

## 2017 Environmental/Earth Sciences Annual Program Plan

### ENVS Environmental/Earth Sciences

**I.A.** Describe the program(s) to be reviewed. What is the purpose of the program and how does it contribute to the mission of Skyline College? (**Program Profile: Purpose**)

#### Narrative




The purpose of the Earth and Environmental Science Program at Skyline College is to educate students about the Earth, Earth Resources, the environment and the role that they play in changing the environment. We offer 5 GE classes in GEOL, 2 in OCEN, and 1 in ENVS. In addition to our GE offerings, we offer several Coop, CTE, and certificate courses ranging from high school engagement to post-secondary training for Climate Protection Professionals.

The goals of the Earth and Environmental Science Program are to:

- 1) Educate students about Earth processes and the environment around them;
- 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;
- 3) Highlight the impact of humans on the environment and the dependency of humans on natural resources; and
- 4) Engage students in environmental stewardship by exposing them to real-world environmental issues and by providing opportunities for them to become engaged on campus and in the community through faculty sustainability efforts.

This contributes to the mission of Skyline College by empowering students to make decisions that will benefit themselves, their communities, and the Earth through educating them on the role that they play in sustaining the Earth and environment. We also offer opportunities for students to become engaged with sustainability related projects on campus and in the community further empowering them to become change agents.

#### Associated Objectives

-  [151-Create Sustainability Coordinator Staff Position](#)
-  [163-Lab supplies for Oceanography course.](#)
-  [186-Research Cruise for OCEN/ENVS/GEOL students](#)

**II.A.** Describe the progress made on previously established program objectives (goals) including identification of achievements or areas in which further effort is needed. Programs which have not yet established CPR/APP objectives should discuss progress on program implementation or activities. (**Analysis: Progress on Prior Program Objectives (Goals) and Activities**)

## Narrative

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***Goal 1: Teach students about Earth processes and the environment around them.***

### **Achievements:**

- ENVS 100 explored waste disposal in San Bruno. GEOL 105 students explore real-world climate and atmosphere data to understand how Earth's climate is changing as a result of human intervention.
- Offered GEOL/GEOG 106 – Weather and Climate – for the first time in Fall 2016 and the course will be offered online in Fall 2017 which will be our first fully online Lecture + Lab course.
- Development of new course in Greywater Principles and Practices (GEOL 680SP) gives students an understanding of Earth systems, offers hands-on technical skills in greywater installation and management, and provides a connection to the local community.
- Expansion of COOP 670 to offer the School of Environmental Leadership program to high school students exposes students to Earth and Environmental Science and creates a high school to college pathway in Environmental Studies and Sustainability.

### **Further Effort Needed:**

- Increased outreach/coordination with counseling faculty to increase enrollment in new courses.

***Goal 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.***

### **Achievements:**

- Teamed GEOL and ENVS students to tour campus facilities to evaluate energy efficiency measures on campus, introduce ESTM programs, and conduct a campus energy audit in an effort to help students relate Earth and Environmental Science to the environment around them as well as exposing them to career opportunities and opportunities on campus.

### **Further Effort Needed:**

- Continue to engage with ESTM programs as there are many overlaps between our departments and our engagement benefits both programs.
- Create permanent Sustainability Coordinator position on campus to be able to plan and facilitate student engagement with sustainability and “campus as a living lab” components for classes, not just in Earth and ENVS, but across the campus.

**Goal 3: Highlight the impact of humans on the environment and the dependency of humans on natural resources.**

**Achievements:**

- OCEN and GEOL students participated in National Coastal Cleanup day through a beach clean up led by Pacifica Beach Coalition.
- Students from 3 classes (GEOL 105, ENVS 100, COMM 100) came together to discuss sustainability on campus and in the community and to propose opportunities for solving sustainability related problems. Funding was provided to students who developed and proposed projects for improving campus sustainability through the President's Innovation Fund.
- Engagement of students through sustainability related work on campus, including Sustainability Ambassadors Network and the Climate Action Plan, allows students to engage with their environment and exposes them to ways that they can positively impact the environment.
- Acquisition of fog catcher and weather station for use on campus with GEOL 106 (Weather and Climate) as well as other Earth Science courses to engage students with both the science and technologies used in Earth Science.

**Further Effort Needed:**

- Formalization of service learning within Earth and Environmental classes to engage students with meaningful experience within the community as well as strengthen community relationships.

Associated Objectives
 <a href="#">151-Create Sustainability Coordinator Staff Position</a>
 <a href="#">161-Field equipment for Earth and Environmental Science Classes</a>
 <a href="#">163-Lab supplies for Oceanography course.</a>
 <a href="#">157-Purchase dissecting microscopes</a>
 <a href="#">186-Research Cruise for OCEN/ENVS/GEOL students</a>

**II.B.** Describe any recent external or internal changes impacting the program or which are expected to impact the program in the next year. Please include when the specified changes occurred or are expected to occur. (**Analysis: Program Environment**)

### **Narrative**

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- Beginning in Fall 2016, the Climate Corps Bay Area and thus our Climate Protection Professional Certificate program began to include students from the AmeriCorp Program. This addition broadened the student body involved and expanded the number of students able to participate in the certificate and in the program in general.
- In Fall 2016, the introduction of Energize Colleges on the Skyline College Campus has allowed us to engage more students in sustainability related projects through funded internships allowing us to have more of an impact on campus and in the community.
- In Spring 2017, we offered Greywater Principles and Practices for the first time to give students training and education in a applied aspect of Earth and Environmental Science and expose them to a growing industry in the Bay Area.
- Throughout the 2016-17 year, our sustainability related work has grown substantially on campus through these various initiatives, which provides both a meaningful experience and tool for engagement for students, but also makes it challenging to facilitate all of the activities that are occurring.

### **Associated Objectives**

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 [151-Create Sustainability Coordinator Staff Position](#)

**II.C.** (1) Instructional Programs Only: Describe what was learned from the assessment of course SLOs for the current and past year.

(2) Student Service Programs Only: If PSLOs are being assessed this year (3-year cycle), describe what was learned. If no assessment was done because this is an off-cycle year, please state that this item is not applicable. (**Analysis: Student Learning Outcomes (SLOs and PSLOs)**)

## Narrative

### **GEOL/GEOG 106 was assessed in Fall 2016**

**Results:** The assessment showed that there is room for improvement in engaging students and achieving student learning outcomes. This course is being offered fully online in Fall 2017, which will provide an opportunity to utilize existing weather data to engage students with the material but will also make it challenging to gauge student understanding of data.

**What was learned:** Students have a difficult time understanding the physics of basic weather and climate, which is necessary to understand the more complex concepts of storm development, climate and climate change. This is a class that would benefit from more hands-on activities, which will hopefully be achieved by looking at local weather data. Since this course was initially offered, we have emplaced a Weather Station and Fog Water Capture system on campus and we will utilize these “Campus as a Living Lab” components in the next iteration of the course to (hopefully) engage students at a deeper level.





### **ENVS 491 was assessed in Fall 2016.**

**Results:** 90% of students produced portfolios and/or presentations to highlight their work as well as engage relevant stakeholders through demonstrated ability to employ project management skills.

**What we learned:** Students within the Climate Protection Professional program are engaged and gaining valuable professional experience through placements at local government, educational, and private organizations engaged in sustainability-related work. We have also learned that the students in this program are very committed and engaged in the program indicating the program itself is highly successful.

### **ENVS 492 is being assessed in Spring 2017.**

#### **Associated Objectives**

-  [161-Field equipment for Earth and Environmental Science Classes](#)
-  [163-Lab supplies for Oceanography course.](#)
-  [157-Purchase dissecting microscopes](#)
-  [186-Research Cruise for OCEN/ENVS/GEOL students](#)

**III.A.** Consider the previous analysis of progress achieved, program environment, and course-level SLOs or PSLOs (if applicable). What are the key findings and/or conclusions drawn? Discuss how what was learned can be used to improve the program's effectiveness. **(Reflection: Considering Key Findings)**

**Narrative**

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This program is in its infancy with many new courses still in the development stages. Through early assessment we have learned that students are most thoroughly engaged in the coursework that offers a meaningful engagement in their environment and community through campus as a learning lab activities, field trips, and opportunities to engage in environmental monitoring.





**Key Findings:**

- Students are most engaged when they are exposed to real-world problems and scenarios through field explorations, accessing data from scientific organizations, and sustainability programs and opportunities on campus;
- OCEN 100 and ENV5 100 continue to have the highest enrollment of all of the courses within the program and through better communication with Counseling faculty and staff, we hope to increase interest in the many other courses in offered in Earth and Environmental Science;

**Improving Program's Effectiveness:**

- Incorporating service learning opportunities in Earth and ENV5 would allow students to engage in the community and put their classroom learning to work which would be mutually beneficial to both the students and the community;
- Creating a permanent Sustainability Coordinator position on campus would allow us to create more and implement more fully the engagement pieces that are most meaningful to students.
- Building more connections with ESTM and other professional programs to introduce students to careers in Earth and Environmental Sciences would potentially improve enrollment and engage students in a more meaningful way.

**Associated Objectives**

-  [151-Create Sustainability Coordinator Staff Position](#)
-  [161-Field equipment for Earth and Environmental Science Classes](#)
-  [163-Lab supplies for Oceanography course.](#)
-  [186-Research Cruise for OCEN/ENV5/GEOL students](#)

**III.B.** If the program participated in assessment of ISLOs this year:

- (1) What are the findings and/or conclusions drawn?
- (2) Does the program intend to make any changes or investigate further based on the findings? If so, briefly describe what the program intends to do. (**Reflection: ISLOs**)

### Narrative

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Two ISLOs were/are being assessed in GEOL 105 in 2016-17:



#### Information Literacy ISLO, Fall 2016

**Findings:** Introduction of the library research workshop and engagement of librarians helped GEOL 105 students to better access and reference their work and seemed to have an overall positive influence on information literacy. In past semesters students have had difficulty accessing and properly citing references in their research papers, but with the addition of the research workshop (which was tailored to the class topic) students achieved a higher level of success on accessing and citing references. Based on these findings, we will continue to engage with library faculty/staff to offer a library research workshop as an ongoing part of the course.

#### Citizenship ISLO, Spring 2017

Findings: TBD -- Assessment is still underway so no results are currently available.

#### Associated Objectives

-  [163-Lab supplies for Oceanography course.](#)
-  [186-Research Cruise for OCEN/ENVS/GEOL students](#)

**IV.A.** Indicate whether the program is continuing implementation of the last CPR strategy or revising the strategy. Please describe the modifications if revisions are intended.






Note: Any new strategies should be linked to Institutional Goals through creation of objectives in the next section. If the program has not yet participated in comprehensive program review, an annual or multi-year strategy can be defined in this item. **(Strategy for Program Enhancement: Continuation/Modification)**

### Narrative

The program continues to implement the most recent CPR strategy through regular assessment of SLO and ISLO data to better understand student mastery and from that improve the courses and the way that we offer the material.

Additionally, we are revising the strategy to expand the engagement of our students with the campus and community through regular projects and opportunities in sustainability related efforts. To be able to achieve this we are requesting that a Sustainability Coordinator position be institutionalized so that these opportunities can be expanded thereby impacting more students and further enhancing community engagement.

### Associated Objectives

-  [151-Create Sustainability Coordinator Staff Position](#)
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**IV.B.** Based on the most recent CPR and any desired modifications, develop an annual action plan with related resource requests. No narrative response will be entered in this section, but the objectives you create will be printed automatically in the APP report under this item.

(1) To begin, click on PLANNING at the top of the page, then CREATE A NEW OBJECTIVE. To view previously created objectives, click PLANNING at the top of the page, then VIEW MY OBJECTIVE.

(2) IMPORTANT! Make sure to associate each objective to this standard in the APP. Need help? Contact the PRIE Office for further instructions. **(Strategy for Program Enhancement: Action Plan and Resource Requests)**

#### Associated Objectives

-  [151-Create Sustainability Coordinator Staff Position](#)
-  [161-Field equipment for Earth and Environmental Science Classes](#)
-  [163-Lab supplies for Oceanography course.](#)
-  [157-Purchase dissecting microscopes](#)
-  [186-Research Cruise for OCEN/ENVS/GEOL students](#)

# Task Details Report

Planning Year: 2017-2018

**Planning Unit:** Environmental/Earth Sciences

**Unit Manager:** Grandy, Carla

**Objective:** 151 - Create Sustainability Coordinator Staff Position

## Objective Description:

We hope to establish a permanent Sustainability Coordinator position on campus. This person would be able to work on implementation of both Sustainability Plan as well as Climate Action Plan goals and objectives, which would ultimately provide a cost savings to Skyline College and the SMCCCD. The Sustainability Coordinator would also help to organize Sustainability related events on campus to more deeply engage students with the interdisciplinary nature of the work we do. This would highlight and increase enrollment in several of our under enrolled programs like ESTM and Geology. The Sustainability Coordinator would also be able to identify and help to develop a GE Pathway in Sustainability and identify Service Learning opportunities in Sustainability related fields, increasing student engagement and community connection.

<b>Start Date:</b> 4/28/2017	<b>Task Type:</b> Department/Division/Unit	<b>Priority Level:</b> High	<b>Task Order:</b> 1
<b>Due Date:</b>	<b>Completion Date:</b>	<b>Task Status:</b> New/Pending	<b>Budget:</b> \$75,000

Create a job description for a Sustainability Coordinator. This position could be either part of the SMT division or a non-instructional Division on campus. The job description would be created by Earth and Environmental Science Faculty, SMT Dean, and with the help of the Sustainability Ambassadors Network.

## Budget Remarks:

Date:	Name:	Remarks:
No Data to Display		

## Budget Details:

GL Code	Account	Description	Requested	Approved
2130	Environmental/Earth Sciences	Staff salary and benefits.	\$75000.00	\$0.00

## Assignment Details:

Name:	Email:
No Data to Display	

# Task Details Report

**Planning Unit:** Environmental/Earth Sciences

**Unit Manager:** Grandy, Carla

**Objective:** 157 - Purchase dissecting microscopes

**Objective Description:**

Analysis of micro plastic pollution samples for Earth and Environmental students in lecture and lab classes.

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<b>Start Date:</b> 4/29/2017	<b>Task Type:</b> Department/Division/Unit	<b>Priority Level:</b> Medium	<b>Task Order:</b> 1
<b>Due Date:</b>	<b>Completion Date:</b>	<b>Task Status:</b> New/Pending	<b>Budget:</b> \$2,970

Dissecting microscopes for analyzing microplastics in lab classes.

**Budget Remarks:**

Date:	Name:	Remarks:
No Data to Display		

**Budget Details:**

GL Code	Account	Description	Requested	Approved
4510	Environmental/Earth Sciences	S71007B Fisher Scientific Stereo Dissecting Microscope price plus tax is \$495 - 6 units = 2970	\$2970.00	\$0.00

**Assignment Details:**

Name:	Email:
No Data to Display	

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# Task Details Report

**Planning Unit:** Environmental/Earth Sciences

**Unit Manager:** Grandy, Carla

**Objective:** 161 - Field equipment for Earth and Environmental Science Classes

## Objective Description:

To be able to expand our field experiences and offer additional skills based field opportunities for students in Earth and Environmental science classes.

**Start Date:**  
4/29/2017

**Task Type:**

**Priority Level:**  
Medium

**Task Order:**  
1

**Due Date:**

**Completion Date:**

**Task Status:**  
New/Pending

**Budget:**  
\$8,800

GPS units and Brunton Compasses to be used in field courses and for data collection for student research and service learning.

## Budget Remarks:

Date:	Name:	Remarks:
No Data to Display		

## Budget Details:

GL Code	Account	Description	Requested	Approved
4510	Environmental/Earth Sciences	\$500 * 10 Garmin Montana 610 GPS = \$5000 + tax Justification -- For student surveying in lab courses + for data collection for student research and service learning  \$300 * 10 Brunton Com/Pro 90 Model F5008 Azimuth = \$3000 + tax	\$8800.00	\$0.00

## Assignment Details:

Name:	Email:
No Data to Display	

# Task Details Report

**Planning Unit:** Environmental/Earth Sciences

**Unit Manager:** Grandy, Carla

**Objective:** 163 - Lab supplies for Oceanography course.

**Objective Description:**

Oceanography has the highest enrollment of all of the courses in Earth and Environmental Science, but is also a class where students struggle to understand the complex physical processes. New lab equipment would allow us to better engage the students in hands-on activities that would make the material more understandable to these mostly non-science major, GE students.

Supplies needed include:

Wave Tank

Salinometers

Hydrometers

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# Task Details Report

<b>Start Date:</b> 4/29/2017	<b>Task Type:</b>	<b>Priority Level:</b> Medium	<b>Task Order:</b> 1
<b>Due Date:</b>	<b>Completion Date:</b>	<b>Task Status:</b> New/Pending	<b>Budget:</b> \$900

Purchase additional supplies for Oceanography Labs to engage students with physical and chemical properties of ocean water and circulation. This would be for use in OCEN 101, which is offered every semester and which we plan to offer additional sections of in the future.

**Budget Remarks:**

Date:	Name:	Remarks:
No Data to Display		

**Budget Details:**

GL Code	Account	Description	Requested	Approved
4510	Environmental/Earth Sciences	<p>\$525 -- Ripple Tank  <a href="https://store.schoolspecialty.com/OA_HTML/ibeCCtpltmDspRte.jsp?minisite=10029&amp;item=3233997&amp;gclid=Cj0KEQjw0lVBRDF0Yzq4qGE4lwBEiQATMQIMbfhJYqCXk-vhqrY6xhalCe3ch1Jcy7w1auEnMIMs1AaAIMG8P8HAQ#features">https://store.schoolspecialty.com/OA_HTML/ibeCCtpltmDspRte.jsp?minisite=10029&amp;item=3233997&amp;gclid=Cj0KEQjw0lVBRDF0Yzq4qGE4lwBEiQATMQIMbfhJYqCXk-vhqrY6xhalCe3ch1Jcy7w1auEnMIMs1AaAIMG8P8HAQ#features</a>                      Justification: To engage students with physical oceanography and help them to see how waves form and progress.</p> <p>\$400 -- Refractometers X 10  <a href="http://www.bulkreefsupply.com/refractometer-for-reading-salinity-with-calibration-fluid.html?gclid=CPnLy9vdytMCFRBEfgoduW4CpwJ">http://www.bulkreefsupply.com/refractometer-for-reading-salinity-with-calibration-fluid.html?gclid=CPnLy9vdytMCFRBEfgoduW4CpwJ</a>                      Justification: allow students to measure and compare salinity of saltwater in different settings</p>	\$900.00	\$0.00

**Assignment Details:**

Name:	Email:
No Data to Display	

# Task Details Report

**Planning Unit:** Environmental/Earth Sciences

**Unit Manager:** Grandy, Carla

**Objective:** 186 - Research Cruise for OCEN/ENVS/GEOL students

## Objective Description:

Bay cruise with Marine Science Institute (non-profit research and education organization based on Redwood City). Cruise leaves from Redwood City, lasts 4 hours and allows students to participate and collect data on chemical and physical constituents of SF Bay as well as sample and observe Bay fauna.

**Start Date:**  
4/29/2017

**Task Type:**  
Department/Division/Unit

**Priority Level:**  
High

**Task Order:**  
1

**Due Date:**

**Completion Date:**

**Task Status:**  
New/Pending

**Budget:**  
\$4,200

Bay cruise with Marine Science Institute for 102 students on a research vessel to participate in water quality monitoring and sample bay fauna.

## Budget Remarks:

Date:	Name:	Remarks:
No Data to Display		

## Budget Details:

GL Code	Account	Description	Requested	Approved
4395	Environmental/Earth Sciences	4 hour Bay Cruise for 102 students -- \$2100/semester * 2 semesters = \$4200 See: <a href="http://www.sfbaymsi.org/discovery-voyage">http://www.sfbaymsi.org/discovery-voyage</a>	\$4200.00	\$0.00

## Assignment Details:

Name:	Email:
No Data to Display	