**Palomar College – Program Review and Planning**

**Instructional Programs**

**YEAR 1**

**Academic Year** **2012-13**

**Purpose of Program 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.)

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| **Discipline: Biology** | **09/12/12** |
| **Instructional Discipline Reviewed (Each discipline is required to complete a Program Review)** | **Please Add Date (00/00/2012)** |

**STEP I. ANALYSIS**

|  |  |  |  |  |  |  |  |
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|   |   |  |  |  | **<<Prelim>>** | ◄▬ Preliminary Fall 2011 data are as of 1/31/2012 |   |
|   |   | **Fall 2008** | **Fall 2009** | **Fall 2010** | **Fall 2011** | **Definitions** |
| **Enrollment at Census** | 1,878 | 1,926 | 1,774 | 2,039 | *Self Explanatory* |
| **Census Enrollment Load %** | 103.36% | 104.11% | 102.72% | 104.94% | Enrollment at Census Divided By Sum of Caps (aka "Seats") |
| **WSCH** | 6,244 | 6,377 | 5,858 | 6,733 | Weekly Student Contact Hours |
| **FTES** | 208.13 | 212.57 | 195.27 | 224.45 | One Full-Time Equivalent Student = 30 WSCH |
| **Total FTEF** | 11.00 | 11.67 | 10.73 | 12.00 | Total Full-Time Equivalent Faculty |
| **WSCH/FTEF** | 568 | 547 | 546 | 561 | WSCH Generated per Full-Time Equivalent Faculty Member |
| **Full-time FTEF** | 5.20 | 3.60 | 2.60 | 2.27 | FTEF from Contract Faculty |
| **Hourly FTEF** | 5.20 | 6.80 | 7.20 | 8.73 | FTEF from Hourly Faculty |
| **Overload FTEF** | 0.60 | 1.27 | 0.93 | 1.00 | FTEF from Contract Faculty Overload |
| **Part-Time FTEF** | 5.80 | 8.07 | 8.13 | 9.73 | Hourly FTEF + Overload FTEF |
| **Part-Time/(Total FTEF) %** | 52.73% | 69.14% | 75.78% | 81.10% | Percent of Total FTEF Taught By Part-Time Faculty |
| Student Achievement: **Non Distance Education Courses** |   |   | Those NOT taught via Distance Ed (see below) methods of instruction |
|  **● Retention Rate** | 94.59% | 95.08% | 96.72% | 96.19% | Non-W Eligible Grades (see next line) Divided by All Eligible Grades |
|  **● Success Rate** | 71.19% | 74.01% | 77.51% | 73.74% | A,B,C,CR/P Grades Divided By A,B,C,CR/P,D,F,FW,NC/NP,W Grades |
| Student Achievement: **Distance Education Courses** |   |   | Those taught via Internet, TV or non line-of-sight interactive methods |
|  **● Retention Rate** | 70.67% | 75.00% | 75.36% | 90.57% | Non-W Eligible Grades (see next line) Divided by All Eligible Grades |
|  **● Success Rate** | 49.33% | 45.00% | 49.28% | 69.81% | A,B,C,CR/P Grades Divided By A,B,C,CR/P,D,F,FW,NC/NP,W Grades |
| **Degrees Awarded** | 2 | 1 |  - | N/A\* | Degree Counts Are for the Full Academic Year (thus, \*N/A for 2011-12) |
| **Certificates Awarded:** | 1 |  - |  - | N/A\* | Certificate Counts Are for the Full Academic Year (\*N/A for 2011-12) |
| **- Under 18 Units** |  - |  - |  - | N/A\* | Certificate Counts Are for the Full Academic Year (\*N/A for 2011-12) |
| **- 18 or More Units** | 1 |  - |  - | N/A\* | Certificate Counts Are for the Full Academic Year (\*N/A for 2011-12) |

| **I. A. Reflect upon and provide an analysis of the four years of data above (for a sample analysis see** <http://www.palomar.edu/irp/11PRYear1/sampleforIA.pdf>) |
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| **The biology discipline has served an average of 1900 students a semester over the past 6 years. However, the department has lost fulltime faculty in the discipline to retirements and upwardly mobile aspirations such that the % of biology courses taught by part time faculty has increased from 53% to 81%. This has a direct impact on our ability to maintain consistency and rigor. It also affects our ability to create and implement innovative teaching and learning. We have half of the load of one full time faculty and a full load of a two faculty teaching in this discipline. Despite these challenging circumstances we maintain an admirable level of student success in terms of retention (averaging 96% over the last 3 years).**  |

| **I. B. Please summarize the findings of Course AND Program SLO assessments conducted by your discipline. (For examples, see** <http://www.palomar.edu/irp/11PRYear1/PRPsloExamples.pdf>) |
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| **I.B.1 Summarize Course SLO assessment results beginning on the next line.****All of our courses are now implementing SLO assessments and participating in department wide discussions about the types of assessments to use as well as the implications of the results. We assess our SLOs on a two-year cycle. As an example, the Biology 100 course is now assessing the Natural Selection SLO. The questions were the product of a collaboration of both full time and part time faculty. The success of students demonstrating mastery was an acceptable average of 75.7% with a range of 69.2-76.8% illustrating that some discussion needs to occur to establish why there is so much variability among our sections. We will continue to revise our approach to the teaching of the subject matter as well as the assessment.****I.B.2 Summarize Program SLO assessment results beginning on the next line.****Our department implemented our first program SLO in the Spring of 2012. This involved the discussion amongst faculty of the proper wording of assessment questions. This dialogue was both thought provoking and productive. Assessments among courses implementing the SLO ranged from 60.24-70.18 but a single question with results in the 40% range brought the average of the other 9 questions (78%) down.** |

| **I. C. Reflect upon the SLO assessment findings in Box B above. Discuss overall observations and any areas of concern or noteworthy trends.**  **(For examples of such analysis, see** <http://www.palomar.edu/irp/11PRYear1/PRPsloExamples.pdf>) |
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| **I.C.1 Please reflect upon the Course SLO findings in Box B (above) beginning on the next line.****The success of students demonstrating mastery was acceptable, but the range of results illustrates that some discussion needs to occur to establish why there is so much variability among our sections. We will continue to revise our approach to the teaching of the subject matter as well as the assessment. At this point we believe we need to have better communication with our part-time faculty to improve consistency and also to achieve 100% participation; some faculty failed to participate in the assessment of our SLO. We also need to reevaluate our SLO questions to accommodate the diverse styles of teaching we have among our faculty.** **I.C.2 And, please reflect upon the Program SLO findings in Box B beginning on the next line.****Our first run through a program SLO was a great learning experience at all levels. We are working to revise our questions to accommodate different teaching styles and to improve consistency across our diverse courses.** |

| **I. D. For Career Technical disciplines only, please provide a brief summary of the labor market outlook. This data can be found at <http://www.labormarketinfo.edd.ca.gov/> Please include job projections and trends that may influence major curriculum revisions.** |
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| **STEP II. PLANNING****Reflecting on the 4-year trend data, the SLO assessment results, and the college’s** [**Strategic Plan 2013**](http://www.palomar.edu/strategicplanning/STRATEGICPLAN2013.pdf)**, describe/discuss the discipline planning related to the following: (For sample reflections, see** <http://www.palomar.edu/irp/11PRYear1/samplesforII.pdf>) |

| **II. A. Curriculum, programs, certificates and degrees (consider changes due to Title 5 or other regulations, CSU/UC transfer language updates, articulation updates, student retention or success rates, workforce and labor market projections, certificate or degree completions, etc.)** |
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| **We are looking for ways to offer our field courses which have been cut due to budget restrictions. We need to accomplish this so that students looking to earn an AA in our discipline can complete the requirements of the degree.** **As part of a division wide effort to increase computational aspects of our courses, we continue to integrate new activities to increase student skills in these areas.** **To maintain transferability to UCs and CSUs, the course outline of records for the field courses are being modified to include prerequisites to establish a basic core of knowledge.****Our department continues to participate in the STEM grant aimed to help students identify graduate school as an educational path to a STEM career as well as help them transfer seamlessly to local CSUs. In addition, we are helping to identify students who might be interested in STEM teaching careers.****Kim Velazquez has been part of a grant to put supplemental instruction (SI) into our STEM courses with the goal of improving student retention and success in those courses. The SI leaders have also benefitted from this experience gaining important experience and confidence for futures in the STEM discipline.** |

| **II. B. Class scheduling (consider enrollment trends, growth, course rotation, sequencing, Center/Site offerings, comprehensiveness, etc.)** |
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| **The number of courses being offered in this discipline does not meet student demand. While the great majortiy of sections within this discipline are at capacity the number of sections or courses can not be increased at this time due to funding restrictions imposed by the adminstration. If and when the college allows for growth in sections we will begin by offering sections in courses that we removed from our schedule. Those removed included highly sought courses such as BIO 100 but we also lost the lower enrollment courses that provide a depth or richness to the departmental offerrings and are also used by the transfer life sciecnes students towards meeting their breadth requirements. Our field oriented courses should be the first to be added back into our offerings as they provide critical hands on experience for student biologists as well as meet the requirements of our AA degree.** |

| **II. C. Faculty (Briefly discuss the faculty hiring needs for this discipline. This discussion does not replace the requirement to submit a Rationale Form for Faculty Hiring to IPC.)** |
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| **This discipline needs to hire at least two full time instructors. The discipline serves over 1900 students and currently has 3 full time, down from 10 less than a decade ago, instructors with Beth Pearson being split with the Botany discipline. The Biology discipline did have four full time instructors until Dan Sourbeer left to serve as Interim Dean. 10 years ago this department had 10 full time faculty teaching at least part of their load in this discipline. With the loss of these full time faculty our dependance on adjunct instructors is astronomical. With so few full time instructors in this discipline it is difficult to maintain the quality of the many courses in this discipline and to properly assess student learning outcomes.** |

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| **STEP III. RESOURCE REQUESTS FOR DISCIPLINE:**  |
| **III. A. Describe the resources necessary to successfully implement the planning described above. Provide a detailed rationale for each request by referring to the analyses of data and SLO assessment results in Step I and/or to any other evidence not apparent in the data or SLO Assessment** results. NOTE: Do **NOT** include Resource Requests that duplicate requests from other disciplines In your department. Place requests common to two or more disciplines on the form: ACADEMIC DEPARTMENT RESOURCE REQUESTS. |

| **a. Equipment (per unit cost is >$500) *Enter requests on lines below.*** |
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| **Resource**  | **Describe Resource Requested** | **Prioritize these requests****1,2,3, etc.** | **Strategic Plan 2013 Goal/****Objective Addressed by This Resource****(**[**Link**](http://www.palomar.edu/strategicplanning/STRATEGICPLAN2013.pdf)**)**  | **Provide a detailed rationale for the requested resource. The rationale should refer to your discipline’s plan, analysis of data, SLO assessments, and/or the College’s Strategic Plan** | **Estimated Amount of Funding Requested** | **Will this be one-time or on-going funding?** | **Is resource already funded (in part or in full)? If so, name source. Why is that source not sufficient for future funding?** |
| **a1.**  | **Teaching Microscope with Camera (Microscope: Olympus cx41)****(Camera: Micofire (from Optronics))** | **1** | **2,5,6** | **The current setup for displaying microscopic images to the class duing microscopy exercises and during lectures is time consuming and it produces images of such poor quality it is essentially useless. A good teaching microscope (as used in our Anatomy and Microbiology laboratories) with a built-in camera for displaying images on the classroom projection system is needed to properly display microscopic organisms, cells and cellular structures for students in this cell biology course.** | **$3,000 for scope +****$5,500 for camera****= $8,500** | **on-going****(10-year for scope and 5-year for camera)** | **No, item is more expensive than our budget category can fund along with other on going expenses. This is a one time request that will not need replacement for many years.**  |
| **a2.**  | **Comparative Proteomics (BioRad):****Protein Profiler Module kit (for 96 students); precast gels (12). This purchase would cover the kit supplies to study proteins for 96 students.** | **2** | **2,5,6** | **This will be the ongoing expenses for the new laboratory experiment for Biology 200. This would give Biology 200 students direct experience isolating proteins (which is a skill biology majors should have). Because the data from this experiment will be analyzed to show the evolutionary relatedness of different fish species this is directly related to the SLO assessment for this course.**  | **$1300** | **on going (each year)** | **Once thee initial equipment is purchased the supply cost for each semester (for 96 students) would be $650 for a yearly total of $1300** |
| **a3.**  |  |  |  |  |  |  |  |
| **a4.**  |  |  |  |  |  |  |  |
| **a5.**  |  |  |  |  |  |  |  |

| **b. Technology (computers, data projectors, document readers, etc.) *Enter requests on lines below.*** |
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| **Resource**  | **Describe Resource Requested** | **Prioritize these requests****1,2,3, etc.** | **Strategic Plan 2013 Goal/****Objective Addressed by This Resource****(**[**Link**](http://www.palomar.edu/strategicplanning/STRATEGICPLAN2013.pdf)**)**  | **Provide a detailed rationale for the requested resource. The rationale should refer to your discipline’s plan, analysis of data, SLO assessments, and/or the College’s Strategic Plan** | **Estimated Amount of Funding Requested** | **Will this be one-time or on-going funding?** | **Is resource already funded (in part or in full)? If so, name source. Why is that source not sufficient for future funding?** |
| **b1.**  | **32 laptop computers for Biology 200****(Dell Latitude E6510).** **Lockable cabinet to securly store the 32 laptop computers**  | **1** | **2,5,6** | **Biology 200 is a majors-level course focused largely on cell biology, genetics and evolution. Currently these fields of study are largely focused on the study and manipulation of genomic and proteomic data, freely available from online scientific databases. Because students need computers to access and manipulate these types of genetic data Biology 200 has not had laboratory exercises devoted to these important aspects of modern biology. We have just written 4 laboratory exercises devoted to these topics and we will be relying on the 5 year old Life Sciences Department laptops for each of these four laboratory sessions (in all three sections of the course). The Life Science laptops have scheduling conflicts (i.e. two or more requests at the same time) and they are getting old and in different stages of repair and replacment. These new laptops would be directly related to the SLO Assessment for this course.** | **32 X $1850****= $ 59200****2 x $1,400 each) locking storage for 16 laptops each. Rolling carts and battery charge station****= $2,800** | **on-going****(5- year cycle)****One time purchase.** | **No, item is more expensive than our budget category can fund along with other on going expenses.** **This is a one time request that will not need replacement for many years.**  |
| **b2.**  | **Four personal computers to be permanently stationed in NS-235****(Dell Optiplex 980 i7 with flat panel 22"** | **2** | **2,5,6** | **Four personal computers to be permanently stationed in NS-235****(Dell Optiplex 980 i7) with flat panel 22"** | **4 x $1550** **= $6200** | **on-going****(5- year cycle)** | **No, item is more expensive than our budget category can fund along with other on going expenses. This is a one time request that will not need replacement for many years.**  |
| **b3.**  | **Please see departmental computer request as well.** |  |  |  |  |  |  |
| **b4.**  |  |  |  |  |  |  |  |
| **b5.**  |  |  |  |  |  |  |  |

| **c. Budget for 4000s (per unit cost is <$500 supplies) *Enter requests on lines below.*** |
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| **Resource**  | **Describe Resource Requested** | **Prioritize these requests****1,2,3, etc.** | **Strategic Plan 2013 Goal/****Objective Addressed by This Resource****(**[**Link**](http://www.palomar.edu/strategicplanning/STRATEGICPLAN2013.pdf)**)**  | **Provide a detailed rationale for the requested resource. The rationale should refer to your discipline’s plan, analysis of data, SLO assessments, and/or the College’s Strategic Plan** | **Estimated Amount of Funding Requested** | **Will this be one-time or on-going funding?** | **Is resource already funded (in part or in full)? If so, name source. Why is that source not sufficient for future funding?** |
| **c1.**  | **Biology 102: 8 Replacement electronic pH meters** | **1** |  | **The pH meters are used in the chemistry portion of Biology 102 to teach concepts of water chemistry, acid-base cehmistry, and the role of buffers. It is also used to teach students the scientific method, SLO #1 for the course, and to teach them how to write a formal lab report.** | **8 x $245**  **= $1,960** | **on-going****(5 year cycle)** | **No, item is more expensive than our budget category can fund along with other on going expenses. This is a one time request that will not need replacement for many years.**  |
| **c2.**  | **Biology 102: Replacement Histology Slides: 12 tissue types, 30 slides of each = 360 slides** | **2** | **2, 5, 6** | **Current slides for the histology lab exercise are old, missing, or broken. We have few remaining slides of adequate quality. This lab is important to student's improved microscope skills and success in Zoology 200.**  | **360 x $6**  **= $2,160** | **on-going****(5 year cycle)** | **No, item is more expensive than our budget category can fund along with other on going expenses. This is a one time request that will not need replacement for many years.**  |
| **c3.**  | **Models (resin) (Plant, Bacterium, Paramecium) - (Wards Scientific Supply)** | **5** | **2, 5, 6** |  **Currently Biology 200 only has an animal cell model and is in need of high quality models of plant, bacterium and protist (Paramecium). These models would be used during lecture and during laboratory exercises.**  | **3 x $300** **= $ 900** | **one-time** | **No, item is more expensive than our budget category can fund along with other on going expenses. This is a one time request that will not need replacement for many years.**  |
| **c4** | **Micropipets****BioRad digiital micropipets (two 2-20 ul; two 20-200 ul and two 100-1000 ul)** | **3** | **2, 5, 6** | **Micropipettes are used in four different biotechnology lab exercises in Biology 200. Micropipettes need to be replaced about every 5 years, and we currently have about 4 that are at the the end of their useful life cycle.**  | **6 x $150** **=$900** | **on-going****(5 year cycle)** | **No, item is more expensive than our budget category can fund along with other on going expenses. This is a one time request that will not need replacement for many years.**  |
| **c5.**  | **Microscope slides (7 sets of 30 slides)** **(Wards Scientific Supply)** | **4** | **2,5,6** | **Biology 200 has historically relied on a relatively small diversity of microscopic slides. We are in the process of expanding the diversity of slides for cellular structures and different groups of organisms.** | **6 x $350** **= $ 2,100** | **on-going****(5 year cycle)** | **No, item is more expensive than our budget category can fund along with other on going expenses. This is a one time request that will not need replacement for many years.**  |

|  **d. Budget for 5000s (printing, maintenance agreements, software license etc.) *Enter requests on lines below.*** |
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| **Resource**  | **Describe Resource Requested** | **Prioritize these requests****1,2,3, etc.** | **Strategic Plan 2013 Goal/****Objective Addressed by This Resource****(**[**Link**](http://www.palomar.edu/strategicplanning/STRATEGICPLAN2013.pdf)**)**  | **Provide a detailed rationale for the requested resource. The rationale should refer to your discipline’s plan, analysis of data, SLO assessments, and/or the College’s Strategic Plan** | **Estimated Amount of Funding Requested** | **Will this be one-time or on-going funding?** | **Is resource already funded (in part or in full)? If so, name source. Why is that source not sufficient for future funding?** |
| **d1.**  | **Camatasia studio by MicroTech** | **1** | **2,5,6** | **This software is the same software AT uses to record instructional videos for Blackboard. This is needed in Biology 200 to produce instructional videos for students to access and manipulate online genomic and proteomic databases.** | **$180** | **one-time** | **Possible, but unlikely from deparment funds, need to wait until the end of budget year to see.** |
| **d2.**  |  |  |  |  |  |  |  |
| **d3.**  |  |  |  |  |  |  |  |
| **d4.**  |  |  |  |  |  |  |  |
| **d5.**  |  |  |  |  |  |  |  |

|  **e. Classified staff position (permanent/contract position requests unique to this discipline) *Enter requests on lines below.*** |
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| **Resource**  | **Describe Resource Requested** | **Prioritize these requests****1,2,3, etc.** | **Strategic Plan 2013 Goal/****Objective Addressed by This Resource****(**[**Link**](http://www.palomar.edu/strategicplanning/STRATEGICPLAN2013.pdf)**)**  | **Provide a detailed rationale for the requested resource. The rationale should refer to your discipline’s plan, analysis of data, SLO assessments, and/or the College’s Strategic Plan** | **Estimated Amount of Funding Requested** | **Will this be one-time or on-going funding?** | **Is resource already funded (in part or in full)? If so, name source. Why is that source not sufficient for future funding?** |
| **e1.**  | **See Departmental PRP** | **1** |  |  |  |  |  |
| **e2.**  |  |  |  |  |  |  |  |
| **e3.**  |  |  |  |  |  |  |  |
| **e4.**  |  |  |  |  |  |  |  |
| **e5.**  |  |  |  |  |  |  |  |

| **f. Classified staff position (temporary and student workers position requests unique to this discipline) *Enter requests on lines below.*** |
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| **Resource**  | **Describe Resource Requested** | **Prioritize these requests****1,2,3, etc.** | **Strategic Plan 2013 Goal/****Objective Addressed by This Resource****(**[**Link**](http://www.palomar.edu/strategicplanning/STRATEGICPLAN2013.pdf)**)**  | **Provide a detailed rationale for the requested resource. The rationale should refer to your discipline’s plan, analysis of data, SLO assessments, and/or the College’s Strategic Plan** | **Estimated Amount of Funding Requested** | **Will this be one-time or on-going funding?** | **Is resource already funded (in part or in full)? If so, name source. Why is that source not sufficient for future funding?** |
| **f1.**  |  |  |  |  |  |  |  |
| **f2.**  |  |  |  |  |  |  |  |
| **f3.**  |  |  |  |  |  |  |  |
| **f4.**  |  |  |  |  |  |  |  |
| **f5.**  |  |  |  |  |  |  |  |

| **III. B. Are there other resources (including data) that you need to complete your discipline review and planning?** |
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| **STEP IV. SHARE YOUR ACCOMPLISHMENTS (AKA Brag, Toot your horn) Please include at least one discipline accomplishment that you’d like to share with the college community.** |
| **We have successfully added computational excercises to Biology 100 as part of a division wide goal to increase our students experiences in these activities. We had two Biology students receive internships to 4 year universities. We formed a STEM club. One of our faculty earned the title of Distinguished Faculty (yay Lesley!) The same, Lesley Williams developed an TV/on-line course, Marine Mammals. Additionally she developed a 30-minute documentary on Sea Otter Conservation. We implemented our first program level PRP. We made major revisions to the Marine Biology and BIology 100 lab manuals as well as the BIology 200 lab manual. We began using the innovative clickers in many of our classrooms and utilized supplemental instruction to increase our students success.**  |

| **STEP V. ACCREDITATION For programs with an external accreditation, indicate the date of the last accreditation visit and discuss recommendations and progress made on the recommendations.** |
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| **STEP VI. COMMENTS Other comments, recommendations: (Please use this space for additional comments or recommendations that don’t fit in any category above.)** |
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| **Please identify faculty and staff who participated in the development of the plan for this department:** |
| **Jim Gilardi*Name*** | **Elizabeth Pearson*Name*** | **Kim Velazquez*Name*** |

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| --- | --- | --- |
| **Steve King*Name*** | **Lesley Williams*Name*** | ***Name*** |

**Department Chair/Designee Signature Date**

**Division Dean Signature Date**

* **Provide a hard copy to the Division Dean no later than September 14, 2012**
* **Provide a hard copy with the Dean’s sign-off to Instructional Services by September 28, 2012**
* **Email an electronic copy to** **jdecker@palomar.edu** **by September 28, 2012**