

*The Program Review process should serve as a mechanism for the assessment of performance that recognizes and acknowledges good performance and academic excellence, improves the quality of instruction and services, updates programs and services, and fosters self-renewal and self-study. Further, it should provide for the identification of weak performance and assist programs in achieving needed improvement. Finally, program review should be seen as a component of campus planning that will not only lead to better utilization of existing resources, but also lead to increased quality of instruction and service. A major function of program review should be to monitor and pursue the congruence between the goals and priorities of the college and the actual practices in the program or service.*

~Academic Senate for California Community Colleges

## **INSTRUCTIONS**

This *Annual Update for Program Review and Planning* is due each year that your *Comprehensive Program Review and Planning* report is not due.

(For information about program review cycles, see Instructional and Student Services program review rotation schedules posted online in their respective sections of the program review webpage: [http://collegeofsanmateo.edu/prie/program\\_review/program\\_review.php](http://collegeofsanmateo.edu/prie/program_review/program_review.php))

### **Resources for Supporting Documentation:**

A listing of resources and documents which provide data or information for each section is included at the end of this document, after the final signature page. These resources are posted online and their URLs are listed at the end of this document.

(You may delete this section, when you submit your final program review.)

### **Next Steps:**

All *Annual* and *Comprehensive Program Review and Planning* reports are due March 25, 2010. This date is aligned with CSM's *Integrated Planning Calendar*. (See: [http://collegeofsanmateo.edu/prie/institutional\\_documents.php](http://collegeofsanmateo.edu/prie/institutional_documents.php).)

Upon its completion, please email this *Program Review and Planning* report to the Vice President of Instruction, the Vice President of Student Services, the appropriate division dean, the CSM Academic Senate President, and the Dean of Planning, Research, and Institutional Effectiveness (PRIE).

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Susan Estes, Vice President of Instruction, [estes@smccd.edu](mailto:estes@smccd.edu)  
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## DEPARTMENT OR PROGRAM: Engineering

### DIVISION: Math/Science

#### 1. BRIEF DESCRIPTION OF PROGRAM:

The engineering program provides the lower division engineering classes necessary for transfer to baccalaureate programs in various engineering fields. Students preparing to transfer in engineering typically take Math (251, 252, 253, 270, 275), Chemistry (210), and Physics (250, 260, 270). Depending on transfer school and major, students also take up to six engineering classes, up to 3 CIS classes, and an additional chemistry class.

The engineering program offers six engineering courses clustered into three math prerequisite levels.

#### **Prereq of Math 130:**

ENGR 100 Introduction to Engineering (fall only)

ENGR 210 Engineering Graphics (spring only)

#### **Prereq of Math 251:**

ENGR215 Computational Methods for Engineers and Scientists (fall only)

ENGR 270 Materials Science (also requires Chem 210) (spring only)

#### **Prereq of Math252 or beyond:**

ENGR 230 Engineering Statics (also requires Phys 250) (fall only)

ENGR 260 Engineering Circuits (also required Phys 260) (spring only)

One course at each prerequisite level is offered in each semester. Curricular offerings are coordinated with Canada College's engineering program to provide greater flexibility for students. Enrollment is such that each campus offers only a single section of each course in an academic year. By coordinating courses, we provide students with the option of taking ENGR 100 (F CSM, Sp Canada), ENGR210 (F Canada, Sp CSM), ENGR230 (F CSM, Sp Canada), and ENGR270 (F Canada, Sp CSM) in either semester. Additionally, students can take ENGR 111 (Canada only), ENGR215 (CSM only until Sp 10; Canada has offered in Sp10 and Sp11), and ENGR240 (Canada only). ENGR260 is offered in the spring semester at both campuses due to its extensive prerequisites.

Although the program offers an A.S. degree in engineering, the B.S. degree is considered necessary for work in the field and most students do not take classes beyond those required for transfer.

2. Based on the elements in your *Core Program and Student Success Indicators* (provided by PRIE for each program) and the goals stated in your most recent Program Review, please identify any key successes and challenges.

#### Successes:

- Enrollment in the program increased significantly over the three year period ending Spring 2010. FTEF remained roughly constant during this time, so load increased significantly (to 571 in 09-10 as reported in PRIE data). Much of the increase in enrollment occurred in the introductory courses (ENGR 100 and ENGR 210); some was due to the addition of a cross-listed hybrid section of ENGR215 starting Fall 2009.
- The engineering club was restarted by students in Spring 2010 and has remained active in the 2010-11 academic year.

#### Challenges:

- Enrollment in the courses with more advanced physics and math prerequisites remains low. To maintain enrollments at acceptable levels, a cross-listed hybrid section of ENGR 230 will be offered (along with the cross-listed ENGR215 section) in Fall 2011 and a cross-listed hybrid section of ENGR 270 will be considered for Sp2012.

- The continued diversification of lower division engineering requirements across transfer schools and majors presents a challenge for CSM's engineering program and for programs at community colleges across the state. To persevere transfer opportunities for students, the statewide Engineering Liaison Committee has discussed the possibility of coordinated online offerings of courses outside the standard engineering lower division core.
  - Engineering enrollment remains heavily male and the fraction of women taking engineering classes remains smaller than the national average for engineering programs. However, the national average includes bioengineering and environmental engineering, which have larger fractions of women but typically do not require many lower division engineering courses for transfer.
3. Are you on track for meeting the goals/targets that your program identified in its most recent Program Review? If not, please explain possible reasons why. If needed, update your goal/targets based on these reasons.

The status of Action Steps from the Spring 2009 Engineering Comprehensive Program Review is as follows

1. Maintain the caliber and improve articulation of engineering courses.
    - a. Instructors stay up-to-date on course offerings and articulation at transfer schools.  
This action step is on track.
    - b. Articulation agreements are reviewed for gaps; ways to address these gaps are developed.  
This action step is on track, though made more difficult by curricular changes at U.C. Berkeley.
    - c. To the extent possible, current versions of software are used and lab facilities are modernized.  
With the exception of the lab facilities for ENGR 270, this action step is on track. The program has been able to provide the current version of the software for ENGR 215 (MATLAB). The software used in ENGR 210 (Solidworks and AutoCAD) has been kept current by the Drafting program. ENGR 260 uses one of the Electronics program's labs; the lab curriculum has been updated to incorporate digital storage oscilloscopes. The materials testing lab used in ENGR 270 has not yet been modernized.
  2. Increase awareness of and access to the engineering program for students at or below Math 130.  
Some advances have been made in this area. The full time engineering instructor continues to represent the program at outreach events such as Connect to College and offers Counseling Focus Workshops on engineering and science. However, no direct links have been made to students in Math 130 and Math 120.
  3. Revitalize the engineering student club.  
The engineering club has been active starting in Spring 2009.
4. Have you identified any new goals or projects for the program to focus on during this next year? Please explain (grants, stipends, initiatives, etc.).

Additional cross-listed hybrid and online sections are being considered to improve access and increase enrollment. A proposal under development by the Dean of Business/Technology includes funds to modernize the materials testing lab and the associated ENGR 270 curriculum.

5. Are there any critical issues you expect to face in the coming year? How will you address those challenges?

The aging materials testing equipment continues to present challenges in a time of limited equipment funds. If the proposal mentioned above is not funded, other outside sources of funding will be pursued.

The full time engineering faculty member will have significant reassigned time associated with accreditation during 2012-13 and 2013-14. New adjunct faculty members have been added to the program in Spring 2010 and Spring 2011 so that there will be continuity during this period. The full time faculty member will continue to teach cross-listed offerings.

6. **STUDENT LEARNING OUTCOMES (SLOs) AND ASSESSMENT FOCUS FOR THIS YEAR:**

- a. Academic areas: Identify at least one course SLO on which to focus. Describe the assessment strategies you will use and your method of reflection and documentation for this cycle.

Assessment of most engineering course SLOs is accomplished through review of selected assignments and exam responses. However, several courses have SLOs that deal with effective group work (see table). To date, these have been assessing by informal instructor observation. However, with the increased number of courses taught by adjunct faculty, it will be helpful to have a standard department instrument for assessing group work. A portion of the Fall 2011 flex day department meeting will be used to develop a draft instrument. Faculty teaching these courses will be asked to use and provide feedback on the instrument in Fall 2011 and Spring 2012.

Course	SLO#	SLO
ENGR 100 Introduction to Engineering	5	Work in teams on both highly specified and open-ended projects
ENGR 210 Engineering Graphics	7	Working in a team setting, use the engineering design process to design and construct a device
ENGR 270 Materials Science	7	Work effectively in small groups.

- b. Student services areas: TBD

7. **SUMMARY OF RESOURCES NEEDED TO REACH PROGRAM ACTION STEPS**

*(Data resources: Educational Master Plan, 2008, Institutional Priorities, 2008-2011, College Index, 2009-2010, GE-SLOs, SLOs; department records; Core Program and Student Success Indicators; previous Program Review and Planning reports)*

- a. In the matrices below, itemize the resources needed to reach program action steps and describe the expected outcomes for program improvement.\* Specifically, describe the potential outcomes of receiving these resources and the programmatic impact if the requested resources cannot be granted.

\*Note: Whenever possible, requests should stem from assessment of SLOs and the resulting program changes or plans. Ideally, SLOs are assessed, the assessments lead to planning, and the resources requested link directly to those plans.

Full-Time Faculty Positions Requested	Expected Outcomes if Granted and Expected Impact if Not Granted	If applicable, <u>briefly</u> indicate how the requested resources will link to achieving department action steps based on SLO assessment.
None	Input text here.	Input text here.

Classified Positions Requested	Expected Outcomes if Granted and Expected Impact if Not Granted	If applicable, <u>briefly</u> indicate how the requested resources will link to achieving department action steps based on SLO assessment.
None	Input text here.	Input text here.

- b. For instructional resources including equipment and materials, please list the exact items you want to acquire and the total costs, including tax, shipping, and handling. Include items used for instruction (such as computers, furniture for labs and centers) and all materials designed for use by students and instructors as a learning resource (such as lab equipment, books, CDs, technology-based materials, educational software, tests, non-printed materials). Add rows to the tables as necessary. If you have questions as to the specificity required, please consult with your division dean. Please list by priority.

Resources Requested	Expected Outcomes if Granted and Expected Impact if Not Granted	If applicable, <u>briefly</u> indicate how the requested resources will link to achieving department action steps based on SLO assessment.
<b>Item:</b> Annual renewal of MATLAB license. <b>Number:</b> 50 seat license <b>Vendor:</b> Mathworks <b>Unit price:</b> N/A. <b>Total Cost:</b> \$400 <b>Status*:</b> Maintenance	If granted, allows continued offering of ENGR100 and ENGR215 in forms suitable for articulation.	Allow use of current software in ENGR 100 and ENGR215.
<b>Item:</b> Contribution toward Technology Division renewal/upgrade of licenses for Solidworks and AutoCAD <b>Number:</b> N/A <b>Vendor:</b> N/A <b>Unit price:</b> N/A <b>Total Cost:</b> \$500 <b>Status*:</b> Maintenance/upgrade	If granted (and with additional funds provided by Drafting), allows continued offering of ENGR210 in form suitable for transfer.	Allow use of current software in ENGR 210.
<b>Item:</b> Tension and Impact Specimens <b>Number:</b> 40	If granted, allows purchase of supplies for ENGR 270 physical properties and heat treatment labs	Allows offering of labs needed for ENGR270 articulation.

<b>Vendor:</b> Laboratory Devices <b>Unit price:</b> varies with specimen <b>Total Cost:</b> . \$500 <b>Status*:</b> ongoing supply need	(5 weeks of lab work)	
<b>Item:</b> Concrete forms <b>Number:</b> 84 (1 case) <b>Vendor:</b> JATCO <b>Unit price:</b> \$70 per case <b>Total Cost:</b> . \$70 <b>Status*:</b> ongoing supply need	If granted, allows purchase of supplies for ENGR 270 concrete/composite lab (3 weeks of lab work)	Allows offering of labs needed for ENGR270 articulation.
<b>Item:</b> Repair of Buehler Duomet2 Belt Surfacer <b>Number:</b> <b>Vendor:</b> Buehler or local <b>Unit price:</b> N/A <b>Total Cost:</b> . \$1000 (estimate; cost new is \$1000) <b>Status*:</b> Repair	If granted, allows permanent repair of one of two surfacers used in ENGR270 metals labs. Temporary repair was accomplished this year with purchase of pond pump from Home Depot	Allows students to complete lab in timely manner.

\*Status = New, Upgrade, Replacement, Maintenance or Repair.

## 8. PROGRAM REVIEW PARTICIPANTS AND SIGNATURES

Date of this *Annual Update for Program Review and Planning* evaluation:

Please list the department's *Annual Update for Program Review and Planning* report team as appropriate:

Primary program contact person: Laura Demsetz  
Phone and email address: 650 574-6617 demsetz@smccd.edu

Full-time faculty:

Part-time faculty:

Administrators:

Classified staff:

Students:

<hr/> <i>Primary Program Contact Person's Signature</i>	<i>Date</i>
<hr/> <i>Full-time Faculty's Signature</i>	<i>Date</i>
<hr/> <i>Part-time Faculty's Signature</i> <b>(as appropriate)</b>	<i>Date</i>
<hr/> <i>Administrator's Signature</i> <b>(as appropriate)</b>	<i>Date</i>
<hr/> <i>Classified Staff Person's Signature</i> <b>(as appropriate)</b>	<i>Date</i>
<hr/> <i>Student's Signature</i> <b>(as appropriate)</b>	<i>Date</i>
<hr/> <i>Dean's Signature</i>	<i>Date</i>

**Annual Program Review  
RESOURCES FOR SUPPORTING DOCUMENTATION**

This section contains a listing of sources for data and key documents referred to in this *Annual Update* along with other resources. Contact information for relevant people is also included.

**Academic Senate**

<http://www.collegeofsanmateo.edu/academicsenate/>

Contact: [csmacademicsenate@smccd.edu](mailto:csmacademicsenate@smccd.edu)

Diana Bennett, President, [bennettd@smccd.edu](mailto:bennettd@smccd.edu), (650) 358-6769

**College Catalogs and College Class Schedules are archived online:**

<http://collegeofsanmateo.edu/schedule/archive.asp>

**Course Outlines are found at:**

<http://collegeofsanmateo.edu/articulation/outlines.asp>

**Committee on Instruction**

<http://www.smccd.net/accounts/csmcoi>

Contact: Laura Demsetz, Chair, [demsetz@smccd.edu](mailto:demsetz@smccd.edu), (650) 574-6617.

**Program Review Resources** (includes forms, data, and completed program reviews for both instructional and student services program review)

*Core Program and Student Success Indicators* (see links for "Quantitative Data for Instructional Programs")

*Distance Education Program Review Data*

*Glossary of Terms for Program Review*

*Listing of Programs Receiving Program Review Data from PRIE*

*Rotation Schedule for Instructional Program Review, 2008-2014*

[http://collegeofsanmateo.edu/prie/program\\_review/program\\_review.php](http://collegeofsanmateo.edu/prie/program_review/program_review.php)

**Office of Planning, Research, and Institutional Effectiveness (PRIE)**

<http://collegeofsanmateo.edu/prie/>

Contact: John Sewart, Dean, [sewart@smccd.edu](mailto:sewart@smccd.edu), (650) 574-6196

Contact: Milla McConnell-Tuite, Coordinator, [mcconnell@smccd.edu](mailto:mcconnell@smccd.edu), (650)574-6699

**At PRIE Website:**

*College Index, 2009-2010*, [http://collegeofsanmateo.edu/prie/institutional\\_documents.php](http://collegeofsanmateo.edu/prie/institutional_documents.php)

*Comprehensive Listing of Indicators and Measures, 2009-2010*

[http://collegeofsanmateo.edu/prie/institutional\\_documents.php](http://collegeofsanmateo.edu/prie/institutional_documents.php)

*Division/Department Workplans, Spring 2009 (only)*

[http://collegeofsanmateo.edu/prie/institutional\\_documents.php](http://collegeofsanmateo.edu/prie/institutional_documents.php)

*Educational Master Plan, 2008*, <http://collegeofsanmateo.edu/prie/emp.php>

*Institutional Priorities, 2008-2011*

[http://collegeofsanmateo.edu/prie/institutional\\_documents.php](http://collegeofsanmateo.edu/prie/institutional_documents.php)

**Student Learning Outcomes (SLOs) website:**

<http://www.collegeofsanmateo.edu/sloac/>

Contact: Frederick Gaines, Interim SLO Coordinator, [gainesf@smccd.edu](mailto:gainesf@smccd.edu), (650)574-6183