# Environmental Science-2008

## I. Team Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Specialty</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don Foss</td>
<td>Geology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fernando Agudelo S</td>
<td>Biology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamie Deneris</td>
<td>Biology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joe Mueller</td>
<td>Biology</td>
<td></td>
<td></td>
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<tr>
<td>Paul da Silva</td>
<td>Biology</td>
<td></td>
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</tbody>
</table>

## II. Program Review Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Committee (Chairs)</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derek Wilson</td>
<td>Chair of Budget Committee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chris Schultz</td>
<td>Curriculum Committee Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blaze Woodlief</td>
<td>Educational Planning Committee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erik Dunmire</td>
<td>Facilities Committee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yolanda Bellisimo</td>
<td>Institutional Planning Committee/ Academic Senate President</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nick Chang</td>
<td>Instructional Equipment Committee (and Other Expenses)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sara Mckinnon</td>
<td>SLO Coordinator and Chair of The Program Review Committee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joetta Scott</td>
<td>Student Access and Success Committee</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## III. Vice President of Academic Affairs

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nick Chang</td>
<td></td>
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</tbody>
</table>

## IV. Board of Trustees President

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phillip Kranenburg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Program Overview—Introductory Report
Environmental Science-2008

I. Program Definition
Environmental Science is an interdisciplinary program that teaches students how to solve environmental problems. It includes general grounding in the theory and practice of environmental science as well as first-hand experience with local environmental problems in Marin County. It is the response of the College of Marin to the increasing interest of students in the field and to the predictions that the greatest increase in jobs in the future will be in the area of environmental science.

Completion of the program at present leads to a certificate that can enhance a degree in another discipline to help students gain entry to environmental science programs in other institutions as well as find employment in the field of environmental science.

II. Program Purpose

<table>
<thead>
<tr>
<th>Primary Goal:</th>
<th>Secondary Goal:</th>
<th>Other Goal:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree/Transfer</td>
<td>Career/Work Training</td>
<td></td>
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</tbody>
</table>

Primary and Secondary Goals Description:
Completion of the program at present leads to a certificate that can enhance a degree in another discipline to help students gain entry to environmental science programs in other institutions as well as find employment in the field of environmental science.

III. Students Served

IV. Program History
In the period 1996-1998, the first environmental science classes were cross-listed in the Biology and Geology disciplines. In 1999, documentation was prepared for the A.S. degree in environmental science, but for various reasons, this was never submitted to the state Chancellor’s Office. In the 2004-2005 academic year, a community advisory committee was convened to decide whether an A.S. degree in environmental science was still a good idea. In its report, approved in June, 2006, the consensus of the committee was that while demand for experience in environmental science was increasing in transfer institutions and in the job market, the strongest candidates for acceptance and hiring showed general experience in environmental science as well as experience in another recognized discipline. Thus the recommendation was that the best immediate action to take was to establish at least one certificate in environmental science using as a base the existing courses. It was also strongly suggested that an internship course be added as a keystone course, since almost all people working in environmental science gain essential experience and make important contacts through internships. It was agreed that the college could then later adapt to changing conditions by additional courses and certificates as necessary. Thus the Basic Certificate in Environmental Science, a skills certificate, was designed in 2006 and approved in 2007. Interest in the certificate has grown, despite the near-impossibility of finding it in the college catalog.

V. Attachments
I. Program Enrollment

How has this changed?

<table>
<thead>
<tr>
<th></th>
<th>F03</th>
<th>S08</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTES</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Why has this occurred?

Enrollment has remained relatively constant from F03 to S08, with some ups and downs. WSCH was 256 in academic year 03-04, 315 in 04-05, 199 in 05-06, 302 in 06-07 and 259 in 07-08. This includes enrollment in the biology and geology classes numbered 138 to 148.

How can the positive results be maintained or the negative results be improved?

The major problem with the program is its lack of visibility. Before 2003, the program was listed as "Environmental Science" in the schedule and catalog. Now it is almost impossible to find. In order to find the environmental science classes, one must now look for the classes numbered 138 to 148 in the biology and geology disciplines. Listing or at least cross-listing the classes under a heading "environmental science" would be a big help.

If there are courses you wish to highlight, please describe changes and trends.

Biology/Geology 138, Introduction to Environmental Science, has seen its WSCH grow from 150 in 03-04 to 204 in 07-08. This is due to two factors -- offering it twice a year in different time slots and adding a laboratory component.

II. Faculty Units

How has this changed?

<table>
<thead>
<tr>
<th></th>
<th>F03</th>
<th>S08</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTEF</td>
<td></td>
<td></td>
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</table>

Why has this occurred?

FTEF has hovered around 1.0 over the long term, with some fluctuations. No faculty member is assigned only to this program; the total FTEF is the result of several faculty teaching one course per semester.

How can the positive results be maintained or the negative results be improved?

If there are courses you wish to highlight, please describe changes and trends.

III. Demographic Trends

Demographic Changes

How has the total of Students changed?

<table>
<thead>
<tr>
<th></th>
<th>F03</th>
<th>S08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
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</table>

Why has this occurred?

We have not seen any dramatic changes in age of students in the program. However, some students have suggested that offering courses more equally in the day and evening sessions would even the students in the older and younger age groups.

How can the positive results be maintained or the negative results be improved?

IV. Student Retention Rates

Student Retention Rate Within The Program (All courses combined)

<table>
<thead>
<tr>
<th>Retention has</th>
<th>F03</th>
<th>S08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remained at 100 %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Why has this occurred?

http://programreview.marin.edu/2008/ASReport.jsp (1 of 2) 7/23/2012 12:56:02 PM
Mean retention rate has remained at near 90% in the program. This is due mainly to the high interest of students in these courses. Another significant observation is that retention rate is usually 100% in the smaller courses.

**How can the positive results be maintained or the negative results be improved?**
The steps that should be taken are to continue to offer high-interest courses and ensure that class sizes are kept as small as possible.

If there are courses you wish to highlight, please describe changes and trends.

### VII. Student Success Rates

**Student Success Rate Within The Program** (All courses combined)

\[
\text{Success} = \frac{\% \text{ Grades of (A, B, C, CR)}}{(A,B,C,CR,D,F,NC,W, I)}
\]

<table>
<thead>
<tr>
<th></th>
<th>change from Pa03</th>
<th>to Sp08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Why has this occurred?*

Success rate has remained relatively constant over the period (mean 70%).

**How can the positive results be maintained or the negative results be improved?**

If there are courses you wish to highlight, please describe changes and trends.

### VIII. Certificates, Degrees, and Transfer

**How has the number of** [awarded changed from] [to]

<table>
<thead>
<tr>
<th></th>
<th>sound changed from</th>
<th>to</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

*Why has this occurred?*

*How can the positive results be maintained or the negative results be improved?*

If there are courses or awards you wish to highlight, please describe changes and trends.

### IX. Justification

**Evidence:** What data or evidence supports your projected requirements?

No attachments are included. Data on enrollments are summarized in the "enrollments" section of the report.

**Attachments:**

- College of Marin Program Review Student Access and Success • AS v.2 June 2008
I. Projected Course Actions Report

<table>
<thead>
<tr>
<th>Action</th>
<th>Course ID</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition</td>
<td>Biol 150</td>
<td>Fieldwork and Internship in Environmental Science</td>
</tr>
</tbody>
</table>

This course was recommended to be added as a capstone course by the COM Environmental Science Advisory Committee.

II. Projected Certificate/Degree & Other Actions Report

<table>
<thead>
<tr>
<th>Category</th>
<th>Action</th>
<th>Category, 18-29 units</th>
<th>Action</th>
<th>Total Courses</th>
<th>Total Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate</td>
<td>Addition</td>
<td>6-9 Courses</td>
<td></td>
<td>20.0</td>
<td></td>
</tr>
</tbody>
</table>

Certificate/Degree Title:
Basic Certificate in Environmental Science was approved in past academic year. Complete certificate including internship course should be added in near future.

III. Attachments

Evidence: What data or evidence have you provided? Please briefly describe.

Attachments: Description of attachment formats (file type, hard copy, etc.)
## I. Program Faculty

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Status:</th>
<th>Years at COM:</th>
<th>Faculty Units:</th>
<th>Reassigned Units:</th>
<th>Year Retired:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agudelo Silva</td>
<td>Fernando</td>
<td>Full-time, probationary</td>
<td>5</td>
<td>00.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>da Silva</td>
<td>Paul</td>
<td>Full-time, tenured</td>
<td>5.0</td>
<td>00.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foss</td>
<td>Don</td>
<td>Full-time, tenured</td>
<td>5</td>
<td>00.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mueller</td>
<td>Joe</td>
<td>Full-time, tenured</td>
<td>5</td>
<td>00.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smith</td>
<td>Vic</td>
<td>Adjunct, ETCUM</td>
<td>5</td>
<td>00.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Specialty:

List all areas of specialty and/or equivalency

### Leadership:

see biology

see biology

see geology

see biology

see biology

see biology
Program Review

see biology

II. Instructional Support Staff

III. Teaching Unit Requirements

<table>
<thead>
<tr>
<th>Teaching Units:</th>
<th>Health and Safety</th>
<th>Scheduling</th>
<th>Title 5</th>
<th>Waitlists</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specialty: Environmental Science

Other:
This total represents current TU's plus 6 units for the new internship class.

IV. Projected Staff Requirements

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Hours Per Week</th>
<th># of Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Tech</td>
<td>40</td>
<td>3500 Students</td>
</tr>
</tbody>
</table>

Justification:

MUSEUM TECHNICIAN
The museum provides materials for some of the environmental science classes, as well as for a large number of other biology and geology courses, especially those in the Natural History Program, together now serving at least 1000 students per year, with potential to serve many more. It provides students first-hand experience with real organisms and other specimens from the world of the present and the past, a major goal of our educational program. It is also the only public focal point facility in the sciences, which together have over 30% of the unduplicated student headcount of the College.

A survey tool has been designed to measure the effectiveness of the museum learning experiences. So far, 102 students have responded. The average response was that the museum experience helped in their learning of biology. However, a majority also reported a need for updating of the museum interface. Access problems have also been recurrent. Filling of the museum lab technician position should remedy these problems and improve student satisfaction. Annual use of the survey tool can monitor this progress.

Upon the retirement of the last geology technician in the 1970's, partial biology and geology museum duties were performed by biology lab technician Carolyn Ferguson. This helped maintain some activities at a reduced level. Since she retired in May, 2006, most museum work has been carried out by hourly student and non-student employees, a stopgap arrangement that was expected to last only a few months.

Since 2006, the hourly workers have provided some new ideas and have maintained some essential activities, but the growing problems are now becoming obvious to all faculty, staff and students. Positive comments continue to be received, but recently students have begun to complain about interruptions in hours and missing components of their coursework when the hourly employees have not been present. They have also noted that the exhibits have not been substantially modified in 30 years. Lack of maintenance of collections and suspension of the hazardous chemical replacement program has led to growing health and safety concerns. Several lighting systems have burned out due to lack of attention; this raises the additional threat of fire hazard. Security concerns have been noted due to lack of personnel to open and close the museum. Slowdown in updating of inventory has been noticed by faculty and community members.

On the other hand, the potential for revitalization is obvious. Students everywhere are now aware of new learning opportunities available at museums at our sister institutions and elsewhere. There are now many funding opportunities available that could be pursued if staff were available. The campus modernization program will require additional staff attention. Museum staff could be some of the main campus contacts for outreach and recruitment.

Fortunately, COM faculty and administration have recognized the situation and taken steps to remedy it through the hiring of a new museum technician. On October 10, 2007, Division Dean Jim Arnold, Vice President Anita Martinez and Human Resources Director Linda Beam met with the department chair and agreed that a new technician should be hired. They directed the chair to develop a draft job description, which was prepared and appears below.

Recruiting should begin for this position early in Spring, 2009 to take advantage of the best pool of applicants.

V. Faculty Requirements

1. No full time instructors in the subject area.
2. Non-Availability of part-time instructors in a subject area.
3. Reduction in department Teaching Units as a result of full-time faculty retirements or other significant causes.
4. Recent or forthcoming growth as a result of additional sections of classes to enrollment demands.

5. Temporary growth in department Teaching Units as a direct result of a short-term grant or other interim resource.

6. Current or forthcoming changes that illustrate the immediate need of additional full-time faculty within this department.

7. Program Review findings.

8. Other considerations.

VI. Attachments

Evidence: What data or evidence have you provided? Please briefly describe.

Conclusions of meetings of Environmental Science Advisory Committee and recommendations for internship course and environmental science certificate.

Attachments: Description of attachment formats (file type, hard copy, etc.)

Copies of IR&D reports and certificate outlines available from Human Resources, Curriculum Committee, and OIM.

College of Marin Program Review Faculty Unit Allocation and Support Staff • CG v.I February 2008
I. Institutional Excellence. The Board believes that superior results originate in high aspirations. Therefore, the Board's basic and most important goal for the College is to excel in every activity it undertakes. By so doing, it will achieve a position of local, state and perhaps even national prominence.

Objective 1: This is the first program review for environmental science at COM.

Objective 2: College of Marin is slightly above average. We have courses and a skills certificate, but no recognized discipline, major or state-recognized certificate.

Attachments:

II. Academic Excellence. The College must offer its students rigorous, high-quality curricula including degree and certificate programs in lower division arts and sciences and in vocational and occupational fields; remedial instruction; English as a Second Language instruction; support services which help students succeed at the postsecondary level; adult noncredit education; and community services courses and programs, in keeping with state mandates. Academic excellence in all of the College's curricula and support services is at the core of the College's environment. The curricula must remain current and challenging.

Objective 1a: Curriculum is based on widely recognized modern environmental science theory made especially relevant by emphasis of local Marin systems. Goal of program is to be eminently practical by including local internship.

Objective 1b:

Attachments:

III. Faculty and Staff Excellence. For the College to excel, it must attract and maintain a faculty and staff of the highest quality, one that functions within an environment of professional development and renewal, and one that focuses on and values the teaching and learning process.

Objective 1a: Faculty currently are active in many local environmental activities and are often invited to speak at workshops and other local events.

Objective 1b:

Attachments:

IV. Community Responsiveness. The College must offer broad curricula to meet the needs of students. It must select areas of special interest and need to the communities it serves.

Objective 1a: There is a long list of organizational partners with our faculty. This includes:
Marin Audubon Society
Environmental Forum of Marin
California Native Plant Society, Marin Chapter
Marin Agricultural Land Trust
Marin County Co-Operative Extension
Wildcare/Terwiliger Environmental Education
Environmental Education Council of Marin
Friends of Corte Madera Creek
SPAWN

Objective 1b:

Objective 1c:
V. Diversity. The community college is the primary opportunity for people of great diversity to come together for growth and development. The College has an absolute obligation to bring together people of different ages, races, and ethnic backgrounds, male and female, at different levels of development, in an atmosphere of equal opportunity and tolerance.

Objective 1a:

Objective 1b:

Objective 1c:

Attachments:

VI. Fiscal Responsibility. The Board and the Administration must operate the College in a fiscally sound way. Together, they must limit expenditures to those that relate directly to the College’s mission, goals and objectives; maintain a prudent level of reserves; and generate new sources of revenue to supplement state funding allocations.

Objective 1c:

Attachments:

VII. Develop and implement sound and coordinated planning processes. Develop and implement sound and coordinated planning processes, utilizing data gathered through Program Review, and other data sources, to support institutional, instructional, and student support service goals, and to promote achievement of student learning outcomes.

Objective 1a: Through the IR&D process, help of a community advisory committee and participation in the California Community College Environmental Science planning process, we have striven to use the best information available to guide us in planning.

Objective 1b:

Objective 1c:

Attachments:

VIII. Create a physical environment that is inviting to students, generates pride in the community, adheres to green principles, and supports the College’s Mission, Goals and Initiatives.

Objective 1c:

Attachments:
Concluding Remarks
Environmental Science-2008

I. Program Excellence (Best Practices)
Briefly summarize examples staff/faculty, institutional, and academic excellence.

Our environmental science program makes the best use of our informed, involved and concerned faculty and our privileged location in Marin to unite the theory and practice of environmental science by using real local examples of environmental problem-solving.

II. Program Resources (Responsiveness)
Briefly summarize examples of key resources required for your program to meet or exceed the college goals (as cited in this review).

The major needs of the program are continued commitment of the college to offer the classes and renewed dedication to publicizing the program.

III. Moving Forward Objectives (Planning)
Briefly summarize examples of data-driven and coordinated planning to improve student enrollment, learning and success.

Recommendations of community advisory committee have been followed to improve the program.

IV. Other Concluding Remarks
Briefly summarize any additional insight necessary to conclude this program review.

Environmental science is recognized as a major growth area for the California Community Colleges, and the College of Marin is poised to become a leader in this field.