GLENDALE COMMUNITY COLLEGE

Annual Program Review 2012-2013 – INSTRUCTIONAL REPORT

Division - Program

PHYSICS

Authorization

After the document is complete, it must be reviewed and submitted to the Program Review Committee by the Division Chair.

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Date Received by Program Review: November 13, 2012

1.0. Trend Analysis

For each program within the division, use the data provided to indicate trends (e.g., steady, increasing, decreasing, etc.) for each of the following measures.

Program	Academic Year	FTES Trend	FTEF Trend	WSCH / FTEF Trend	Full-Time % Trend	Fill Rate Trend	Success Rate Trend	Awards Trend
Physics	2008-2009	95	6	541	85.7%	78.4%	68.7%	2
	2009-2010	111	5	653	55.6%	92.2%	73.9%	0
	2010-2011	109	7	473	55.4%	93.1%	70.4%	1
	2011-2012	112	7	489	58.0%	96.1%	72.7%	1
	% Change	+17.7%	+30.4%	-9.7%	-27.7%	+17.7%	+4.0%	-50.0%
	Four-Year Trend	increasing	increasing	stable	decreasing	increasing	stable	decreasing

1.1 Describe how these trends have affected student achievement and student learning:

The physics department has the highest success in the division(72.7 %).This is significantly higher than most 4 year institutions. This is particularly significant in that the engineering courses are taught at a higher level than most 4 year institutions because of the extensive use of calculus. Students are thus very well prepared to transfer to 4 year institutions . Our fill rates are high and increasing. Note that fulltime % trend has decreased because we used to have two fulltime instructors and we are down to 1.4 (one 100 % FT timer and division chair that teaches 40 %).

1.2 Please explain any other relevant quantitative/qualitative information that affects the evaluation of your program?

The physics department provides many other services to students in addition to instruction. We have many SI workshops and a computer lab that is used by students to drop in, finish labs, do homework , and just hang out. Effectively , we have created a learning community environment. Additionally ,we have a strong relationship with JPL and coordinate an internship program with them(SIRI Program). We also have student internships with two local engineering firms.

2.0. Student Learning and Curriculum

Course Level

Year	SLOAC Course Count		% of Courses Assessed
2010-2011	6	100.0%	16.7%
2011-2012	7	100.0%	28.6%
% Change	16.7%	+0.0%	+11.9%
Four-Year Trend		stable	increasing

Provide the following information on each department and program within the division.
This program review is for the Physics department only. Each department will do their own program review. But for completeness I will fill in the following table.

List each program within the division	Active Courses with Identified SLOs		Active Courses Assessed		Course Sections Assessed	
	N / N	%	N / N	%	N / N	%
Astronomy	3/3	100	1/3	33	1/4	25%
Chemistry	7/7	100	7/7*	100	1/3	33%
Geology and Oceanography	4/4	100	34	75	1/4	25%
Physics	7/7	100	6/7	85.7%	9/10	90%

2.1 Please comment on the percentages above.

All courses in physics have SLO's and 16 % have been assessed as of Spring 12. The low % of assessment has been because the physics department for the last three years has had **only 1 fulltime instructor to manage 7 courses and 5 labs.** The % of courses assessed shown in the table was as of the end of Spring 12. At the moment (October of 12), **5 more courses have been assessed raising our % of courses assessed to 6/7 or 86 %**. In the Spring of 13 we will asses the remaining course .

2.2 Using the results from your division/departments recent assessment reports, please summarize any pedagogical or curricular changes that have been made as a result of your course assessments.

Because of assessments in Physics 101,102, and 103, changes have been made in laboratory procedures and manuals to improve the % of students achieving our learning objectives. Lab manuals have been rewritten in Physics 101 and 102 and experiments modified in Physics 101 and 103.

2.3 Please list all ,courses which have been reviewed in the last academic year.

No physics courses have been formally reviewed but informally we are continually updating our teaching methodologies and improving our labs. Clickers have been added to our lectures. Physics 110 (conceptual physics) is presently being altered to be more relevant . And experiments in Mechanics, Electricity and Magnetism , and Optics have been modified, improved, and updated. We are also considering adding Mathematica to our program.

Degree, Certificate, Program Level

List each degree and certificate, or other program* within the division	AA/AS Degree PLO Identified		AA/AS Degree Assessment Cycles Completed		Certificate PLO Identified		Certificate Assessment Cycles Completed	
Physical Sciences AA	YES	NO	YES	NO	YES	NO	YES	NO
	X			X		X		X

2.4 Please comment on the percentages above.

The only degree./certificate program in the division is the Physical sciences AA . The PlO for that has just been updated but the program has not been reviewed or assessed . The program began in the Spring of 12 and so it is too new to assess. The first part of the assessment will be at the end of Spring 13..

2.5 Using the results from your division/departments recent assessment reports, please summarize any. changes that have been made as a result of your program level assessments. Your summary should include a summation of the results of all degrees, certificates, and other programs which were recently assessed.

N/A

2.6 Please list all degree/certificate programs within the division that were reviewed in the last academic year. ,,

The Physical sciences AA was instituted (not reviewed) in the last academic year.

2.7 What recent activities, dialogues, discussions, etc. have occurred to promote student learning or improved program/division processes in the last year?

a. The departments fulltime teachers, adjuncts, and staff now meet regularly to work out problems and discuss pedagogy to promote student learning.

b. The division meetings now include a significant time block to discuss teaching and learning issues

c. The division is planning a retreat devoted to improving our curriculum.

d. We have begun to meet with other divisions to discuss curriculum revisions to improve our courses , particularly Chemistry and Biology.

e. Faculty in 3 of our departments have now begun to integrate clickers into our courses.

Mark an "X" in front of all that apply.

x	Curricular development/revisions of courses
	Curricular development/revision of programs
X	Increased improved SLO/PLOs in a number of courses and programs
x	Other dialog focused on improvements in student learning
	Documented improvements in student earning
X	Increased/improved SLO/PLOs in a number of courses and programs
	New degree or certificate development
	Best Practices Workshops
X	Conference Attendance geared towards maintaining or improving student success
X	Division Retreat in 2011-2012
X	Division or department attendance at Staff Development activity geared towards maintaining or improving student learning
	Division Meeting Minutes
	Reorganization

Please comment on the activities, dialogues, and discussions above

Physics is in the process of revising 5 of its courses.

Physics has improved its % of courses assessed from 17 % to 85 % in the last year;

Every Division meeting now has a pedagogical discussion .

The Physics department regularly goes to lunch with its adjuncts.

Clickers are being introduced into Physics ,Astronomy, and Chemistry courses.

We had a very successful and stimulating division retreat.

3.0 Reflection and Action Plans

3.1 Based on your data and analysis presented above, as well as on issues or items that you were unable to discuss above, comment on the Strengths and Weaknesses of the physics department

Strengths

List the current strengths of your department

1. Complete integration of computers into the Physics program
2. An outstanding Mac computer lab and a dedicated staff
3. Three semesters of carefully designed laboratory experiments

3.2 Weaknesses

List the current weaknesses of your department

1 .Aging computers
2. Limited fulltime technician hours
3. Aging instruments and equipment

3.3 Using the weaknesses, trends and assessment outcomes as a basis for your comments, please briefly describe any future plans and/or modifications for program/division improvements. Any plans for reorganization should also be included, along with a resource request if applicable.

Plans or Modifications	Anticipated Changes/ Improvements	Link to EMP, Plans, SLOs, PLOs, ILOs
Replace aging computers in the lab and desktops	More reliable data analysis, computer simulations, and more advanced experiments developed	See Student learning outcomes #2 for Phy 101,Phy 102, Phy 103;Phy 105, Phy106 See PLO#2 and 3. These can be found at the Physical science division Website http://vision.glendale.edu/index.aspx?page=245
Ask for a second permanent technician	Experiments done more reliably with less equipment breakdown during a lab	See Physics CHAC
Replace aging instruments and equipment.	As we meet the demand for more sections of Physics 105 and develop a new course (Calculus based Physics for Bio/Med and Bio/ Pharmacy majors) ,we will see our program grow significantly and the diversity of offerings will expand significantly .	See Student learning outcomes #4 for Phy 101,Phy 102, Phy 103; and Phy106 See PLO#2 and 3. These can be found at the Physical science division Website http://vision.glendale.edu/index.aspx?page=245

2012 PROGRAM REVIEW

Section 4
Resource Request

PHYSICAL SCIENCES-PHYSICS *New Interface Boxes*	I:PS.Ph-1

Mark Type of Request:

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
X	Instructional equipment		Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
	Supplies		Other

4.1 Clearly describe the resource request.

11 Pasco 850 Universal Interface boxes at $995 a piece plus tax = $11,364.
See section 4.4 for description and rationale.

Amount requested: $11,364

4.2 Funding

X	Requires One Time Funding
	Requires Ongoing Funding
	Repeat Request
	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

	Health & Safety Issue
	Accreditation Requirement
	Contractual Requirement
	Legal Mandate

Please explain how/why this request meets any of the above criteria:
It doesn't meet any of the above criteria. It meets the need for modernization and Innovation.

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

The physics department strives to give our students the most up to date introduction to doing laboratory experiments. This involves what is called computer interfacing – taking sensors and using converter interface boxes to convert their output into a signal that can be entered into a computer, Special software can then be used to start, stop, analyze, graph, and control the experiments in real time . Experiments can be done in milliseconds or days, the data stored in memory and then analyzed, and inspected at a later time.

The Physics department has been using this equipment since when it first came out about 10 years ago in the three Engineering Physics courses Physics 101,102, and 103, Our interfacing equipment is now old, acting irregularly, and being replaced by a new generation of interface boxes, We would like to get a new updated set of interface boxes.

This goal of using computer interface boxes and software is the SLO #2 for Phy101, Phy 102, Phy103, and Phy 106,

SLO # 2 - Students will be able to use computer interfacing hardware and software.
It also is PLO#3 - for the Physical Science AA program.

See Student learning outcomes #2 for Phy 101,Phy 102, Phy 103; and Phy106
See PLO # 3.
These can be found at the Physical science division Website
http://vision.glendale.edu/index.aspx?page=245

4.5 What measurable outcome will result from filling this resource request?

With new interface boxes with greater capability, it will increase the number of interface experiments that we do in the three Physics Engineering courses. It will reduce the number of experiment crashes caused by older interface boxes and will better prepare students for transfer to 4 year colleges and the real engineering job world where this kind of experimentation has become the standard, It may also increase the number of students in our SIRI program who intern at JPL because their increased knowledge and experience using this important technology will make them more competitive in the JPL Intern application process.

APPROVAL

AGENCY	***DECISION***	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	**X**
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

Reports determined to be "Non-Compliant" will be returned to the division member responsible. Reports must be resubmitted with needed changes to the Program Review Office. Requests will not move forward in the budget process if the report or request is Non-Compliant.

2012 PROGRAM REVIEW

PHYSICAL SCIENCES *Physics-Assist. Lab Tech*	I: PS.Ph-2

Section 4: CHAC REQUEST

If this is a repeat request, please list the year(s) requested:_____

4.1. Describe the position including the complete description used to advertise for the position. Also include the division/department/program or service and full-time percentage for the position.

Assistant lab technician Physics/ Planetarium - 25 hour position (20 hours in Physics , 5 hours in Planetarium) 25/40= =62.5 %

Description of position- Assists in performing a variety of duties related to computerized instructional support including the ability to use general and discipline specific software applications as well as the setup and maintenance of equipment used for instruction in all physics labs. Maintains the computers and software in the Planetarium and sometimes helps with the planetarium shows.

Note this is a replacement position for Marcus Duran(100 %) and Paul Buehler(planetarium manager and technician) who resigned and were partially replaced by a **temporar**y part time hourly person.(Barbara Falkowski) . Barbara presently works as a temporary 900 hour per year physics technician , an adjunct and a presenter for Planetarium shows. **We propose to merge her temporary technician and presenter responsibilities into a combined permanent 25 hour position. And we will show that it will cost very little**. See economic analysis below in 4.3.

4.2 Criteria:

a) Are there state or federal mandates particular to this program/service? If so, please describe.

Cal/Osha dictates many safety rules that require the employment of a **trained experience**d individual. The physics department does a number of experiments where safety is a serious issue- particularly those involving Electricity and high voltage experiments. To be safe and meet Osha's standards we need a trained experienced technician. If our present part time person leaves it will take at least 3 years to train a new person. During that time safety may be compromised.

b) How does this position support the objectives and functions of the college in regards to the Mission Statement, EMP goals, annual college goals and/or student need?

The mission statement ,the colleges goals and the states educational goals include providing support to students planning to transfer to a 4 year institution. The physics department is a dynamic engine that produces large numbers of transfer students. Almost all of the students who go through the Physics sequence of Physics 101.102. and 103 transfer to the UC's and Cal States.
To keep this transfer engine running efficiently we need the technical support that this position will create.

Students need to be up to date with the latest technology in order to achieve their goals in Science and Engineering.) The physics department has a lot of computer technology, electromagnetic instrumentation, and optical instruments like spectrometers and interferometers which require constant technician attention. Hiring a permanent technician will make it more likely we will be able to continue to meet their goals.

c. Please provide quantitative data to support your request (such as program review, research office reports, surveys, etc.)

Two of our 3 learning objectives in PHYSICS 101.102. and 103 are related to computer usage in The Physics Mac lab and this technician oversees and maintains that computer system. Note that the physics program review document states that a weakness of our program is inadequate permanent technician staffing and that one of our action items is to hire a second permanent technician.

d) Is this request related to compliance with a collective bargaining agreement? If so, please explain.

Our physics technicians work from 8am to 8 pm and the CSEA contract will not allow one technician to do that.

e) Are there industry standards that directly relate to this position? If so, please explain.

No

4.3 Additional Information and **economic analysis**.

a) What implications does the addition of this position have on: budget, staffing, facilities and equipment?

This position will result in a savings to the college since we will be replacing a 100 % position that was filled by a person with many years of experience with a 25 hour(62.5 %) position likely to be filled by a person with less experience. Two persons are an absolute necessity given the size and number of classes offered in the physics departments and the usage of the Planetarium.

The present temporary physics technician (Barbara Falkowski) cost the college for her duties as a technician and planetarium presenter $23873 last year. By merging these two functions into one 25 hour position it would only cost the College $29882.
The additional cost would be only $6009. See analysis below.

Physics / Astronomy tech costs				
Actual costs 2011-12			Proposed costs new position	
As Physics lab technician			As Physics lab and planetarium technician	
Hourly wages 900 hrs @ $18.73/hr	$16,857		Hourly wages 25 hours /week for 11months @ $18.73/hr	$22,075
Social Security (6.2%)	$1,045		Kaiser health plan (single)	$5,588
Medicare (1.45%)	$244		Social Security (6.2%)	$1,277
Unemployment insurance (1.12%)	$189		Medicare (1.45%)	$299
Workers compensation (2%)	$337		Unemployment insurance (1	$231
Total 1	$18,672		Workers compensation (2%)	$412
			Total	$29,882
As planetarium assistant				
Hourly wages	$4,590			
STRS	$379			
Medicare (1.45%)	$66			
Unemployment insurance (1.61%)	$74			
Workers compensation (2%)	$92			
Total 2	$5,201			
Grand total	$23,873		Grand total	$29,882
Actual cost=$ 29882 -$23873= $6009				

Although this proposal represents an increased cost of $6009 for the college, please note that this position serves as both extra Physics lab technician and planetarium technician. These positions used to cost the college in salaries alone $129,543 and benefits added another $25,000 at least to that. So this very modest proposal still represents a very large saving for the college.

b) Discuss any benefits your program may have lost from not receiving this requested position.

If we do not get this position, the temporary hourly technician we have now will likely leave for a fulltime job elsewhere . Since it takes at least 3 years to train a new technician , this would be a serious setback for the physics department and the physical sciences division.. In addition the planetarium shows which are among the college's best PR event will have to be scaled back.

c) Are there any special concerns that are not addressed in this request? If so, please explain.

If we don't get a second technician the technical support that the physics department provides for the rest of the physical science division will cause problems in Chemistry and Geology, And the Planetarium. The physics techs provide technical support for the computers used in Chemistry and Geology and other parts of the campus for MAC's.

Presently, the physics department is straining to provide adequate technical support for its labs, and the students are sometimes suffering the consequences of equipment that is poorly maintained. The physics department presently has one fulltime technician and one part time temporary technician .The physics department has multiple labs going on simultaneously (usually two and sometimes three). It is imperative that we have two technicians to cover these simultaneous multiple labs .

The planetarium presently has **NO t**echnicians for its program. **And it is the most sophisticated machine on campus requiring regular hardware and software attention.**

d. Describe how this position enhances student success and/or program outcomes.

The physics department has the highest success rate in the Physical Science division. We believe this to be because computers are completely integrated into all aspects of our program- lecture, lab, simulations and homework. The lab equipment and the computers need to be working properly in order for this to happen. Sufficient technician hours are required to do this.

Note that in the SLO's for Physics 101 ,102. and 103, computer usage is required. Additionally ,the Program SLO for the division also involves computer skills . Hiring another technician to keep our labs and computers running smoothly is necessary in order to achieve these outcomes.

The physics department currently does a number of state of the art computer interfaced labs in which students learn to program computers and sensors to work together to record, monitor and analyze data. These experiments while pedagogically outstanding require a not of technical skills to maintain and operate. We need really good (not temporary) technicians to make them work.

The planetarium is the heart and soul of the Astronomy departments teaching and outreach into the community. **Thousands** of elementary school kids visit our Planetarium every year and with the help of the Science center staff help them meet state standards. This multimillion dollar computer optical machine needs regular technical maintenance and the number of planetarium shows require that a person help out with the presentations.

4.4 Please attach data from Human Resources on new classified hires in your program during the past five years, including the full-time percentage of each new hire.

>> See HR email below.

From: "Nicole Hise" <nhise@glendale.edu>
Date: October 4, 2011 10:50:51 AM PDT
To: "'Rick Guglielmino'" <richardg@glendale.edu>
Subject: **New Hires (Classified)**

Hi Rick:

I was able to pull a Discoverer report for the last 5 years beginning 7/1/2006. It appears that you have only hired 3 new classified employees in the last 5 years in the Physical Science Division.

1.	Yelena Zakaryan	Sr. Instruct Lab Tech-Chemistry	9/5/06
2.	Anahit Tosunyan	Science Lab Tech-Chemistry	11/19/07
3.	Melina Allahverdi	Admin Asst (rehired off rehire list)	2/4/08

Markus Duran (formerly Smalling) was hired in 2002. All other hires were temporary hourlies such as Falkowski.

I hope this info helps.

Nicole Hise
Human Resources Generalist
Glendale Community College
(818)240-1000 ext.3135