

*This is the review your department or program submitted in Spring 2008. For Questions #3 and #4 on this form, please provide a progress or status report on the plans you identified last year. For each item, type your progress report in the right column titled, Progress-2008-09. Also, please list the faculty and staff who participate in this progress report. Forward (1) a hard copy to Instructional Services for review by IPC and (2) an electronic copy to [jdecker@palomar.edu](mailto:jdecker@palomar.edu) no later than 3/2/2009*

## Palomar College – Institutional Program Review and Planning Instructional Programs

**Purpose of Institutional Review and Planning:**

The institution assesses progress toward achieving stated goals and makes decisions regarding the improvement of institutional effectiveness in an on-going and systematic cycle of evaluation, integrated planning, resource allocation, implementation, and re-evaluation. Evaluation is based on analyses of both quantitative and qualitative data (ACCJC/WASC, Standard I, B.3.)

**Discipline: Astronomy**

Instructional Discipline Reviewed

2007-08

**1. 3-year trend of quantitative data**

	Fall 2004	Fall 2005	Fall 2006	Definitions
Enrollment at Census	575	511	500	Self Explanatory
Census Enrollment Load %	97.46%	84.18%	77.28%	Enrollment at Census Divided By Sum of Caps (aka "Seats")
WSCH	1,798	1,599	1,564	Weekly Student Contact Hours
FTEs	59.92	53.31	52.12	One Full-Time Equivalent Student = 30 WSCH
Total FTEF	2.60	2.60	2.80	Total Full-Time Equivalent Faculty
WSCH/FTEF	691	615	558	WSCH Generated per Full-Time Equivalent Faculty Member
Full-time FTEF	0.80	1.40	1.40	FTEF from Contract Faculty
Hourly FTEF	1.60	0.60	0.80	FTEF from Hourly Faculty
Overload FTEF	0.20	0.60	0.60	FTEF from Contract Faculty Overload
Part-Time FTEF	1.80	1.20	1.40	Hourly FTEF + Overload FTEF
Part-Time FTEF %	69.23%	46.15%	50.00%	Percent of Total FTEF Taught By Part-Time Faculty
Retention Rate	91.89%	91.68%	91.18%	Non-W Grades (A,B,C,CR,D,F,FW,NC) Divided By A,B,C,CR,D,F,FW,NC,W Grades
Success Rate	53.77%	50.73%	48.82%	A,B,C,CR Grades Divided By A,B,C,CR,D,F,FW,NC,W Grades
Degrees Awarded	1	-	-	Total number of Degrees awarded for the Full Academic Year
Certificates Awarded:	-	-	-	Total number of Certificates awarded for the Full Academic Year
- Under 18 Units	-	-	-	Total number of Certificates awarded for the Full Academic Year
- 18 or More Units	-	-	-	Total number of Certificates awarded for the Full Academic Year

**2. Reflect upon and analyze the above 3-year trend data. Briefly discuss overall observations and any areas of concern or noteworthy trends.**

Some of the data for the Fall of 2004 is anomalous. Mark Lane was on sabbatical that semester and his contract teaching load was covered with adjunct instructors. The result is that the FTES, and some FTEF numbers are skewed.

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Having said that, the Fall 2005, 2006 numbers are in line with the rest of the Earth Space and Aviation Sciences department statistics. Retention rates seem high and similar to other disciplines. The success rate has a slight downward trend to it. It is believed that this is due to a greater number of students who do not finish the semester but were present after the withdrawal deadline (i.e. a greater number of "FW" grades being assigned). The slight downward trend in the retention rate is correlated with the slight downward trend in the success rate.

Continued next page...

A greater emphasis on encouraging students to earn degrees in astronomy seems necessary at first glance, however many of our students who are astronomy majors will continue their education at four-year colleges and will transfer their credits rather than working to meet the requirements of an AA at Palomar College. This is typical with many community colleges that offer a degree in astronomy or other hard sciences.

**3. Reflecting on the 3-year trend data, describe/discuss discipline planning related to the following:**

PLAN – 2007-08	Progress – 2008-09
<p><b>a. Curriculum, programs, certificates and degrees (consider changes due to CSU/UC transfer language updates, articulation, workforce and labor market projections, certificate or degree completions, etc.)</b></p> <p>The Astronomy Program at Palomar College continues to articulate well with other CSU and UC programs. Many of our students are satisfying their general education science requirement by taking the introductory astronomy courses. This keeps the enrollments high in astronomy and occasionally allows for growth in courses offered.</p> <p>The Astronomy Program will soon be enhancing its curriculum to include simple hands-on <i>observational</i> projects that students can conduct either in a laboratory class, or through our Astronomy 295 (Directed Study course) course. These simple observational projects will allow the students to see the practical side of astronomy (and science in general) and see how the theory of astronomy transfers to the practice of it.</p>	<p>We have made a major step towards completion of this goal. 10 new telescopes have been purchased that will be used by students in various hands-on projects. Additional equipment was also purchased that will allow students to take research quality data that can be used to explore some of the basic concepts of astronomy in a realistic manner.</p> <p>However progress towards completion of this goal has slowed due to delays with the new Natural Science building. The 10 new telescopes are still boxed up and stored in NS-318. We are currently waiting for the construction of the storage facility on the rooftop of the NS building. Until this structure is built, we cannot use the telescopes, much less take them out of their boxes. We have been informed that many of these backlogged projects are still pending State approval from the DSA and will begin once said approval is granted.</p>
<p><b>b. Class scheduling (consider enrollment trends, growth, course rotation, comprehensiveness, etc.)</b></p> <p>Most of our M-Th astronomy sections are full on the first day and still have a healthy size by census day. The Friday morning section was originally offered to meet the request of the Division to switch to a block schedule and</p>	<p>Our experiment with replacing the Friday morning Astronomy 100 section with a Thursday evening section was a success. The enrollment at the time of census was considerably larger on Thursday night compared to the Friday morning section. As a result we will continue to offer the Thursday night section in lieu of the Friday morning section.</p>

**Spring 2009 Progress Report: Astronomy - Page 3 of 8**

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<p>offer a once-a-week section of astronomy on Fridays to boost the Division numbers. However we have been struggling to keep the Friday morning section enrollment consistently high enough to avoid being cancelled. This problem seems to be worse in the Fall semester so we have decided to discontinue offering the Friday morning section in the Fall and replace it with a Thursday night section. Night classes seem to have a better enrollment turnout for astronomy. The Friday morning section of Astronomy 100 will continue to be offered in the Spring semester until a change becomes necessary.</p> <p>We have also found that one of our adjunct instructors is willing (and able) to teach the Astronomy 210: "Life in the Universe" course for us on an annual basis. In the past, the course was taught every three years due to low enrollments and conflicting teaching schedules. We feel that with greater advertising we can boost enrollment to meet our annual offering of Astronomy 210 and grow the course curriculum by giving it continual attention from our adjunct instructor.</p>	<p>We suffered a set-back for the Astronomy 210: "Life in the Universe" course. The adjunct that successfully taught the section in the Fall of 2007 had agreed to be the regular instructor for the course. However in the Summer of 2008 he found permanent employment out of state and we were forced to cancel the Fall 2008 offering. There continues to be a steady interest in the course by continuing astronomy students and so we will continue to seek a regular instructor for this course.</p>
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**4. Discuss/identify the resources necessary to successfully implement the planning described:**

PLAN – 2007-08	Progress – 2008-09
<p><b>a. Equipment/Technology – block grant funds, VTEA, other resources, etc.</b></p> <p>The goal of Palomar College is to replace the old planetarium with a new planetarium/multipurpose theater. The basic funding for this construction has been provided through the passage of Proposition M in 2006. <b><u>However it is strongly believed that this project is underfunded in the area of equipment for the new planetarium projection system.</u></b> Basic projection systems are expensive but necessary to create an adequate visual experience for students who expect realistic displays created with computer animations typical in the media and on the internet. It is important that the administration re-examine the budget for this project and look for ways to augment the equipment funds either through community support (Palomar College Foundation) or through additional Proposition M funding, or both.</p> <p>The old Earth Sciences building included a dedicated computer lab where students could use departmental computers and software in an open-lab</p>	<p>Progress towards the construction of the new planetarium continued throughout 2008. We are nearly finished with the design phase and will soon seek DSA approval and a green-light to begin construction – hopefully by late 2009.</p> <p>It is becoming very apparent that this project will indeed be underfunded and additional funding will be aggressively sought. We will continue to look to the guidance of the Division Dean and the leadership of the College to help with fundraising efforts.</p>

**Spring 2009 Progress Report: Astronomy - Page 4 of 8**

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<p>setting. Transitioning to the Natural Sciences building has come with the loss of this lab. The Astronomy Program curriculum has been affected in both the astronomy laboratory class and the lecture class. Some of the software used in astronomy education allows students to explore concepts in ways that are not conducive to the lecture environment. Unfortunately some of our students do not have a computer available to them at home and need a dedicated open-lab venue to meet this need. As a result of the closure of the computer lab in ES-9, previously offered assignments have had to be altered or deleted from the curriculum. If the Division can re-create a dedicated computer lab in the Natural Science building, then the astronomy program can re-establish this portion of its curriculum.</p> <p>The Division has already provided funds to purchase a new 14-inch telescope and add 10 new 8-inch telescopes to our program. Additional detection equipment has also been purchased that will allow us to create the set of hands-on observational projects (mentioned in 3a). However there will be a future need for funds to purchase any additional equipment needed or to replace damaged or worn out equipment.</p>	
<p><b>b. Budget – budget development process, one-time funds, grants, etc.</b></p> <p>With the completion of the new planetarium, the Astronomy Program and the MNHS Division will need to revisit the planetarium budget. New equipment will eventually need to be replaced or repaired. A new larger venue and enhanced public program (see 4d below) will require a change in the way the planetarium is staffed and run. Some of this funding comes from ticket sales at the door, but many big ticket items must be planned for and funded through budget development. It is hoped that the Division will be willing to work with the Planetarium Director to meet any fiscal needs.</p>	<p>This item is ongoing pending the completion of the new planetarium. We continue to stand behind our original concerns outlined in the original analysis.</p> <p>We will visit this need once the new planetarium is closer to its grand opening.</p>
<p><b>c. Facilities – schedule maintenance needs, additional classrooms/labs due to growth, remodeling, etc.</b></p> <p>The Astronomy Program is in a transitional phase right now. The construction of a new planetarium will create the opportunity to grow the program in many fundamental ways. Careful planning for the new planetarium can create a venue that will allow us to offer astronomy classes <u>IN</u> the planetarium creating WSCH numbers for the first time in the planetarium itself. A modern, state of the art experience in the planetarium will allow students to explore topics in</p>	<p>This item is ongoing pending the completion of the new planetarium. We continue to stand behind our original concerns outlined in the original analysis.</p> <p>We will visit this need once the new planetarium is closer to its grand opening.</p>

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<p>astronomy in ways like never before. Community Education courses can be taught in the planetarium, and community outreach through our K-12 planetarium field trip program will give hundreds of thousands of local children their first taste of astronomy and their first visit to Palomar College. The administration needs to focus its planning and energy into creating a planetarium that will serve the needs of the college and community for decades to come.</p> <p>Transitioning to the Natural Sciences building has allowed the Astronomy Program to grow with new lab space and new laboratory equipment. Future needs will be mostly related to maintenance of the NS lab/lecture rooms and repair/replacement of equipment related to lecture presentations.</p> <p>As mentioned in 4a (above) a dedicated computer lab is vital to the quality and growth of the Astronomy Program. It is hoped that the Division will look into creating and funding a lab like this.</p>	
<p><b>d. Faculty position(s) – faculty priority process and projected full-time needs for 1 – 3 years</b></p> <p>The Astronomy Program will need to replace Jim Pesavento's position following his eventual retirement (tentatively scheduled for 2011). Our program offers nine sections of Astronomy 100, one section of Astronomy 120, and four sections of Astronomy lab. This robust offering of courses requires a minimum of two full-time instructors augmented by 3 – 4 adjunct instructors. An additional factor is that both full-time instructors will share in the responsibilities of running the planetarium while sharing the bulk of the teaching load of astronomy courses. The ESAS department and college administration needs to begin the process of planning to hire an eventual replacement for Jim Pesavento.</p> <p>Additional faculty needs are related to the new planetarium. In 2004 Jim Pesavento stepped down as Planetarium Director due to health issues. This left Mark Lane as the new Planetarium Director and the only faculty member to run the planetarium. This job requires a <u>minimum</u> of two people to successfully meet the needs of giving planetarium presentations, promoting the planetarium to the public, creating planetarium shows, and keeping up with the day-to-day operation of the facility. The new planetarium will be a bigger and more sophisticated facility that will need a minimum of two faculty</p>	<p>This item is ongoing pending the completion of the new planetarium and the retirement of Jim Pesavento. We continue to stand behind our original concerns outlined in the original analysis.</p> <p>We will visit this need once the new planetarium is closer to its grand opening and Jim Pesavento announces his plans for retirement.</p>

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<p>members to run. The Division/Administration needs to anticipate this need before the opening of the new planetarium (scheduled for 2009 – 2010) so that we can maximize the potential of this grand new venue.</p>	
<p><b>e. Staff position(s) – changes in instructional or support needs due to program growth, new technology, etc.</b></p> <p>The ESAS Department ADA (currently Brenda Morris) is involved in the day-to-day scheduling and operation of the planetarium. In the past, the planetarium used student workers to help with some of planning and scheduling duties related to school group visitations and help with cleaning the facility. Unfortunately student workers have proven to be unreliable and have a high turn-over rate. Brenda Morris has helped out by taking on many of these duties in addition to her busy work load. This help has been appreciated but cannot be considered mandatory based on her job description. Additionally, many of the duties that a planetarium staff employee would perform require learning the operation of sophisticated and delicate equipment. Currently we are paying one of our astronomy adjuncts to fill part of this role. Although appreciated, this help is at the whim of this adjunct instructor and can change at any time. There is a need to have long-term, reliable employee(s) to meet these needs. The College needs to find the fiscal resources to fund a staff position like this for the new planetarium. If the college will support the planetarium and an increase in public outreach, there will be a substantial increase in ticket sales and perhaps the ability to augment any salary issues related to hiring permanent planetarium staff.</p>	<p>This item is ongoing pending the completion of the new planetarium. We continue to stand behind our original concerns outlined in the original analysis.</p> <p>We will visit this need once the new planetarium is closer to its grand opening.</p>
<p><b>f. Other</b></p>	

**5. Discuss one discipline goal linked to Palomar’s Strategic Plan 2009 and how it will support the success of students.**

It is the goal of the Astronomy Program to use the new planetarium to facilitate student learning in a diverse, accessible format. The new planetarium on campus will enhance student learning and success by providing realistic displays that will demonstrate and reinforce astronomical concepts described in lecture. Students in the 21<sup>st</sup> Century are surrounded by computer driven, realistically animated, virtual realities. This is evident in the media, through cinema, and through the internet. As a result of this immersion in technology, students expect this virtual reality when it comes to learning new concepts. Students will be more successful at learning basic concepts when they are presented with it in a highly realistic and technological way. The new planetarium will be equipped with an audio-visual system that will realistically display these concepts in a way that cannot be done in the classroom or laboratory.



## Spring 2009 Progress Report: Astronomy - Page 7 of 8

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### 6. Student Learning Outcome progress:

#### a. Describe a learning outcome at the course or program level and the assessment used to measure student learning of that outcome.

The Astronomy 100 course traditionally focuses on explaining the Phases of the Moon to students. This concept is essential for a basic understanding of what is seen in the sky. A follow up exercise requires students to track the changes in the appearance of the Moon at home for a period of one lunar phase cycle. The Moon's location in the sky is correlated with its position in its orbital path around the Earth. Finally a follow up exam is given to students to test them on their comprehension of the concept. In general, students show a greater success rate when answering exam questions related to the concept of lunar phases compared to success rates prior to including the assignment as part of the curriculum.

#### b. Discuss a learning outcome that is observable yet difficult to measure.

In the Astronomy 105L laboratory class the students are taught the concept of the scale of the solar system. In this exercise the students measure and calculate the sizes and distances of each of the planets in our solar system. The students are then taken outside where they re-create a scaled down version of our solar system by walking the distances between each planet. In the exercise the students can gain a better grasp of how large the solar system is and how far the distances to the stars are. Although this learning outcome of understanding the scale of our universe is difficult to measure, the students give anecdotal evidence that they have a greater appreciation for some of the other concepts that are covered in the astronomy lab. The learning of the sizes and distances involved in astronomy is essential to having students gain a better understanding of the universe around them.

### 7. Describe a discipline accomplishment that you want to share with the college community.

A new state-of-the-art planetarium will be built over the next several years. This new venue will be a combination planetarium and multipurpose theater that was funded through the passage of Proposition M in 2006. After 44 years of service, the old planetarium has served the community well but needs to be torn down to make way for new campus construction. A new, larger planetarium will be equipped with an audio and visual system that will recreate the night sky and astronomical imagery in an unprecedented way here at Palomar College. The goal of the ESAS department is to grow the planetarium program to reach more K-12 children and have a greater offering to the San Diego North County Community. Scheduled completion is for 2010.

### 8. Are there other resources (including data) that you need to complete your discipline review and planning?

No other resources are identified at this time.

### 9. For programs with an external accreditation, indicate the date of the last accreditation visit and discuss recommendations and progress made on the recommendations.

N/A

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**10. Other comments, recommendations:**

The closure of the current planetarium will mean a vast reduction in our public outreach for the next 2 – 3 years. This will require the astronomy staff to find ways to maintain public awareness of our program, encourage students to enroll in our courses, and to foster excitement for the future opening of the new planetarium facilities. One way we are planning to do this is by hosting many more public nights with our telescopes. It is important that the Division/Administration supports our efforts to keep the astronomy program at Palomar College prominently a part of the North County community.

**Please identify faculty and staff who participated in the development of the reviewer’s planning:**

Mark Lane

\_\_\_\_\_  
**Department Chair/Designee Discipline Review and Signature** **Date**

\_\_\_\_\_  
**Division Dean Review and Signature** **Date**

**Please identify faculty and staff who participated in the development of the reviewer’s progress/status report -  
Input Names Here:**

Mark Lane

\_\_\_\_\_  
**Department Chair/Designee Discipline Review and Signature** **Date**

\_\_\_\_\_  
**Division Dean Review and Signature** **Date**