

## Earth and Environmental Science Comprehensive Program Review Executive Summary

Submitted: March 31, 2015

### Earth and Environmental Science Program Mission and Goals

- 1) Teach students about Earth processes and the environment around them and support transfer students via the AS-T in Geology and CTE opportunities for Climate Professionals;
- 2) Build an understanding of the interdisciplinary nature of Earth and Environmental sciences, which includes a comprehension of the relationships between Earth processes and the distribution of natural resource; and
- 3) Highlight the impact of humans on the environment and the dependency of humans on natural resources.

### Significant Strengths of Program

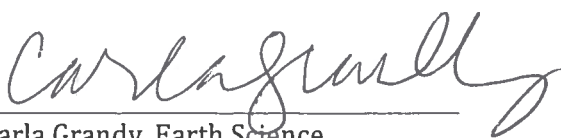
- 1) Incorporating concepts of sustainability and environmental stewardship, which are fundamental to the mission and goals of Skyline College into the curriculum as well as providing opportunities for students to become involved in sustainability-related events and offerings on campus and in the community.
- 2) Hands-on opportunities and exposure to real-world and local Earth and sustainability-related issues from faculty who have experience working in the field of Earth and Environmental science and so are able to offer perspectives on careers and techniques used in the field as well as introductions to industry experts.
- 3) Interdisciplinary science courses (incorporating biology, chemistry and physics) that allow students to earn either physical or life science credits without prerequisites.

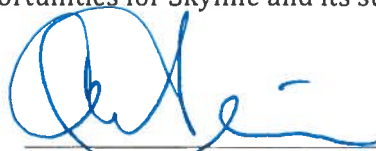
### Needed Improvements

- 1) Increase the number of field opportunities and living lab components for all courses to allow students to directly examine issues in the world around them. This will require additional facilities and equipment but will significantly enhance the opportunities for students;
- 2) Expand the Environmental Science offerings to include an Environmental Science Lab section (which will include opportunities for student research on campus like study of the new Sweeney Ridge frog sanctuary) and develop a transfer degree (AS-T) for Environmental Science;
- 3) Incorporate service-learning into the curriculum through class projects or additional courses that will allow students to gain exposure to local environmental issues and experience formulating solutions to those problems. In addition to providing opportunities for students to gain exposure and experience, we hope that this will aid in diversifying the department by exposing students to issues of environmental justice.

### Summary of Findings

Earth and Environmental Science courses have good enrollment and retention and are increasingly in-demand with students who are looking for science courses that are relevant to their lives and community. The strengths of the program include: the opportunity to take interdisciplinary science courses; exposure to real-world opportunities to explore Earth, environmental problems, processes and solutions; and two new full-time faculty who are dedicated to providing a relevant and hands-on experience for students. We are looking forward to growing the program and course offerings in the coming years with the addition of several new courses and a new AS-T degree program. With the addition of the new Environmental Studies building we will have the space and facilities to better meet the needs of students and we hope that through service learning opportunities we will also be able to engage with the community to increase of awareness of sustainability-related issues as well as to create new opportunities for Skyline and its students.

  
Carla Grandy, Earth Science

  
Carina Antilla-Suarez, ENVS



**Program Mission and Goals**

The goals of Earth and Environmental Science are to:

- 1) Teach students about Earth processes and the environment around them and support transfer students via the AS-T in Geology;
- 2) Build an understanding of the interdisciplinary nature of Earth and Environmental sciences, which includes a comprehension of the relationships between Earth processes and the distribution of natural resource; and
- 3) Highlight the impact of humans on the environment and the dependency of humans on natural resources.

**Three Strengths of the Program**

First Strength:

All of our courses incorporate concepts of sustainability and environmental stewardship which are fundamental to the mission and goals of Skyline College. Students within these courses are also exposed to sustainability-related events and offerings on campus including the Sustainability Forum, Sustainability Ambassadors Network and Environmental Science Club where they have opportunities to use the information gained in classes to make their campus and community more sustainable. The program and Earth and ENVS faculty also support the Sustainability Blitz whereby students from the Climate Protection Professionals courses (and Climate Corps Bay Area) develop sustainability related curriculum to be taught across disciplines at Skyline.

Second Strength:

All of the courses in Earth and Environmental Science offer hands-on opportunities and exposure to real-world and local Earth and sustainability-related issues. Additionally the faculty who teach the courses have experience working in the field of Earth and Environmental science and so are able to offer perspectives on careers and techniques used in the field as well as introductions to industry experts.

Third Strength:

The program offers 6 courses that are interdisciplinary in nature (incorporating biology, chemistry and physics) and allow students to earn either physical or life science credits without prerequisites.

## Three Suggestions for Improvement

---

First Suggestion:

Increase the number of field opportunities and living lab components for all courses to allow students to directly examine issues in the world around them. (This will require additional lab and classroom space in addition to new scientific and computing equipment, which are included in the resource request section.)

Second Suggestion:

Expand the Environmental Science offerings to include an Environmental Science Lab section (which will include opportunities for student research on campus like study of the new Sweeney Ridge frog sanctuary) and develop a transfer degree (AS-T) for Environmental Science. (This will require new staff, facilities and equipment to be able to offer the lab courses in a timely manner for degree completion.)

Third Suggestion:

Incorporate service-learning into the curriculum through class projects or additional courses that will allow students to gain exposure to local environmental issues and experience formulating solutions to those problems. (This will require new equipment to gather data in the field as well as computers to analyze, interpret, and present data in the field and to the community.)

## Short Summary of Findings

Earth and Environmental Science courses have good enrollment and retention and are increasingly in-demand with students who are looking for science courses that are relevant to their lives and community. The strengths of the program include: the opportunity to take interdisciplinary science courses; exposure to real-world opportunities to explore Earth, environmental problems, processes and solutions; and two new full-time faculty who are dedicated to providing a relevant and hands-on experience for students. We are looking forward to growing the program and course offerings in the coming years with the addition of several new courses and a new AS-T degree program. With the addition of the new Environmental Studies building we will have the space and facilities to better meet the needs of students and we hope that through service learning opportunities we will also be able to engage with the community to increase awareness of sustainability related issues as well as to create new opportunities for Skyline and its students.

### Faculty Signatures

Carla Grandy

Type in name & Sign

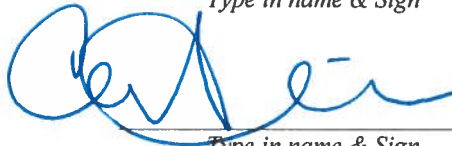


Type in name & Sign

Type in name & Sign

Carina Anttila-Suarez

Type in name & Sign



Type in name & Sign

Type in name & Sign

Type in name & Sign

Type in name & Sign

Type in name & Sign

Division Dean:

Ray Hernandez

Type in name & Sign



Date Submitted:

3/31/15

Note: Save your form as a PDF format and name your file as "Program Name\_PR\_Year" e.g., Mathematics\_PR\_2013).

Program Title: Earth and Environmental Science

Date Submitted: 3/31/15

**1. Planning Group Participants** (include PT& FT faculty, staff, students, stakeholders)

List Names and Positions:

Carina Anttila-Suarez (FT Faculty)  
Carla Grandy (FT Faculty)  
Ray Hernandez (Dean, SMT)  
Gary Cheang (Chemistry Lab Technician)  
Aaron Wilcher (Workforce Development)

**2. Contact Person** (include e-mail and telephone):

Carla Grandy (grandyc@smccd.edu, 650.738.4383)

**3. Program Information**

**A. Program Personnel**

Identify the number of personnel (administrators, faculty, classified, volunteers, and student workers) in the program:

1 Dean- Ray Hernandez  
2 FT Faculty- Carina Anttila-Suarez, Carla Grandy  
5 PT Faculty- Steve Miller, Richard Hsu, Kirstie Stramler

FT Faculty: 1.4

PT/OL Faculty (FTE): .6

FT Classified: .1

PT Classified (FTE): 0

Volunteers: 0

Student Workers: 0

### **B. Program Mission and Goals**

State the goals/focus of the program and how the program contributes to the mission and priorities of the College and District. Discuss how this program coordinates, impacts and interacts with other programs in the College. Explain how this program meets the needs of our diverse community. (200 word limit recommended)

We hope to see the updated Earth and Environmental Science departmental offerings attract even more students to the program. The new courses and labs will aim to enrich the student experience and enhance student understanding of the world through the new multi-disciplinary department at Skyline College. The goals of our program are to:

- 1) Teach students about Earth processes and the environment around them;
- 2) Build an understanding of the interdisciplinary nature of Earth and Environmental sciences;
- 3) Highlight the impact of humans on the environment and the dependency of humans on natural resources.

In educating students about the processes and issues facing our natural world, we contribute to the mission of the college by ultimately making them more informed and responsible global citizens, helping them to understand issues of environmental justice, and giving them tools to encourage positive change in their communities.

The program further contributes to Skyline's sustainability efforts by giving students opportunities to be involved in sustainability related efforts on campus. By coordinating with the Environmental Systems Technology and Management and with the office of Workforce Development we incorporate general education science into CTE and workforce programs across the college.

## **4. Summary of Student Learning Outcomes and Program Data**

### **A. Drawing from the TracDat PSLO report, summarize recent course and/or program SLO assessment, identify trends and discuss areas in need of improvement.**

Submit the TracDat PSLO report with the completed comprehensive program review report.

Tool: <https://sanmateo.tracdat.com/tracdat/>

#### Respond to the following:

- Review the PSLO report and note any trends over the last five years.
  - Instruction: Highlight the major areas on the course and program level in which students are doing well and those in need of improvement.
  - Student Services: Highlight the major areas in which students are doing well and those in need of improvement, including on the course level when applicable.
  - Career Technical Education: Note any trends in the last three years compared to the preceding three years or further.
- Identify changes that have occurred in your program as a result of annual SLO assessment.
- Explain any modifications to the program's SLO assessment process or schedule.
- Note that the PSLOs on TracDat match the ones listed on the departmental/ service area website and in the College Catalog.

All of the courses in Earth and ENVS have had SLOs updated within the last year and as such the new SLOs map differently to the PSLOs. As a result of that and because there are new faculty teaching each of the courses, the assessment of past data is not particularly useful. We will begin assessing the new SLOs for two of the courses (GEOL 210 and ENVS 100) in Spring of 2015 and at that point will have a better sense of trends and areas where we and students need to focus more energy and attention.

New assessment plans have been made for the courses that are currently up for assessment and the schedule of assessment has been updated to include the new courses that have been added to the program. Besides the addition of new courses, the 3-year assessment schedule has been kept unchanged.

PSLOs on TracDat match the program website.



**B. Summarize courses/services in the program that map to institutional student learning outcomes and discuss the results of the assessment and analysis.**

Respond to the following:

- Explain what the course level assessment results reveal about student fulfillment of ISLOs.
- If the department participated in campus wide assessment, explain what insights were obtained.

SLOs for all courses have been revised in the the last 2 semesters and have not been assessed since the revision and thus we have no insights into the fulfillment in the assessment of ISLOs for this review cycle. The main ISLOs that Earth and Environmental Science courses map to are:

- Critical Thinking
- Effective Communication
- Citizenship
- Information Literacy

**C. Summarize results of student data packets from the Office of Planning, Research & Institutional Effectiveness, and where appropriate, any other relevant data.**

Tool: <http://skylinecollege.edu/prie/programdata.php>

Respond to the following:

- Review 5-year data to describe trends in student success, retention, demographics.
- Were any student populations disproportionately impacted or underperforming?
- Analyze trends and discuss plans to address significant findings.
- Analyze trends in student success with respect to mode of delivery and/or technology. For instructional programs, address any differences between on-campus and distance education

Trends: Rates of retention for the last 5 years have remained over 80% with the Spring of 2014 at 89%. Student success rates are consistently over 70% (except for Fall 2013 where student success sank to 67%, which coincided with a much higher W-rate than any other semester in the last 5 years). Demographics in Earth and Environmental Sciences have remained fairly consistent over the past 5-years.

Diversification and success of under-represented groups of students are areas that need to be improved within our program. Within the coming semesters we would like to see increased numbers of both African American and Hispanic students in our classes as well as improved success rates for those and other under-represented groups of students. During the previous 5 years, white students performed highest with success rates of 77-87% (over the 5 years) and the lowest rates were among African American students which range from 42-75%. 2013-2014 year was the highest success rate for African Americans at 77% (based on a headcount of 8 students). In the 5 years of data, we have only had 3 Native American students in the head count for Earth and Environmental Science students. Hispanic success rates have also decreased over the last 5 years (down to 53% success from a high of 76% in 2010). A similar trend is seen in Filipino students over the same time period (2013-14 success rate is down to 59% from a high of 73% in 2011-12).

During the period of data collection, Earth and Environmental Sciences were taught primarily by adjunct faculty until Fall 2013 (ENVS) Fall 2014 (GEOL and OCEN) and we are hopeful (and committed) to improve these statistics now that the courses are primarily taught by full-time faculty. The new faculty now leading the Earth and Environmental Science program are dedicated to improving success rates among students of color and to diversifying the Earth and Environmental sciences. Through the work of Dr. Anttila-Suarez with ASTEP and by reaching out to other groups of under-represented students on campus, we hope to improve the diversity within our courses. Additionally, we are in the process of applying for 2 grants (NSF Geopaths and the NSF funded InTeGrate program) to encourage diversity and retention in Earth Science programs.

#### D. Program Enrollment and Efficiency

For programs with curricular offerings, state the last three years of fall semester FTES, FTE and LOAD. Spring semester data may also be submitted as needed. For programs without curriculum offerings, and those with curriculum offerings and services, please provide information on the efficiency of services. Assess the efficiency of the program. (Program efficiency information can be obtained from PRIE).

	FTES	FTEF	LOAD
Fall 2012			
GEOL 105	7.6	.4	570
OCEN 100	4.2	.2	630
OCEN 100 (online)	4.5	.2	675
OCEN 101	2.86	.16	536
ENVS 100	4	.2	600
Fall 2013			
GEOL 100	7.29	.3	729
GEOL 100 (H)	.99	.1	297
OCEN 100	3.6	.2	540
OCEN 100 (online)	4.42	.2	663
OCEN 101	2.5	.16	469
ENVS 100	4	.2	600
Fall 2014			
GEOL 100	4.2	.2	630
GEOL 210	6.3	.36	525
OCEN 100	4.8	.2	720
OCEN 100 (online)	5.3	.2	795
OCEN 101	2.5	.16	469
ENVS 100	6.4	.4	480

**E. Career Technical Education Program Required Information and Data (CTE Programs only)**

Tools: San Mateo County's Largest Employers

<http://www.labormarketinfo.edd.ca.gov/majorer/countymajorer.asp?CountyCode=000081>

Staffing Patterns in Local Industries & Occupations

<http://www.labormarketinfo.edd.ca.gov/iomatrix/staffing-patterns1.asp>

Respond to the following:

- Review the program's Gainful Employment Disclosure Data. Identify any areas of concern.
- Discuss the role of the Advisory Committee and provide minutes of the most recent Advisory Committee meeting.
- Describe how changes in business, community and employment needs, new technology, and new transfer requirements could affect the program.

ENVS 680SO, ENVS 491, ENVS 492 are part of a Climate Protection Professional Certificate Program run in collaboration with Climate Corps Bay Area. This program enrolls 25 Environmental Studies recent graduates as Skyline College students as the work to improve the environmental sustainability of local partners companies, county offices and educational institutions. The program also enlists the students to develop sustainability-related curriculum through the Sustainability Blitz, which is another way that the program is working to infuse sustainability-related curriculum throughout the disciplines on campus.

## 5. Curricular Offerings

Tools: CurricUNET <http://www.curricunet.com/smcccd>

**A. Program Curriculum and Courses. If your program does not offer curriculum please state "N/A".**

Respond to the following:

- All courses, including prerequisites, must be reviewed and updated at a minimum of every six years. (Be sure to complete Appendix D: Course Outline and Prerequisite Checklist Table).
- List courses that have been banked/deleted.
- Note that you've added new courses to the department's three-year calendar of assessment and requested that they be added to TracDat.
- If new courses were added since the last CPR, note that they've been mapped to ISLOs and PSLOs on TracDat, including relevant interdisciplinary degrees.

Reviewed by curriculum committee, Fall 2014:

GEOL 100, GEOL 210, GEOL 105, ENVS 491, ENVS 492, ENVS 680SO

Reviewed by curriculum committee, Spring 2015:

GEOL 220, OCEN 100, OCEN 101, ENVS 100

New courses approved, Fall 2014:

GEOL/GEOG 106

ENVS 410, 411, 680SB, 680SD, 680SH were transferred from ENVS to the ESTM

No courses were deleted or banked.

All courses have been added to Tracdat and the 3-year assessment schedule.

All new courses have been mapped to PSLOs and ISLOs.

**B. Identify Patterns of Curriculum Offerings. If your program does not offer curriculum please state “N/A”.**

Reflections:

- Review the 2-year curriculum cycle of course offerings to ensure timely completion of certificates, degrees, and transfer.
- Identify strengths of the curriculum.
- Identify issues and possible solutions.
- Discuss plans for future curricular development and/or program modification.

Anticipated offerings for next 2 years:

Offerings listed by: Course Number (number of sections)

Fall 2015	Spring 2016	Summer 2016
GEOL 210 (2)	GEOL 220 (2)	GEOL 100 (DE) (1)
GEOL 105 (2)	GEOL/GEOG 105 (2)	OCEN 100 (1)
OCEN 100 (1)	OCEN 100 (1)	OCEN 101 (1)
OCEN 101 (1)	OCEN 101 (1)	ENVS 100 (1)
ENVS (2)	GEOL 100 (DE) (1)	
ENVS 680SO* (1)	ENVS 100 (2)	
ENVS 491 (1)	ENVS 492 (1)	

Fall 2016	Spring 2017	Summer 2017
GEOL 220 (2)	GEOL 210 (2)	GEOL 100 (DE) (1)
GEOL 106 (2)	GEOL/GEOG 105 (2)	OCEN 100 (1)
OCEN 100 (1)	OCEN 100 (1)	OCEN 101 (1)
OCEN 101 (1)	OCEN 101 (1)	ENVS 100 (1)
ENVS (2)	GEOL 100 (DE) (1)	
ENVS 680SO*(1)	ENVS 100 (2)	
ENVS 491 (1)	ENVS 492 (1)	

\*ENVS 680SO, ENVS 491, ENVS 492 are part of a Climate Protection Professional Certificate Program run in collaboration with Climate Corps Bay Area. This program enrolls 25 Environmental Studies recent graduates as Skyline College students as the work to improve the environmental sustainability of local partners companies, county offices and educational institutions.

As projected, the curriculum offerings will allow for timely completion of the degrees for which these courses are counted.

Strengths: The strengths of the curriculum are that these courses provide a number of Earth and Environmental Science lecture and lab options for students looking to satisfy their physical science requirements. All of the courses expose students to issues of sustainability and local Earth Science concepts that affect them in their daily lives.

Issues and Solutions: The main issue with offering these courses is the availability of lab space, staffing, and equipment. Enrollment is good for all of the courses and we could better meet student needs by adding additional sections, but that is made difficult by limited lab space, lab technician support and faculty to teach courses. Additionally, we are in need of equipment for the Geology, Oceanography and Weather and Climate classes, which do not have dedicated laptops or the types of equipment (Weather Station, water monitoring equipment, etc.) needed to collect meaningful data. The second issue with the curriculum is that we do not yet have a lab for Environmental Science, which will need to be developed to begin offering that additional lecture/lab option for students. The equipment, staff and facilities listed above will also be needed for this new course. With the anticipated addition of the new Environmental Studies building we will have space to offer more sections of lecture and lab classes, but we will still require more staffing and equipment.

Plans for the future: We will begin offering GEOL/GEOG 106 (Weather and Climate) in 2016, which will provide students an opportunity to learn about climate and climate change and earn physical science lecture and lab credit for it. In addition to the service learning offerings that were discussed earlier, we are also looking at the development of a water resources or environmental monitoring course, which can provide more hands-on opportunities for students and expose them to methods used in Earth and Environmental Sciences.

## 6. Action Plan

Provide your action plan based on the analysis and reflections provided in the previous sections.

Tool: <https://sanmateo.tracdat.com/tracdat/>

### Actions:

- Identify next steps to be taken and set a timeline.
- Identify questions that will serve as a focus of inquiry for the next Annual Program Plan and/or Program Review.
  - Determine the assessments; set the timeline for tabulating the data and analyzing results.
  - Describe what you expect to learn from the assessment efforts.

Spring 2015

Assessment of ENVS 100 and GEOL 210

Summer 2015

Compile and analyze data to gauge student understanding.

Develop assessment plan for OCEN 100 and OCEN 101

Fall 2015

Reflect on SLOs and assessment strategies to determine whether they are effective indicators of student success.

Assess OCEN 100 and OCEN 101

Development of ENVS 101 lab and submission to curriculum committee

First offering of GEOL/GEOG 106 (Weather and Climate)

Spring 2016

Compile and analyze data to gauge student understanding in OCEN 100 and 101

\*\* Because we have updated the SLOs recently, we will be hoping to learn (1) if the SLOs are quantifiable and appropriate to the courses, and (2) whether the assessments that we have established are adequately testing their mastery of the learning objectives, and (3) if students are being successful in our courses.

## 7. Resource Identification

### A. Professional Development needs

#### Actions:

- List the professional development activities the faculty and staff participated in this year.
- Explain how professional development activities in the past six years have improved student learning outcomes.
- Describe professional development plans for next year.

#### 2014--2015:

Carina Anttila-Suarez along with fellow Skyline College sustainability leaders including our Sustainability fellow attended the 2014 AASHE conference in Portland, Oregon where a workshop was given.

Carla Grandy attended the American Geophysical Union's (AGU) annual meeting which included a workshop for the National Association of Geoscience Teachers on incorporating research into geosciences courses at 2-year institutions.

#### Professional Development in Earth Science:

In the fields of Earth and Environmental Science, new discoveries are being made on a daily basis and it is hard to keep up with the current state of the science without being involved in regular professional development activities. Local and national meetings like AGU and others help us to keep current with trends, findings and methods in the field. Smaller meetings focusing on pedagogy and best practices in teaching Earth Science as well as efforts to diversify the science are also crucial parts of the professional development plan. Exposure to both methods and instructors who are incorporating innovative methods helps to engage students and improve student learning. These meetings and workshops are crucial not only for full-time faculty but also for adjunct faculty to improve our classes and student learning in general.

#### 2015-2016:

Carla Grandy, Carina Anttila-Suarez, Steven Miller and Christopher Koh (Sustainability Coordinator) will be attending 2015 AASHE and CHESCH meeting to present data on sustainability efforts occurring at Skyline College and the implementation of the Curriculum Blitz to infuse Sustainability-related curriculum across disciplines.

Carla Grandy is applying to be an InTeGrate (Interdisciplinary Teaching about Earth for a Sustainable Future) research team member to evaluate interdisciplinary approaches to teaching Earth Science.

Carla Grandy will plan to attend the 2015 AGU conference in San Francisco.

Carla Grandy and Kirstie Stramler (OCEN adjunct faculty) are also part of the SMT Reading Apprenticeship team and so have and will be participating in professional development relating to incorporating reading comprehension into our science classes.



## B. Office of Planning, Research & Institutional Effectiveness requests

### Actions:

- List your program's data requests from the Office of Planning, Research & Institutional Effectiveness.
- Explain how the requests will serve the Student/Program/Division/College needs.

We requested the 5-year demographic and student success data for GEOL, OCEN and ENVS. The data published on the PRIE website also include ESTM courses which are no longer part of the Earth and ENVS program and because of the small class sizes, affect the efficiency numbers. (Unfortunately, due to the high demand for data from the PRIE office, we did not receive the results in time to incorporate them into this report.)

**C. Faculty and Staff hiring, Instructional Equipment and Facilities Requests**  
**Complete the following table:**

Smaller items needed for Earth and Environmental Science classes and labs: Incubator (1 unit) Hygrometer (18 units) Water testing kits SOD testing kits GPS Units (15) Brunton Compasses (15) Computers for Google Earth Labs Seismograph rocks and minerals Sieves lava lamp physical globes classroom set of iclickers and receiver meter sticks smart wall plastic boxes for mineral kits Stream table Surveying equipment
---

### Comprehensive Program Review Resource Needs

Program: Earth and Environmental Science      Date: 3/31/15

	Needs	How does this request align with your assessment of student outcomes?	How does this request align with your action plan?	Estimated cost for facilities and equipment
<b>Personnel</b>	<ol style="list-style-type: none"> <li>1. Technician</li> <li>2. Full time Faculty</li> <li>3.</li> </ol>	With increasing enrollment and increasing offerings in lab classes, a geology lab technician is needed to insure that materials are properly organized and that the correct supplies are available for each lab.	To increase lab offerings, we will need a new lab technician to facilitate the management of lab supplies. Within the next 2 years, we anticipate offering enough sections that we will require additional faculty.	Technician -- \$50,000 FT Faculty -- \$75,000
<b>Equipment</b>	<ol style="list-style-type: none"> <li>1. Laptops</li> <li>2. Weather Station</li> <li>3. Environmental Monitoring</li> <li>4. Van</li> </ol>	The Earth Science lab classes do not have dedicated laptops and being able to obtain real-world/real-time data from instruments such as weather stations and monitoring equipment and analyze them spatially and digitally in lab is fundamental to achievement of all of our SLOs	All of the equipment is needed for the lab classes which are currently offered in addition to the planned courses GEOL/GEOL 106 which will be offered in 2015-16 and the new ENVS lab which will be developed within the next year.	Laptops -- \$20,000 Weather Station (3) -- \$6,000 Monitoring Equipment -- \$10,000 Van -- \$30,000
<b>Facilities</b>	<ol style="list-style-type: none"> <li>1. Environmental Studies Building</li> <li>2. Storage space for Lab supplies</li> <li>3. Offsite Field Office</li> <li>4.</li> </ol>	Space is the limiting factor in terms of our ability to meet student needs. Currently, we are not able to offer enough lab courses to meet student demand, which impedes student success and timely completion of degrees.	We will be more limited with the addition of the new and anticipated lab courses discussed in our action plan.	ES building in progress. Costs for other Facilities needs -- TBD

## Appendix D

Program:

Semester:

<b>COURSE OUTLINE AND PREREQUISITE CHECKLIST TABLE</b>							
1	2	3	4		5	6	7
<b>Prefix &amp; Number</b>	<b>Course Title</b>	<b>Curric-UNET Review Date (Month/Year)</b>	<b>Transfer</b>		<b>G.E.</b>	<b>Prerequisites, Co-requisites, and/or Recommended Preparations</b>	<b>Reviewed</b>
			<b>C S U</b>	<b>UC</b>			
GEOL 100	Survey of Geology	10/14	x	x	x		x
GEOL 210	General Geology	11/14	x	x	x		x
GEOL/GEOG 106	Weather and Climate	11/14	x	x	x		x
GEOL 105	Environmental Earth Science	10/14	x	x	x		x
GEOL 220	Historical Geology	3/15	x	x	x		x
OCEN 100	Survey of Oceanography	2/15	x	x	x		x
OCEN 101	Oceanography Laboratory/Field Study	2/15	x	x	x	OCEN 100	x
ENVS 100	Environmental Science	3/15	x	x	x	ENGL 846 or ESOL 400	x
ENVS 491	Climate Protection Professional I	10/14				ENGL 846 or ESOL 400,	
ENVS 492	Climate Protection Professional II	10/14				ENGL 846 or ESOL 400,	
ENVS 680SO	Climate Protection Professional II	8/14				ENGL 846 or ESOL 400,	

**APPENDIX E  
SKYLINE COLLEGE**

**INSTRUCTIONAL AND STUDENT SERVICES PROGRAM REVIEW**

**RESPONSE SHEET**

**Program:** Earth and Environmental Science

Thank you for your time and effort in preparing this Program Review. Your Resource Needs Summary has been shared with the College Budget Committee and the Resource Needs Summary and Executive Summary, with recommendations, has been shared with the College Council.

<b>College President</b>	
<i>Comments:</i>	_____
	<i>Signature</i>

**Separate boxes for each**

<b>College Vice President(s)</b>	
<i>Comments:</i>	_____
	<i>Signature</i>

<b>Curriculum Committee</b>	
<i>Comments:</i>	_____
	<i>Signature</i>

Original to remain with self-study  
Copies to Program Review preparer

# PSLOs Report Via Course Level Assessment Results

## San Mateo CCCD

### SKY Program - Earth Sciences/ Environmental Science

Apply scientific method of thinking to analyze and critically evaluate relevant literature and information, and the use of evidence for support.

Results			
Result	Action	Follow-Up	Reporting Cycle
05/24/2013 - 66% of the courses have been assessed and linked to this PSLO. Students effectively apply the scientific method, analyze, and critically evaluate information, and use evidence for support. Ocen 100 provided an action plan and was carried out to improve student learning in this area. Course level PSLOs have been met in this area. GEOL 210 and GEOL 220 have not been offered in this cycle. <b>Result Type:</b> Criterion met <a href="#">Related Results</a>			2012 - 2013

Recognize and accurately articulate how their environment (including the Earth, the atmosphere, ocean, and biosphere) affects humans? lives and how human activities affect their environment.

Results			
Result	Action	Follow-Up	Reporting Cycle
05/24/2013 - 66% of the courses have been assessed and linked to this PSLO. Students are are given opportunity to recognize and accurately articulate how their environment affects humans through the courses linked to this PSLO. Course level PSLOs have been met in this area at 100%. GEOL 210 and GEOL 220 have not been offered in this cycle. <b>Result Type:</b> Criterion met			2012 - 2013

Communicate effectively in a variety of ways, such as scientific writing, visualization of data and ideas, or through oral communication

Results			
Result	Action	Follow-Up	Reporting Cycle
05/24/2013 - 66% of the courses have been assessed and linked to this PSLO. Students effectively communicate through scientific writing, visualization of data and ideas, and through oral communication. Ocen 100 provided an action plan integrating use of visualizing assignment which was carried out to improve student learning in this area. Course level PSLOs have been met in this area. GEOL 210 and GEOL 220 have not been offered in this cycle. <b>Result Type:</b> Criterion met <a href="#">Related Results</a>			2012 - 2013

Solve quantitative problems, analyze results from data and measurements, form hypotheses from data, test hypotheses

Results

Results			
Result	Action	Follow-Up	Reporting Cycle
05/24/2013 - 66% of the courses have been assessed and linked to this PSLO. Students solve quantitative problems analyze data, form and test hypotheses effectively. Course level PSLOs have been met in this area. GEOL 210 and GEOL 220 have not been offered in this cycle. <b>Result Type:</b> Criterion met <u>Related Results</u>			2012 - 2013

**Recognize the interdisciplinary nature of science and enjoy the process of learning science**

Results			
Result	Action	Follow-Up	Reporting Cycle
02/06/2015 - Delete-- Both course SLOs were assessed and reached their benchmark. <b>Result Type:</b> Criterion met <u>Related Results</u>			2014 - 2015
02/06/2015 - delete <b>Result Type:</b> Inconclusive <u>Related Results</u>			2014 - 2015
05/24/2013 - 66% of the courses have been assessed and linked to this PSLO. Students are able to recognize the interdisciplinary nature of science. GEOL 210 and GEOL 220 have not been offered in this cycle. <b>Result Type:</b> Inconclusive	08/30/2013 - The second portion of the PSLO "enjoy the process of learning science" can be assess with a pre and post survey. This will be implemented in the 2013-2014 year and administered with those courses that will be assessed during this period.		2012 - 2013

**Appendix F**  
**Skyline College**

**Evaluation of the Program Review Process**

To improve the Program Review process your help and suggestions are instrumental. We ask that all parties responsible for preparation of this review have input into the evaluation. After completion of the Program Review process, please take a few moments to complete and return this evaluation to the chair of the Curriculum Committee.

Estimate the total number of hours to complete your Program Review:

1. Was the time frame for completion of Program Review adequate? If not, explain.

Yes.

2. Was the instrument clear and understandable? Was it easy to use? If not, explain and offer suggestions for improvement.

Yes, though there were some areas that seemed redundant and some areas where I was not entirely sure what the committee was looking for though this is probably largely related to my newness at the college and this being my first time completing program review.

3. Were the questions relevant? If not, please explain and offer suggestions.

Yes.



4. Did you find the Program Review process to have value? If not, please explain and offer suggestions.

For me it was very valuable to look at the program holistically and to think about where we want it to go in the future. The parts that were not useful from the perspective of our program were the reflection pieces, but that is because our program has undergone so many changes that demographic and SLO data from past years are not particularly meaningful.

5. Was the data you received from the Office of Planning, Research and Institutional Effectiveness complete and presented in a clear format? Would you like additional data?

I did not receive the data that I requested in time to include in the report. In retrospect I should have requested it earlier, but being new, I didn't know what data I needed until I was pretty far into writing the report.

6. Please offer any comments that could improve and/or streamline Program Review.

The instructions and support have all been very clear. It might be useful to have a questions/answer session closer to the time when the reports are due. I attended the session in the Fall, but I didn't know what my questions were at that point, whereas it would have been very helpful to have one closer to the due date.