



**Earth Science
PROGRAM REVIEW REPORT
2014 - 2015**

Faculty and Staff (List all)

Full Time	Adjunct	Support Staff
Hathaway, George	Fair, Charles	
	Johnson, David	
	Kang, Hwang	
	Regalado, Shelley	
	Rath, Carolyn	



Earth Science

I. Executive Summary

Program Description:

Earth Science includes the disciplines of geology and oceanography, both of which study the materials and phenomena associated with the development and evolution of the Earth. Courses in Earth Science satisfy general education requirements for the associate degree and lower division transfer and can be used to fulfill some of the major requirements for the associate degree in Biological and Physical Sciences and Mathematics.

Courses in Earth Science are offered in the day and evening.

Strengths/Effective Practices:

- All credit course outlines have been reviewed and updated to reflect the SLO requirements as per current accreditation standards.
- Courses articulate with those at UC and CSU campuses.
- The program conforms to the District's mission statement to provide transfer and degree courses.
- The student population in the Earth Science program reflects the District's diversity.
- Current offerings are meeting demands for Earth Science courses.

Weaknesses/Lessons Learned:

- Data indicate a significant drop in student success at the same time that instructor led fieldtrips were not conducted. The lack of instructor led fieldtrips could be a significant factor affecting student success.
- Securing reliable and functional transportation has been difficult and funding for department-specific vehicles should be pursued.
- Earth Science essentially has received no S.T.E.M. support for years. We have repeatedly requested support for our students, but there has been no response from S.T.E.M. managers. Earth Science support has instead been given to policy courses (e.g., Environmental Science) and students seeking careers in environmental policy instead of the sciences.

Recommendations/Next Steps:

- Fieldtrips, class projects, classroom debates could increase student success for oversized classes. Field classes would increase student engagement, making geology classes fun as well as supplying educational experiences.



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II. Curriculum

Course Number and Title (Courses must be reviewed every six years to remain active)	Date of last Curriculum Committee Review	2013-2014 Course offerings By Term and # of Sections				SLOs Assessed (Semester / year)
		Summer	Fall	Winter	Spring	
ESCI 119 Physical Geology (without Lab)	F11	1	1	1	1	Fall, 2014
ESCI120 Physical Geology (with lab)	F11	0	8	0	8	Fall, 2014
ESCI 121 History Geology		0	0	0	0	
ESCI122 Earth History		0	0	0	0	
ESCI124 Environmental Geology	S08	0	0	0	0	
ESCI130 Physical Oceanography	S07	2	6	2	6	Spring, 2013
ESCI 140 The Geology of Death Valley National Park	F07	0	0	0	0	Deactivated
ESCI 141 The Geology of Yosemite National Park	F07	0	0	0	0	Deactivated
ESCI 142 The Geology of Channel Islands National Park	F07	0	0	0	0	Deactivated
ESCI 143 The Geology of Joshua tree National Park	F07	0	0	0	0	Deactivated
ESCI 145 The Geology of Sequoia National Park	F07	0	0	0	0	Deactivated
ESCI 146 The Geology of Kings Canyon National Park	F07	0	0	0	0	Deactivated
ESCI 180 Introduction to Geographic Information Systems	S07	0	1	0	0	Fall, 2013
ESCI 698A Cooperative Education		0	0	0	0	
ESCI 698B Cooperative Education		0	0	0	0	
ESCI 698C Cooperative Education		0	0	0	0	
ESCI 698D Cooperative Education		0	0	0	0	

ESCI 699A Cooperative Education		0	0	0	0	
ESCI 699B Cooperative Education		0	0	0	0	
ESCI 699C Cooperative Education		0	0	0	0	
ESCI 699D Cooperative Education		0	0	0	0	

III. Degrees and Certificates

Title	Type	Date Approved by Chancellor's Office	Number Awarded 2011	Number Awarded 2012	Number Awarded 2013	Number Awarded 2014
Biological and Physical Sciences (and Mathematics)	AS	1950	212	224	277	373
Liberal Arts: Math and Science	AA	2009	23	19	18	93

TYPE: AA = Associate in Arts AS = Associate in Science Degree C = Certificate S = Skill Award
AA-T = Associate in Arts for Transfer AS-T = Associate in Arts for Transfer

IV. Sections Offered

Review the data sheet for section counts, which includes the following information by course category:

1. Section counts
2. Enrollment by student demographic
3. Success and retention

Provide a brief narrative analysis and describe any trends or concerns you noticed.

Esci 120 Section counts in Earth Sciences has increased over the past two years despite the reductions in budgetary augmentation and student population across campus. This provides the opportunity for students to complete core GE graduation and transfer coursework leading to their educational goals.

Course offerings in the morning, afternoon, and evening sections allows the department to provide coursework for a diversified student body.

V. Student Demographics

Review the data sheet for program enrollment, retention, and success which includes data on these metrics by student demographic

Provide a brief narrative analysis and describe any trends or concerns you noticed.

For data on course sections, success and retention, and student demographics please refer to data packet in your program review folder. Observations and reflections related to these data can be addressed in the appropriate "plus one" addendum.

Observations and comments about course, program and college level data can be made below.

Data indicate that there is a drop-off in student success since the institution of oversized classes, but without a drop in retention. This is in likelihood that there is an added difficulty in engaging students with such large classes. It is my belief that field work and fieldtrips is a way to engage students who would otherwise end up doing poorly.

VI. Student Accomplishments

Provide current, interesting information about accomplishments of students who have participated in this program.

Many students enrolled in the Earth Sciences Program at Citrus College have successfully completed their curriculum and transferred to four-year institutions.

VII. Student Learning Outcomes Assessment Reflection

Academic Senate Approved 4/11/12

All SLOs for every course will need to be assessed at least once within the 5-year comprehensive program review cycle. Upon reflection with program colleagues (or self-reflection for programs with only one instructor), please provide a brief narrative to the following (at least one row for one SLO needs to be completed for each course at this time):

Complete SLO assessment and analysis in the table at:

<http://intranet/SLO/Pages/default.aspx>

DOCUMENT REFLECTION DISCUSSION BELOW (FOR BOTH SUMMER/FALL 2013 AND WINTER/SPRING 2014)

Data indicate that there is a drop-off in student success, and therefore meeting SLOs, since the institution of oversized classes. Again, this is in likelihood that there is an added difficulty in engaging students with such large classes. It is my belief that field work and fieldtrips is a way to engage students who would otherwise end up doing poorly. The addition of another teaching modality and enhanced student engagement may improve SLOs.

SLO assessment indicates that larger class size has a negative impact on student success. Again, this is in likelihood that there is an added difficulty in engaging students with such large classes. It is my belief that field work and fieldtrips is a way to engage students who would otherwise end up doing poorly. The addition of another teaching modality and enhanced student engagement may improve SLOs for large-sized classes. SLO assessment indicates that smaller classes (i.e., ESCI 119) are meeting or exceeding expectations.



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VIII. Progress toward previous goals

During 2013 - 2014, we accomplished:

	Previous Goals	Progress/ Persons Responsible	Status	Institutional Goal
Goal 1 EMP	Develop opportunities for students to do field work to enhance their understanding of course content.	Field experiences for students in Earth Science classes are now non-existent. Suitable and timely transportation to the field is not available. Responsibility: Facilities	P	1.1.1
Goal 2 EMP	Collaborate with the Vice President of Administrative Services and Finance to renovate classroom and laboratory space to keep pace with current technological trends	Updated laboratory benches with running water, computer ports, and better seating would improve laboratory teaching environment. Person responsible: Rabitoy, Facilities	P	3.1.4
Goal 3 2010-11	Consider developing and offering: (1) a transferable course in Mineralogy (with a laboratory component), and (2) distance education, and hybrid, courses.	Currently under development. Responsibility Hathaway	P	1.1.1
Goal 4 2010-11	Consider upgrading Physical Oceanography (ESCI 130) to include a laboratory component, thus offering enhanced transferability in marine sciences and offering Citrus College students more choices in meeting the Physical Science with a lab requirement for their Associate degree.	Not feasible at present time. Discussions to continue. Responsibility: Hathaway, Rabitoy	P	1.1.1
Goal 5 2010-11	Explore the opportunities to do in-service activities for K-12 teachers at their school site or at a workshop at Citrus College in an effort to promote geosciences education in primary and secondary schools	Not yet initiated. Responsibility: Hathaway, Rabitoy	P	6.1

	and to increase the pool of prospective geosciences majors within the UC and CSU system and Citrus College.			
Goal 6 2010-11	Consider working with the Articulation Officer to possibly change course numbering to follow a more logical, less confusing sequence showing a hierarchy that students can follow; for instance, higher numbered courses should be indicative of having lower numbered courses as prerequisites.	Not yet initiated. Responsibility: Hathaway, Rabitoy	P	1.1
Goal 7 2010-11	Consider creating an A.A./A.S. degree in Earth Science/Geology.	Currently awaiting SB1440 information from the state. Responsibility: Hathaway	I	1.1
Goal 8 2010-11	Consider online offering of course content followed by laboratory experiences in the field for Physical Geology (ESCI 120).	Online potential included in course outlines for some courses but not all. Field lab for Physical Geology still warranted. Responsibility:: Hathaway, Rabitoy	P	1.1.1
Goal 9 2010-11	Consider offering a field lab section as a component of ESCI 120 as a potential precursor to a hybrid ESCI 120 course in the future.	Not yet initiated. Responsibility: Hathaway, Rabitoy	P	1.1.1
Goal 10 2010-11	To help promote the Earth Science Program, offer more field classes and facilitate field instruction/trips, with faculty and journalistic involvement, to expose students to the exciting outdoor activities and academic stimulation associated with geological sciences.	Field classes are currently on the books (2 unit classes) but have not been offered for 5 years. Responsibility: Rabitoy	P	1.1
Goal 11 2010-11	Consider offering courses to meet not just lower division transfer needs, but preparation for major and higher status student transfer needs in addition to General Education requirements. Historical Ge-	Earth History has been scheduled, but not Historical Geology. Mineralogy or higher level courses have not been submitted to curriculum. Responsibility: Hathaway, Rabitoy	I	1.1

	ology, Mineralogy, and field component courses should be offered and scheduled on a regular basis to achieve these ends			
Goal 12 2010-11	Establish new guidelines for proper field trip protocol.	No faculty input permitted. Responsibility: Administration	P	1.1
Goal 13 2010-11	Continue to insure that Earth Science faculty has access to post information on class websites.	Faculty need DIRECT input, not third person. Responsibility: Administration	P	3.1
Goal 14 2010-11	Consider combining ESCI 122 and 121 into a single course, or, consider offering these two courses concurrently.	Currently under development. Responsibility: Hathaway	P	1.1
Goal 15 2010-11	Consider removing ESCI course indicator and replacing with appropriate GEO indicators.	Not yet initiated. Responsibility: Administration	P	6.1
Goal 16 2010-11	Consider hiring a dedicated Geology laboratory tech and stockroom assistant.	Not yet initiated. Responsibility: Rabbitoy	P	3.1
Goal 17 2010-11	Consider acquiring vehicles suitable for natural sciences field trips (i.e., suitable suspensions, clearance, and driving range). Develop a pool of responsible science students as qualified drivers and compensate them appropriately. Consider other innovative options to meet transportation needs.	Not yet initiated. Responsibility:: Administration	P	3.1
Goal 1 2011	Develop new coursework and revise existing curriculum to allow students to enroll in a lecture only course or a lecture/lab combination course for ESCI 124.	Curriculum submitted to CurricUNET in September, 2011.	I	1.1 2.2
Goal 2 2011	Evaluate the need to hire a 100% lab technician to serve the needs of the Earth Science and Physics Programs.	Initiate discussion with Physics faculty and the dean./Fall 2011	P	2.2 3.1
Goal 1 2012	Incorporate field activities into course curriculum	Identify support from District and outside agencies regarding functional	II	3.1.4

		and reliable transportation – Spring, 2013		
Goal 2 2012	Complete curriculum changes aimed at combining ESCI 121 and 122	Initiate curriculum changes in CurricUNET – Spring, 2013	II	1.1.5
Goal 3 2012	Pursue the hiring of an additional full-time faculty member	Identify needs and FNIC assessment – Fall, 2012	IV	1.1.1

In addition to previous goals, during 2014-2015, we plan to:

	Description	Actions / Target Date	Institutional Goal**
Goal 1	Consider combining: Geology of Death Valley National Park (ESCI 140), Geology of Yosemite National Park (ESCI 141), Geology of Channel Islands National Park (ESCI 142), Geology of Joshua Tree National Park (ESCI 143), Geology of Lassen Volcanic National Park (ESCI 144), and Geology of Sequoia-Kings Canyon National Parks (ESCI 145) into a single course: California Geology to meet General Education and transfer standards established by CSU and UC systems, associate degree standards for Citrus College, and community life-long learning courses.	Initiate curriculum changes in CurricUNET – Fall, 2013	1.1.1 2.2
Goal 2	Develop a fieldtrip protocol for NPS fieldtrip logistics and District vehicle usage.		3.1 4.1
Goal 3	Deactivate Historical Geology		1.1
Goal 4	Incorporate Adjuncts into teaching courses other than ESCI130		2.2

Goal 5	Hire a part time field assistant to help with logistics for fieldtrips and field classes and maintenance of field equipment		2.3
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**For instutional goals visit link below.*

<http://www.citruscollege.edu/admin/planning/Documents/StrategicPlan2011-2016.pdf>

***For Educational and Facilities Master Plan, use table below.*

EFMP 1 – Increase the number of physical science courses like earth science to balance the number of life science courses.
EFMP 2 – Develop opportunities for students to do field work to enhance their understanding of course content.
EFMP 3 – Collaborate with the Vice President of Administrative Services and Finance to renovate classroom and laboratory space to keep pace with current technological trends.



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IX. Budget Recommendations for 2014-2015

(Add rows or attach additional pages as needed for complete description / discussion)

Certificated Personnel (FNIC)

Position	Discuss impact on goals / SLOs	Impact	Priority
Full-Time faculty member	Will improve achievement of all goals/SLOs	M, N, Q, F	2, 3

Classified Personnel

Position	Discuss impact on goals / SLOs	Impact	Priority

Staff Development (Division)

Item	Discuss impact on goals / SLOs	Cost	Impact	Priority

Facilities (Facilities)

Describe repairs or modifications needed	Discuss impact on goals / SLOs	Building / Room	Impact	Priority

Computers / Software (Tecs)

Item	Discuss impact on goals / SLOs	Cost	Impact	Priority

Equipment

Item	Discuss impact on goals / SLOs	Cost	Impact	Priority

Supplies (Division)

Item	Discuss impact on goals / SLOs	Cost	Impact	Priority
Fieldtrip Vehicle(s)	Will improve achievement of critical goals	30,000 ea	M,N,Q	2,3
Proper maintenance	Will improve achievement of critical goals	TBD	M,N,Q	2,3

General Budget Guidelines

Budget Preparation Tips:

- Include items on the budget form that are needed for program success even if there is no financial need associated with the request (ie training that could be accomplished with on-campus resources, sharing of resources with another discipline or department etc.)
- Whenever possible, obtain actual cost for the items / equipment you wish to purchase. This avoids situations where items are considered for purchase but it is determined that the actual cost greatly exceeds the original estimate.
- Identify unit cost (cost per item) and the number of units desired in requests.
- Indicate if there is a lower level of financial support that would be workable in your educational plan – if you request \$30,000 for a classroom set of equipment (one item for each student), if \$15,000 were available, would it be possible for two students to share an item? Is the request “All or nothing”?

Determining Budget Impact:

Indicate one or more of the following areas that your request will affect:

M = Mission: Does the request assist the program in meeting the District’s mission and established core competencies and / or diversity?

N = Need: Does the request assist the program in addressing needs based on labor market data, enrollment, articulation, advisory committee, regional agreements, etc.?

Q = Quality: Does the request assist the program in continuing or establishing appropriate lecture/lab unit values? Will the request assist in the regular reviewed / updated of course outlines? Is faculty development adequate? Does program need support in addressing the State and District emphasis on critical thinking, problem solving and written expression? Does program need support to meet stated objectives in the form of SLOs? Do course pre-requisites and co-requisites need to be validated?

F = Feasibility: Does the request assist the program maintain adequate facilities, equipment, and library resources? Is there a need for repair or modification of facilities? Is there a need for new equipment or supplies? Are course offerings frequent enough for students to make adequate progress in both day and evening programs? Does the program have adequate communication with & support from Counseling?

C = Compliance: Does the request assist the program in meeting Federal, State & District requirements? (Do the course outlines meet state, district & federal regulations for content? Do vocational programs have regular advisory meetings?)

Budget Priorities:

When establishing priority, consider the following:

Priority 1: This item is mandated by law, rule, or district policy.

Priority 2: This item is essential to program success.

Priority 3: This item is necessary to maintain / improve program student learning outcomes.