Astronomy
PROGRAM REVIEW REPORT
2014 - 2015

Faculty and Staff (List all)

Full Time	Adjunct	Support Staff
Kaisler, Denise	Chan, Linda	
Kary, David		

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I. Executive Summary

Program Description:

Astronomy studies celestial bodies and their structure, origin, and development. Courses in astronomy 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.

The Honors Program includes one astronomy course: Astronomy 115H Planetary Astronomy—Honors. Courses in astronomy are offered in the day, evening, and online.

Strengths/Effective Practices:

Astronomy offers a set of highly interactive science courses to serve the General Education needs of Citrus College students. All faculty are strongly committed to finding a variety of ways to actively engage students in the learning process.

The astronomy program also provides a wide range of class times and formats, including evening classes, courses with and without labs, summer and winter offerings, distance education, honors, and we are experimenting with an 8-week fast track class.

The faculty in the area are work hard to keep up-to-date both on the latest scientific developments that impact their courses and on new technological and pedagogical approaches to science teaching, such as seminar-style “flipped” classes.

Weaknesses/Lessons Learned:

A key concern we have is over students’ mastery of basic skills when entering these classes. Both writing and math skills seem very weak for many of our students, and this can be a challenge for them to demonstrate the level of communication and mathematical reasoning required in a college-level science class.

Students have found the mis-match in timing of content covered between lectures and labs is a hindrance to learning.

In our DE classes we find that the attrition rate is substantially higher than in the traditional classes and the success rate is lower.

Finally, there are few adjuncts available who are qualified to teach astronomy classes, so finding and keeping such adjuncts is a constant challenge.

Recommendations/Next Steps:

We recommend investigating adding basic skills math and/or English classes as requisites to some or all astronomy classes.
We are changing when we cover some material in lab in order to give a better match with the lecture content.
We are experimenting with new formats and content in the online lecture classes to try to improve student retention and success.

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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	
ASTR115 Planetary Astronomy	**S09**	2	6	0	4	**Fall 13/Spring 14**
ASTR115H Planetary Astronomy- Honors	**S09**	0	0	0	1	**Spring 14**
ASTR 116 Stellar Astronomy	**S09**	0	6	0	6	**Fall 13/Spring 14**
ASTR 117 Life In The Universe	**S09**	0	2	0	2	**Fall 13/Spring 14**

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	

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.

All ASTR classes are in the "Primarily General Education" category. Courses continue to be offered in a range of times and formats, including DE and fasttrack. We will review the effectiveness of the fasttrack format in future semesters to determine if these are helpful to students.

Note that any changes in the BIOL 105 offerings will have a direct impact on classes in ASTR along with related physical science GE areas (such as GEOL, GEOG, and PHYS).

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.

As a large GE program ASTR's student demographics are reasonably similar to the college's overall student population.

There appears to be a slightly lower student success rate for female vs. male students. This is not consistent over major semesters and may not be statistically significant on the long term, but we should continue to monitor this to see if it turns into a clearer trend.

We continue to be concerned about the lack of preparation many students have in basic math and english, and we plan to investigate adding basic skills prerequisites to some or all of our courses.

Student retention and success rates in distance education classes are substantially lower than in traditional sections. We have stopped offering the stellar astronomy online class temporarily while

we work on correcting this. In the planetary astronomy online class we have added enhanced online lecture materials and modified other assignments to help students learn the critical thinking skills expected in this class.

VI. Student Accomplishments

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

All students in the ASTR 115H earned a B or better in fall 2014.

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)

In spring 2014 we focused on critical thinking skills in all courses as well as lab skills in ASTR 116. Several major findings arose from this study:

1. While students who succeed in the class are demonstrating reasonable critical thinking skills for a gen-ed science course, the number of students who do not succeed is still too high, especially in the DE sections. We should reduce the number of DE sections while we experiment with format changes to help students be better prepared.
2. Students found there was not enough linkage between the ASTR 116 lecture and lab, so we are making changes to the lab schedule to improve these ties.

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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	Create a greater variety of offerings available to students meeting general education requirements, including Introduction to Cosmology	Defer for the indefinite future.	I	1.1.1
Goal 8 2010-11	Faculty should investigate offering a "late start" version of the Planetary Astronomy online class to better serve the non-traditional student population.	Fasttrack online tried in fall 2013, but there was no improvement in student retention and success rates. Trying Fastrack in person 115 class instead Fall 2014. Person responsible: Kary.	C	1.1.1
Goal 15 2010-11	Astronomy faculty should continue investigating enhanced online materials (such as audio- and video- of lecture materials) that can be used to assist student understanding of astronomical concepts.	Attempting technology-supported flipped format classes: Person responsible: Kary	C	3.1.4 2.2
Goal 16 2010-11	Establish regular meetings with STEM counselors.	Schedule conflicts has not allowed this to happen.	I	1.2.4
Goal 17 2010-11	Submit first term review evaluating effectiveness of MA 225 lab.	Lab problems have been resolved.	C	1.2 3.1.4
Goal 19 2010-11	Create separate ASTR budget (Rabitoy)	Despite requests for a separate ASTR budget from the dean and division faculty, the department budget still resides within the Physical Sciences budget code. Persons responsible: Rabitoy	I	3.1 3.1.4
Goal 1 2012	Add new planetarium software to astronomy lab.	Investigating Starry Night College Professor Edition	P	1.2.3

Goal 2 2012	Experiment with "flipped format" lectures in astronomy.	Successfully completed in ASTR 115H. Extending to traditional classes. Person responsible: Kary	P	1.2.3
Goal 1 2013	Create international partnerships for astronomy students and faculty to interact with one another as they study the same material.	Make a list of faculty who would be interested in having their students collaborate with ours via teleconference.	I	1.2
Goal 3 2013	Investigate the need for basic skills prerequisites in Astronomy classes.	Work with Office of Institutional Research and College Success faculty to determine if there is justification for adding an English and/or Math prereq to one or more ASTR classes.	Student success	1.1 &1.2

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

	Description	Actions / Target Date	Institutional Goal**
Goal 1	Create better links between lectures and labs in ASTR 116.	Modify timing to better link to lecture content.	1.2.3
Goal 2			
Goal 3			
Goal 4			
Goal 5			

**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 – Create a greater variety of offerings available to students meeting general education requirements, including Introduction to Cosmology.
EFMP 2 – Increase the number of laboratory physical science courses like astronomy to balance the number of laboratory life science courses.
EFMP 3 – Expand the number of online courses and sections offered.

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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

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
Starry Night College Professor Edition	Better match between labs and lecture (See ASTR 116 SLOs – Winter/Spring 2014)	$500	Quality	3

Equipment

Item	Discuss impact on goals / SLOs	Cost	Impact	Priority
100 Diffraction Gratings	Allow better student experience of light and spectra – Critical thinking/communication/lab SLOs.	$35 (100 at $.35 each)	Quality	3

Supplies (Division)

Item	Discuss impact on goals / SLOs	Cost	Impact	Priority

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.