**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: Engineering** | **09/14/2012** |
| **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** | | 97 | 102 | 99 | 108 | *Self Explanatory* | |
| **Census Enrollment Load %** | | 78.23% | 83.61% | 78.57% | 93.86% | Enrollment at Census Divided By Sum of Caps (aka "Seats") | |
| **WSCH** | | 231 | 240 | 232 | 248 | Weekly Student Contact Hours | |
| **FTES** | | 7.69 | 7.99 | 7.75 | 8.28 | One Full-Time Equivalent Student = 30 WSCH | |
| **Total FTEF** | | 0.73 | 0.67 | 0.67 | 0.67 | Total Full-Time Equivalent Faculty | |
| **WSCH/FTEF** | | 315 | 360 | 349 | 373 | WSCH Generated per Full-Time Equivalent Faculty Member | |
| **Full-time FTEF** | | 0.60 | 0.60 | 0.60 | 0.60 | FTEF from Contract Faculty | |
| **Hourly FTEF** | | 0.07 | - | - | - | FTEF from Hourly Faculty | |
| **Overload FTEF** | | 0.07 | 0.07 | 0.07 | 0.07 | FTEF from Contract Faculty Overload | |
| **Part-Time FTEF** | | 0.13 | 0.07 | 0.07 | 0.07 | Hourly FTEF + Overload FTEF | |
| **Part-Time/(Total FTEF) %** | | 18.18% | 10.00% | 10.00% | 10.00% | 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** | | 98.59% | 100.00% | 97.22% | 96.39% | Non-W Eligible Grades (see next line) Divided by All Eligible Grades | |
| **● Success Rate** | | 69.01% | 85.33% | 88.89% | 79.52% | 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** | | - | - | - | - | Non-W Eligible Grades (see next line) Divided by All Eligible Grades | |
| **● Success Rate** | | - | - | - | - | A,B,C,CR/P Grades Divided By A,B,C,CR/P,D,F,FW,NC/NP,W Grades | |
| **Degrees Awarded** | | 1 | 1 | 1 | N/A\* | Degree Counts Are for the Full Academic Year (thus, \*N/A for 2011-12) | |
| **Certificates Awarded:** | | - | - | - | 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** | | - | - | - | 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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| **Analysis shows the enrollment has dramatically increased over the past four years. WSCH/FTEF also increased by 75% which clearly shows the growth of the Engineering department. Retention rate and success rates are very high. This is mainly due to the thoroughness of the Physics curriculum, which prepares the students for the Engineering courses. In addition, many of the students are involved in projects through the Engineering Club PEPSO. The camaraderie and cohesion within this cohort is unequaled and leads to great success** |

| **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.**  **Assessment was embedded in ENGR 235. At the end of the semester, faculty reviewed and evaluated each student’s Exam #2 , problem # 2 to determine the degree to which the student met the SLO assesments. Assessment results indicated that 70% of students applied geometry, 75% of students applied calculus, and 35% of students solved the problem correctly.**  **I.B.2 Summarize Program SLO assessment results beginning on the next line.** |

| **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.**  **Implementation of hands-on activities in order to enforce understanding of concepts and topics should be considered for greater success.**  **I.C.2 And, please reflect upon the Program SLO findings in Box B beginning on the next line.** |

| **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/**](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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| **The Engineering discipline is in dire need of supplies, tools, and an adequate work space. Several projects are being developed by students from three institutions. (Palomar, CSUSM and Mira Costa) The main drive for these projects originates at Palomar making this the likely place to nurture and develop this hands-on approach. Even though CSUSM and Mira Costa don't offer an Engineering program, the Applied Physics Program at CSUSM is a suitable alternative for many of our students. This makes the relationship between Palomar and CSUSM for both physics and engineering programs extremely important. Cooperation between students is blossoming, creating and strengthening the pathway to CSUSM.** |

| **II. B. Class scheduling (consider enrollment trends, growth, course rotation, sequencing, Center/Site offerings, comprehensiveness, etc.)** |
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| **Our class offerings right now are at a minimum. Our transfer and AA-degree required courses are offered only once a year, making class selections for students difficult. Part of the Engineering 100 course is to lay out an education plan for the students in order to avoid requiring a course for transfer during a semester when it is not offered. Considering the prerequisites for some of these courses (Completion of Calculus based Physics), enrollment for these courses remains depressed. An increase in success in Physics 230 will lead to higher enrollment numbers in Engineering.** |

| **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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| **Currently, the Engineering department doesn't require any new faculty. An increase in time from our lab assistant would be very beneficial. (Currently shared with Earth Science/ Physics & Engineering)** |

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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.*** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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.** | **Ohaus Adventurer™ Pro Precision Balances, 2100g x 0.1g $1600**  **Ohaus® Triple Beam Balance TJ611 $600**  **6" digital calipers $650**  **12" digital calipers $870**  **105 piece tool set with boxes $1850**  **tape measures $180**  **nut/bolt gauges $15**  **digital angle gauges $200**  **16 piece precision screwdriver sets $80**  **56 piece precision knife sets $180**  **12" steel rulers $135**  **12-Feet by1/2-Inch PowerLock Tape Rule $150**  **Handheld Thermo-Anemometer with Infrared Thermometer $655**  **12-Feet by1/2-Inch PowerLock Tape Rule $150**  **Weller WES51 Analog Soldering Station $2600**  **proxxon styrofoam cutter $600**  **Electronics Learning Lab $1900**  **Misc. electrical components (ram, diodes, resistors, etc) $750**  **Ryobi drill press $190**  **Urrea 10" bench vise $450**  **CHICAGO-LATROBE Jobber Drill Set, Aircraft, 115 PC, HSS $750**  **44", 13 Drawer Gloss Red Industrial Quality Roller Cabinet $750** | **1**  **2** | **SP 2 & 6** | **Shared equipment among enginnering courses in Q-10. Currently, we have none of these but these equipment are essential for courses taught in engineering. In the past some of euqipment were transported from NS-252 to Q-10. There were some incident the equipment almost fell due to the bumps/holes/stairs we had to go through.**  **Basic mass measurement tools used in all engineeirng classes.**  **Basic** | **15,305.00** | **Replacement very 8 years** | **no** |
| **a2.** | **25 MHz Digital Storage Oscilloscope $20,000**  **oscilloscope probes $1200** |  | **SP 2 & 6** | **Relacement of old/broken equipment. Currently they are 14+ years old.** | **$21,200.00** | **One time (regular replacement required every 6 years)** | **No** |
| **a3.** |  |  |  |  |  |  |  |
| **a4.** |  |  |  |  |  |  |  |
| **a5.** |  |  |  |  |  |  |  |

| **b. Technology (computers, data projectors, document readers, etc.) *Enter requests on lines below.*** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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.** | **document camera**  **computer**  **projector** | **1** | **sp 2,5, &6** | **Detailed 3D diagrams are impossible to drawn on a whiteboard + time consuming. Document camera will make better and accurate diagrams to help students to visualize the problems. At this point, there is no visual aid equipment in Q-10.** |  |  | **Information Services** |
| **b2.** | **Desktop computers:**  **Lab room (Q-10)**  **7 compters X $1700/computer = $11900** | **2** | **Desktop computers:**  **Lab room (Q-10)** | **Computers in Q-10, where most of engineering classes are held, were removed without any consultation with us in the beginning of 2010. They have not been replaced since then.** | **$11900** | **on-going** | **Information Services** |
| **b3.** | **Printer (Q-10)** | **3** | **SP 2 & 6** | **There is no working printer** |  | **on-going** | **Information Services** |
| **b4.** |  |  |  |  |  |  |  |
| **b5.** |  |  |  |  |  |  |  |

| **c. Budget for 4000s (per unit cost is <$500 supplies) *Enter requests on lines below.*** | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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.** | **Budget increase to purchase new and updated demo equipment to replace old and some disfuntional equipment** |  | | **SP 2 & 6** | | **Currently the budget is $300, but instructors are not able to purchase enough supplies to support students' learning/success. Those supplies are, but not limited to, wood, styro-foam, glue, hand and power tools, fiber glass, epoxy, vacuum bagging supplies and electronics components. In the past, instructors have been supplying from their own pocket. Also, the budget is usually used to cover printing cost. For those who distribute budget also should understand that Engineering education is very expensive. However, those students are going to be successful, productive, and large comtributers back to our society.** | | **$5000** | | **on-going** | | **No** | |
| **c2.** |  |  | |  | |  | |  | |  | |  | |
| **c3.** |  |  | |  | |  | |  | |  | |  | |
| **c4** |  |  | |  | |  | |  | |  | |  | |
| **c5.** |  |  | |  | |  | |  | |  | |  | |

| **d. Budget for 5000s (printing, maintenance agreements, software license etc.) *Enter requests on lines below.*** | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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.** | **Please see Department PRP** | **1** | |  | |  | |  | |  | |  | |
| **d2.** |  |  | |  | |  | |  | |  | |  | |
| **d3.** |  |  | |  | |  | |  | |  | |  | |
| **d4.** |  |  | |  | |  | |  | |  | |  | |
| **d5.** |  |  | |  | |  | |  | |  | |  | |

| **e. Classified staff position (permanent/contract position requests unique to this discipline) *Enter requests on lines below.*** | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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.** | **Please see Department 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.*** | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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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| **We need a high-tech engineering building or rooms. Although we aim to provide students with a challenging and rewarding experience here, but consistently we find that the astonishingly low budget available to us and the age and lack of available equipment and space makes this an uphill battle. The attendance of students in PEPSO and their eagerness to be involved in hands-on projects is evidence that more experiencial education is needed in the classroom. If these students are not able to put themselves into the world of an engineer during their education, then they will be less valuable to their future employers. The goal of education is to prepare students to be productive members of society and without practice this journey for them will be longer than it needs to be, and this comes at the cost of society at large.** |

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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.** |
| **The total of six students that received AA degrees in Engineering over the last five years. This can be increased easily by modernizing lecture rooms and lab rooms to teach them physic and engineering courses with state of art equipment.** |

| **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:** | | |
| **Takashi Nakajima *Name*** | **Art Gerwig *Name*** | ***Name*** |

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| --- | --- | --- |
| ***Name*** | ***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**](mailto:jdecker@palomar.edu) **by September 28, 2012**