**Palomar College – Program Review and Planning**

**Instructional Programs**

**YEAR 1**

**Academic Year** **2010-11**

**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: Computer Science** | **3/10/2011** |
| **Instructional Discipline Reviewed (Each discipline is required to complete a Program Review)** |  |

**STEP I. ANALYSIS**

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|  |  |  |  |  | **<<Prelim>>** | ◄▬ Preliminary Fall 2010 data are as of 1/30/2011 |  |
|  |  | **Fall 2007** | **Fall 2008** | **Fall 2009** | **Fall 2010** | **Definitions** | |
| **Enrollment at Census** | | 746 | 833 | 1,068 | 1,009 | *Self Explanatory* | |
| **Census Enrollment Load %** | | 81.98% | 90.94% | 92.23% | 100.30% | Enrollment at Census Divided By Sum of Caps (aka "Seats") | |
| **WSCH** | | 1,989 | 2,219 | 2,808 | 2,684 | Weekly Student Contact Hours | |
| **FTES** | | 66.31 | 73.96 | 93.61 | 89.45 | One Full-Time Equivalent Student = 30 WSCH | |
| **Total FTEF** | | 5.27 | 5.13 | 6.53 | 5.66 | Total Full-Time Equivalent Faculty | |
| **WSCH/FTEF** | | 378 | 432 | 430 | 474 | WSCH Generated per Full-Time Equivalent Faculty Member | |
| **Full-time FTEF** | | 2.20 | 3.07 | 3.33 | 3.39 | FTEF from Contract Faculty | |
| **Hourly FTEF** | | 1.60 | 1.07 | 2.47 | 1.53 | FTEF from Hourly Faculty | |
| **Overload FTEF** | | 1.47 | 1.00 | 0.73 | 0.73 | FTEF from Contract Faculty Overload | |
| **Part-Time FTEF** | | 3.07 | 2.07 | 3.20 | 2.27 | Hourly FTEF + Overload FTEF | |
| **Part-Time/(Total FTEF) %** | | 58.23% | 40.26% | 48.98% | 40.05% | 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** | | 90.32% | 96.75% | 91.95% | 95.53% | Non-W Eligible Grades (see next line) Divided by All Eligible Grades | |
| **● Success Rate** | | 64.98% | 69.51% | 58.72% | 74.12% | 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** | | 86.11% | 88.82% | 86.74% | 85.99% | Non-W Eligible Grades (see next line) Divided by All Eligible Grades | |
| **● Success Rate** | | 43.75% | 55.92% | 53.04% | 64.97% | A,B,C,CR/P Grades Divided By A,B,C,CR/P,D,F,FW,NC/NP,W Grades | |
| **Degrees Awarded** | | - | 1 | 1 | N/A\* | Degree Counts Are for the Full Academic Year (thus, \*N/A for 2010-11) | |
| **Certificates Awarded:** | | - | 2 | 1 | N/A\* | Certificate Counts Are for the Full Academic Year (\*N/A for 2010-11) | |
| **- Under 18 Units** | | - | 2 | - | N/A\* | Certificate Counts Are for the Full Academic Year (\*N/A for 2010-11) | |
| **- 18 or More Units** | | - | - | 1 | N/A\* | Certificate Counts Are for the Full Academic Year (\*N/A for 2010-11) | |

| **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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| **Statistics from Fall 2007 to Fall 2010:**  **▪ Increase in Enrollment at Census by 35.3%**  **▪ Census Enrollment Load Report has increased 22.3% to about 100%, meaning that every classroom section offered is completely full**  **▪ Increase in WSCH by 34.9%**  **▪ Increase in FTES by 34.9%**  **▪ Increase in WSCH to FTEF by 25.4%**  **▪ Increase in Full-time FTEF by 54.1%**  **The data clearly shows that the Computer Science (CSCI) discipline within the Computer Science and Information Systems (CSIS) Department has experienced considerable enrollment growth during the past 3 years. At the same time, large numbers of sections have been cut, so that now every classroom section offered in the discipline is completely full.**  **It is expected that this strong growth in enrollment will continue. CSIS enrollment has always increased in times of economic uncertainly, as new students choose a major likely to lead to a secure future, and those who lost jobs return to school for retraining. We are again in such an economic downturn and expect CSCI enrollment to expand, if allowed, during the years ahead.**  **We are therefore concerned that we must be allowed to add more sections of CSCI to serve this future demand.** |

| **I. B. Please summarize the findings of a Course or Program SLO assessment conducted by your discipline. (For examples, see** <http://www.palomar.edu/irp/11PRYear1/PRPsloExamples.pdf>) |
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| **Course Outcome: Students will be able to develop C programs containing all of the most basic elements of C**  **This outcome was assessed at the end of the CSCI 220 C Programming course, with 29 students responding. Student success for this outcome was over 90%, indicating that students feel confident in their mastery of the material.** |

| **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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| **Based on examination of student feedback, instructors decided that the current method of instruction in this class seems to be effective and working. We plan to continue the approach of first presenting programming theory during lecture, using many specific, small example programs. Then require students to apply this theory to programming assignments which they must complete, so that the students learn by doing. We will continue to monitor SLO outcomes, to ensure that positive results continue to be achieved.** |

| **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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| **While the demand for technology is ever increasing, the supply of IT talent continues to fall far short of demand. A recent survey reported that almost 20% of top U.S. IT executives identified the lack of skilled personnel as the most serious constraint to growth in their businesses. The need for well trained IT workers is enormous in San Diego County. The latest labor market information released by California’s Employment Development Department (EDD) projects that for the years 2008 – 2018, for the San Diego-Carlsbad-San Marcos Metropolitan Statistical Area, both:**  **• Computer Software Engineers, Applications**  **• Computer Software Engineers, Systems Software**  **will be amongst the top 100 fastest growing occupations, with percentage change in employment of 20.2% and 18.5% respectively. The CSIS Department has recently moved into the new MD building, and new computer labs. However, in order to be able to develop and support curricula that attracts and retains students, the CSIS Department must have the necessary, on-going financial support to maintain these new laboratories. Without this support, the CSCI program’s ability to accomplish its goals is significantly diminished. This is the most crucial issue that the department has had to deal with in the past and will remain crucial for the survival of all of its programs.** |

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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 CSIS department recently reorganized into five separate disciplines to**  **better differentiate and focus curricula. This reorganization has enabled**  **students to more easily identify those programs in which they are interested**  **and has allowed faculty members to establish cohesive identities within**  **these disciplines. The discipline of Computer Science (CSCI) will focus on**  **the study and design of computer systems, algorithms, languages,**  **hardware architectures, systems software, applications software and tools.**  **As computing moves into a post-PC era, CSCI strives to develop curricula**  **that explores new areas of technology while providing a strong foundation**  **to the classical areas of Computer Science. CSCI faculty are currently**  **redesigning the Computer Science curriculum to feature a core of**  **foundation courses followed by a depth concentration in a track area as**  **well as additional elective courses from a list of more broadly related**  **courses. Students will have six tracks to choose from:**  **Mobile Programming**  **Video Game Programming**  **Java Software Development**  **Networking**  **Web Development**  **Unspecialized**  **The track system was designed to give students the opportunity for**  **additional depth in a more diverse set of areas while still providing the**  **opportunity for students to include plenty of breadth in their programs.**  **One of the new programs we're developing will focus on Mobile**  **Programming (there are more cell-phones than computers). While we**  **currently offer an iPhone/iPad Programming course (CSCI 275) for Apple's**  **mobile operating system, iOS, we will develop an Android programming**  **course for Google's mobile platform, Android.**  **In future years the dramatic growth of computer technology within all areas**  **of the world economy will bring substantial increases to the CSCI discipline**  **at Palomar. Technologies such as mobile communication, mobile devices,**  **the integration of entertainment and information systems, digital security,**  **gaming, and computer forensics will impact enrollments and we will need to**  **expand both our programs and infrastructure to prepare for these students.**  **According to a recent study by Employment Data Development, four of the**  **top five fastest growing occupations in San Diego County are computer**  **related. Government forecasts continue to place information technologies**  **as one of the top two or three careers in the next ten years. This increased**  **interest and enrollments in Computer Science will bring additional demands**  **on the discipline. New programs and classes will need to be developed to**  **insure that Palomar continues to be able to provide graduates to the hightech**  **industries either already here or planning to come to North County.**  **Ironically, a major part of our job is to train students for jobs that do not yet**  **exist.** |

| **II. B. Class scheduling (consider enrollment trends, growth, course rotation, sequencing, Center/Site offerings, comprehensiveness, etc.)** |
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| **Course offerings in the CSCI discipline have been dramatically reduced**  **due to the budget shortfall. Fall 2008 saw a reduction in course offerings of**  **30% and Spring 2009 saw a reduction in course offerings of 20%.**  **However, enrollment during Fall 2010 and Spring 2011 has dramatically**  **increased in the remaining classes that have been offered.**  **Computer Science courses are being taught in both online and lecture**  **formats with an eye towards being able to offer the degree completely**  **online for those who prefer that option. We plan to look for opportunities to**  **offer entire certificate programs online and market those programs**  **aggressively. Unfortunately, due to budget cuts, the CSCI discipline has**  **been unable to increase the scheduling of classes in high demand courses.**  **Video gaming and mobile technologies will continue to be a fast growing**  **area that pushes the envelope of both hardware and software. We will be**  **looking for areas to expand our offering in these areas.**  **CSCI has broken each of its degree/certificate programs into 4-semester**  **course sequences to easily allow students to to receive degrees/certificates**  **with a two year time frame.** |

| **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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| **With the enormous projected growth in the field of Computer Science, we**  **feel that the demand for CSCI programs will be explosive. We project the**  **need for one or two additional full-time faculty members within the next 2-3**  **years.**  **Additionally, it is likely that one full-time faculty in the CSCI discipline will be**  **retiring within the next three or four years. It is critical to the integrity of the**  **classes that the retiring faculty be replaced with full time faculty within an**  **academic year of their retirements.**  **FInally, the CSCI discipline needs additional full-time faculty in accordance**  **with the requirements of AB 1725. Our FTES contract/adjunct ratio justifies**  **hiring additional full-time faculty. The CSIS department had previously been**  **funded for two faculty positions which have never been filled. It is crucial to**  **the fulfillment of the CSCI discipline goals that these positions be filled in a**  **timely manner.** |

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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. |

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| **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.** | **Programmable computer robots (6)** | **1** | **6** | **Robots for use in programming class.** | **3,000.00** | **One-time** | **no** |
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| **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.** | **Mac Pro OS X Server** | **1** | **6.1** | **See sections 1.A, 1.D, 11A Curriculum of the CSCI discipline plan and section 6.1 of the College's Strategic Plan.** | **5,778.00** | **On-going** | **Yes** |
| **b2.** | **Mac Pro** | **2** | **6.1** | **See sections 1.A, 1.D, 11A Curriculum of the CSCI discipline plan and section 6.1 of the College's Strategic Plan.** | **3758.00** | **On-going** | **yes** |
| **b3.** | **17" MacBook Pro Laptops (4)** | **3** | **6.1** | **See sections 1.A, 1.D, 11A Curriculum of the CSCI discipline plan and section 6.1 of the College's Strategic Plan.** | **12,000.00** | **One-time** | **No** |
| **b4.** | **Dell UltraSharp U2711 27-inch Widescreen Monitors (33)** | **4** | **6.1** | **See sections 1.A, 1.D, 11A Curriculum of the CSCI discipline plan and section 6.1 of the College's Strategic Plan.** | **36,267.00** | **On-going** | **yes** |
| **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.** | **LaCie Rugged All-Terrain 1 TB FireWire 800/FireWire 400/USB 2.0 Portable External Hard Drive 301924** | **1** | | **6.1** | | **See sections 1.A, 1.D, 11A Curriculum of the CSCI discipline plan and section 6.1 of the College's Strategic Plan.** | | **2 @ $190 each** | | **one-time** | | **no** | |
| **c2.** |  |  | |  | |  | |  | |  | |  | |
| **c3.** |  |  | |  | |  | |  | |  | |  | |
| **c4** |  |  | |  | |  | |  | |  | |  | |
| **c5.** |  |  | |  | |  | |  | |  | |  | |

| **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.** | **Apple's Remote Desktop 3** | **1** | | **6.1** | | **See sections 1.A, 1.D, 11A Curriculum of the CSCI discipline plan and section 6.1 of the College's Strategic Plan.** | | **3 @ $499 each** | | **one-time** | |  | |
| **d2.** | **Apple's Xsan Fiber Chanel Network** | **2** | | **6.1** | | **See sections 1.A, 1.D, 11A Curriculum of the CSCI discipline plan and section 6.1 of the College's Strategic Plan.** | | **999.00** | | **one-time** | |  | |
| **d3.** | **Mac Pro OS X Update** | **3** | | **6.1** | | **See sections 1.A, 1.D, 11A Curriculum of the CSCI discipline plan and section 6.1 of the College's Strategic Plan.** | | **33 @ 30.00 each** | | **on-going** | |  | |
| **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.** |  |  | |  | |  | |  | |  | |  | |
| **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.** |
| **CSCI is about to re-organize our course offerings into core foundation classes, then 6 new tracks, focusing upon the most in-demand areas of our discipline:**  **- Mobile Programming**  **- Video Game Programming**  **- Java Software Development**  **- Networking**  **- Web Development**  **- Unspecialized** |

| **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.** |
| --- |
| **None** |

| **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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| We must emphasize that in order to be able to develop and support curricula that attracts and retains students, the CSCI discipline and the CSIS department as a whole must have the necessary, on-going financial support to maintain our computer laboratories. Without this support, the department’s ability to accomplish its goals is significantly diminished. This is the most crucial issue that the department has had to deal with in the past and will remain crucial for the survival of its programs. The CSIS department would welcome the opportunity to explore with administration the possibility of formalizing such a plan.  Finally, one thing that is certain in the field of Information Technology is that information and technology will change. If the CSIS faculty has any chance of remaining current in their field, they must be given the opportunity, on a fairly regular basis, to upgrade their skills. We propose that CSIS faculty be offered a one-semester sabbatical leave every three or four years. Additionally, due to the enormous demands made upon the CSIS chair, it is crucial that the chair release time from classroom activity be increased to 80%. In the two or three years that one spends as chair administering the department and teaching the required classes, one can often find that technology has passed them by. Two or three years in information technology is a very long time and without the opportunity to keep abreast of changes in the field and learn new technologies, one can gain a sense of technological obsolescence. |

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| **Please identify faculty and staff who participated in the development of the plan for this department:** | | |
| **Richard Stegman *Name*** | **Walter Pistone** | **Tony Smith** |

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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 March 11**
* **Provide a hard copy with the Dean’s sign-off to Instructional Services by March 18**
* **Email an electronic copy to** [**jdecker@palomar.edu**](mailto:jdecker@palomar.edu) **by March 18**