



ANNUAL PROGRAM PLAN & REVIEW (INSTRUCTIONAL)
ASGC ADOPTED SPRING 2011

The purpose of this document is to collect information to be used by the college planning bodies IPC (Instruction Planning Council), APC (Administrative Planning Council), SSPC (Student Services Planning Council), Budget Planning Committee, and CPC (College Planning Council) and may be used for Program Improvement and Viability (PIV). Through this process, faculty have the opportunity to review the mission and vision of their department/program. Then, using multiple measures and inquiry, faculty will reflect on and evaluate their work for the purposes of improving student learning and program effectiveness. This reflection will identify steps and resources necessary to work towards the program vision including personnel, professional development, facilities, and equipment. *Faculty should use their judgment in selecting the appropriate level of detail when completing this document.*

The deadline for submission of the Annual Program Plan to the IPC is March 31. Complete this document in consultation with your Dean who will then submit a copy to IPC. Members of the IPC review the document and return their comments to the author for use in the next annual program plan.

Cañada College

Mission Statement

It is the mission of Cañada College to ensure that students from diverse backgrounds have the opportunity to achieve their educational goals by providing quality instruction in general, transfer, career, and basic skills education, and activities that foster students' personal development and academic success. Cañada College places a high priority on supportive faculty/staff/student teaching and learning relationships, responsive support services, and a co-curricular environment that contributes to personal growth and success for students. The College is committed to the students and the community to fulfill this mission.

Vision

Cañada College ensures student success through personalized, flexible, and innovative instruction. The College infuses essential skills and competencies throughout the curriculum and assesses student learning and institutional effectiveness to make continuous improvement. Cañada responds to the changing needs of the people it serves by being involved in and responsive to the community, developing new programs and partnerships and incorporating new technologies and methodologies into its programs and services.



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Document Map:

- 0) Key Findings
- 1) Planning group
- 2) Authors
- 3) Program
- 4) Responses to previous Annual Program Plan & Review (APP&R)
- 5) Curricular Offerings
- 6) Program Level Data
- 7) Action Plan
- 8) Resource Identification



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Department/Program Title:

Earth Science (Geology, Oceanography, Meteorology and Environment Science)

Date submitted: April 15, 2014

0. Key Findings:

The Earth Science program continues to grow. Other than a slight decline in Spring 2012, total enrollments have grown each semester. Our load numbers are below college average, in part due to an increase in the number of sections offered and additional lab offerings. As enrollment continues to build and transfer major are developed, we anticipate load numbers increasing.

The addition of a new full-time faculty member has helped get curriculum up to date. In fact, nine courses have been created/revised in the last 7 months.

Some instructors are not consistently collecting/entering course assessment data. More training necessary.

Currently the program primarily serves general education students pursuing transfer. We have one degree program, an Associate of Science in Earth Science. We are behind on assessment for our programs.

Although our retention rates are generally at/above the 84% goal department-wide, success rate are lower than the 70% goal in many of our disciplines. The department needs to develop and implement measures to increase student success.

We are making progress on updating our lab equipment and supplies, but we still have some outstanding needs. Notably, last year we underestimated the amount of rock and mineral samples needed.

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

List of names and positions:

Susan Mahoney – FT

Kim Kirchoff-Stein – PT

2. Writing Team and Contact Person: Susan Mahoney

3. Program Information

A. Program Personnel

Identify all personnel (faculty, classified, volunteers, and student workers) in the program:

FT Faculty: Susan Mahoney

PT Faculty: Kim Kirchoff-Stein
Bridget James



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B. Program mission and vision

The Earth Sciences department endeavors to prepare students for successful transfer to 4-year institutions, to provide the prerequisite earth science foundation for further study in earth science fields, to foster critical thinking and active learning, and to fulfill the needs and interests of students by having a well rounded curriculum of lecture and laboratories.

C. Expected Program Student Learning Outcomes

1. The Scientific Method:

Students completing this program will be able to use the scientific method and appreciate its importance to the development of scientific thought.

Assessment Tools: Questions on Exam #1 in GEOL 100 and OCEN 100

2. Effective communications and documentation of work:

Students completing this program will demonstrate the ability to document and communicate their work effectively.

Assessment: GEOL 101 fieldtrip report and lab exercises, OCEN 101 lab exercises

3. Critical thinking and analysis of physical systems:

Students completing this program will demonstrate critical thinking and the ability to analyze physical systems in terms of scientific concepts.

Assessment: GEOL 100 Final exam and questions on second midterm in OCEN

100.

4. Response to Previous Annual Program Plan & Review

The most recent program review noted that we were behind on assessing program performance. We are still behind, however we do at least have a plan. All of our courses have new/revised SLOs, so our first step will be to get those input into tracdat and to ensure that all faculty understand their data collection/reporting responsibilities. Next, as a department, we will discuss our program level goals for our GE program, our current Earth Science degree, and the two new degrees likely to be implemented in the next calendar year.



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5. Curricular Offerings (*current state of curriculum and SLOAC*)

Course Prefix	Course Number	Course Title	Date of last revision	SLO Cycle completed *
GEOL	100	Introduction to Geology	9/28/13	12/16/11
GEOL	101	Geology Lab	9/28/13	12/16/11
GEOL	121	Earth Science	2/7/14	
OCEN	100	Oceanography	4/11/14	12/16/11
OCEN	101	Oceanography Lab	2/24/12	3/9/14
METE	100	Meteorology – Weather Processes	10/11/13	
ENVS	115	Introduction to Environmental Science	9/28/13	

A significant amount of curriculum work was completed in the last year. Within the department, we revised five courses and created one new course. Three courses were successfully submitted for C-ID to support transfer degrees in Geology and Elementary Education, and ENVS 115 was successfully resubmitted for CSU-GE and IGETC. Department faculty also revised three courses that do not fall under the Earth Science program review (GEOG 100, GEOG110, GEOG 150). These courses were successfully submitted for C-ID to support the Geography transfer degree. No courses have course outlines over 6 years old.

We are getting caught up on our SLO Cycles. In the past, data was not always entered each semester for each class. This has improved, though there is still one faculty member not entering data. We hope to have a short training session in Fall 2014, to get all faculty members up to speed on reporting requirements. Additionally, nearly all of our courses have new SLOs, which we will update in TracDat in Fall 2014. Notably, GEOL 121 is a new course and has not yet been offered, ENVS 115 was a new course Spring 2013, and METE is offered sporadically.

A. Attach the following TracDat and Curriculum data in the appendix:

- TracDat report attached.

B. Identify Patterns of Curriculum Offerings

Current Active Courses:

- GEOL 100 – 3 units
- GEOL 101 – 1 unit
- GEOL 121 – 4 units
- OCEN 100 – 3 units
- OCEN 101 – 1 unit
- METE 100 – 3 units
- ENVS 115 – 3 units



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The current plan is to offer at least one on-campus section each of OCEN 100, OCEN 101, GEOL 100, GEOL 101, and ENVS 115 each semester and one on-line section each of OCEN 100 and METE 100. GEOL 121 will likely be offered once per semester or once per year a rotating basis district-wide.

ENVS 115 was not offered in Fall 2013 due to low enrollment, but is being offered online Spring 2014. We We anticipate that enrollment for this class will increase now that is is approved for CSU-GE and IGETC. Additionally, once the new Environmental Science degree is implemented, enrollments will likely increase as well.

Future plans include:

- Develop historical geology lecture and lab classes required for the AS-T Geology degree.
- Develop a lab course for environmental science to go with the lecture course.
- Consider adding a lab course for meteorology to go with the lecture course (METE 101).
- Consider adding a lab course for GEOG 100 to go with the lecture course (GEOG 100).

6. Program Level Data

A. Data Packets and Analysis from the Office of Planning, Research & Student Success and any other relevant data.

Except for a slight dip in Spring 2012, combined total enrollment across the department continues to grow.

	S08	S09	S10	S11	S12	S13	F08	F09	F10	F11	F12
Combined Earth Science Headcount by Term	67	87	125	173	153	190	106	115	119	135	192
% change from prior		+30%	+44%	+38%	-12%	+24%		8%	3%	13%	42%

Despite dramatic increases in total enrollment, our enrollment per section has dipped, due to offering more sections and also the regular offering of lab classes. As enrollment in the lecture sections continues to build, the lab will likely increase enrollment as well. Similarly, our load is below the college average, as we have recently hired a full-time faculty (F2012) and are working to build a program.

Year	# Sections	#/Section
2008/09	8	25.1
2009/10	8	30.6
2010/11	9	33.3
2011/12	10	29.1
2012/13	15	25.5



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Generally our retention rates remain at or above the retention rate goal of 84%. Our success rates declined slightly and are now below the goal of 70%. In particular our online Meteorology class and our new Environmental Science class had lower success rates. Ethnicity and age distribution are reflective of the college overall.

B. Analyze evidence of Program performance. Explain how other information may impact Program (examples are business and employment needs, new technology, new transfer requirements)

Students enrolled in Earth Science programs are primarily general education students preparing for transfer. Career opportunities in Earth Science and Environmental Science continue to increase higher than the national average, so we anticipate an increase in the number of students pursuing an Earth Science degree. Further, we anticipate increased enrollment once the Geology AS-T and Environmental Science AS-T is approved. Notably, many community college students do not have a good understanding of the career opportunities that exist in Earth Science related fields. The department is working with campus and outside groups (e.g. the Cañada College STEM Center and the United States Geological Survey) to increase student exposure to the Earth Sciences through STEM Center speakers, fieldtrips, and internship opportunities.

As a department, we prioritized updating all of our course outlines over performing program level assessment. As noted above, we made excellent progress on our course outline revisions, but we have made little progress on entering and analyzing program level assessment data. We still reconginze this as a priority.

7. Action Plan

- Input new SLOs into TracDat. (Most of our courses have new SLOs.)
- TracDat training for all faculty.
- Review all assessment plans to ensure that all courses are on track to complete assessment cycles on time, and to ensure that faculty are using the data to improve their courses.
- Review PLOs. The original PLOs were adopted from the Physical Science Department. We may keep them as is or slightly modify them to note and Earth Science focus.
- Ensure that PLO and ILO assessment is completed and tracked through TracDat.
- Develop an Environmental Science A.S. degree, as the state has stalled on the development of an Environmental Science TMC.
- Develop a Historical Geology course and a Geology AS-T. We will partner with our sister schools to ensure the Historical Geology course is offered once per year, district-wide. This this is the final course needed for the Geology AS-T.
- Continue our work organizing and updating our lab equipment and supplies.



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- Connect with discipline peers at our sister schools to collaborate on student fieldtrip and research opportunities.
- Interested departmental faculty will meet to discuss ideas for increasing enrollment numbers and success rates, as well as recruitment of Earth Science and Environmental Science majors.
- Interested departmental faculty will meet to identify community partners (e.g. high schools, local, state, and federal agencies, non-profits, etc...) for program planning and also fieldtrip and internship opportunities.

8. Resource Identification

A. Faculty and Staff hiring requests: No additional staff or faculty are requested.

B. Professional Development needs

Professional development is essential to keep current in the discipline and to keep current with effective pedagogy and assessment methods. Susan Mahoney and Kim Kirchoff-Stein have indicated that more training on TracDat would be useful. Susan also plans to attend at least one geology or environmental science conference per semester, likely the National Association of Geoscience Teachers- Far Western Region Field Conference that occurs twice each year. This conference focusses on local California geology and pedagogy appropriate for community college-level courses. All department faculty need training on TracDat and/or assessment reporting requirements.

C. Classroom & Instructional Equipment requests

- 1. Classroom Globes -5:** Cram (brand) 12" plastic political globe with clearview mounting. For use with in GEOG 100, ENVS 115, GEOL 101, and likely OCEN 101 and astronomy. We tried using the inflatable globes, but they are not appropriate for learning to locate Earth features. Paperboard globes simply do not hold up over time.
<http://www.classroommapsatoz.com/12in-political-plastic-globe-clearview-base-p-18.html>
Vendor: Classroom maps A-Z
Item #: CM-CRM6120-0250
Unit Price: \$118
Quantity: \$590



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2. Rock and Mineral Samples for GEOL 101 Student Kits:

For use with in GEOL 101 and limited use in GEOL 100 and OCEN 101.

Trying to develop 10 “kits” each for minerals, igneous rocks, sedimentary rocks, and metamorphic rocks, Many of the current samples are very old and have deteriorated. Last year we underestimated our needs. We still need 10 samples each of approximately 5 minerals and 10 rocks to complete our existing kits. Cost per unit varies considerably depending on the mineral or rock. The cost listed below is an estimate, assuming we get small student samples at approximately \$13/set of 10.

Total Cost: \$200

3. Academic Dividers – 6 inch

For use with in OCEN 101.

Drafting Steals.com <http://www.draftingsteals.com/catalog-drafting---drawing-aides-compass---dividers-dividers.html>

Code: 20022MFG Part #: 660

Regular price: \$12.00 Sale price: \$8.56

Quantity =10

Total Cost: \$120.00

4. Portable Salinity Refractometers

For use with in OCEN 101.

Marine Depot.com <http://shop.marinedepot.com/marine-depot-aquarium-refractometer>

Item #: MD2101

\$49.99 ea.

Quantity =7 (need at least 2)

Total Cost: \$349.93

5. Salinity Hydrometer: High-Precision Specific Gravity Hydrometer

For use with in OCEN 101.

Carolina: <http://www.carolina.com/>

Item # 722570

\$34.95 ea

Quantity =7

Total Cost: 244.65

6. Graduated Cylinder, Polypropylene, 250 mL

Carolina: <http://www.carolina.com/>



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Item # 721604

\$6.95 ea

Quantity =7

Total Cost: 48.65

7. Physiographic Sea Floor Charts

Fischer Scientific: <http://www.fishersci.com/>

No.:437

\$18.00 ea

Quantity =2 pads of 100 charts each

Total Cost: \$36.00

D. Office of Planning, Research & Student Success requests

We would like to be able to identify student who are interested in pursuing a major in Earth Science or Environmental Science and/or students who are interested in career fields related to these majors.

E. Facilities requests

As a temporary measure, the basement of building 16 was renovated into a classroom / lab space for earth science (shared with physics and physiology). The lighting in this room needs improvement so that students can accurately read instruments and assess water and mineral properties.