on student learning? Does performance differ by student group (ex. gender)?

| Dissemination of Results | The results of this process were presented in several forum:  
| | 1) Assessment Committee – Faculty of Arts and Sciences - Jan 19, 2006.  
| | 2) Faculty Members, Dept. of Marine Sciences – February 8, 2006  
| | 3) Graduate Students- Dept. of Marine Sciences- February 2, 2006.  
| | The presentations to DMS Students and Faculty resulted in lengthy and productive discussions about the possible courses of actions to take to improve the situation. |

| Possible Reasons or Hypotheses | • Results are pending. We expect significant improvement, given the intensity and the scope of the intervention in progress. |

| Course of Action | • In part, the course of action is pending the results of the post-intervention. In the meantime, the DMS will direct its efforts and invest resources in the promotion of a highly academic environment by increasing the number and quality of academic activities such as round table discussions, special topics seminars, discussion forums, etc. |

| Next learning assessment closing the loop project | • Assess the number of peer review publications by students as a result of their research activities at the DMS. |

| Appendix | • Include copies of all assessment tools |

Adapted from OMCA UPRM Student Learning Assessment Report Form