CAL POLY

Academic Senate

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Meeting of the Academic Senate

Tuesday, February 9, 2016
UU 220, 3:10 to 5:00 pm

I. **Minutes**: Approval of January 19, 2016 minutes (pp. 2-3).

II. **Communication(s) and Announcement(s)**:

III. **Reports**:
- A. Academic Senate Chair:
- B. President's Office:
- C. Provost:
- D. Vice President for Student Affairs:
- E. Statewide Senate:
- F. CFA:
- G. ASI:

IV. **Consent Agenda:**

ITEMS TO BE CONSIDERED BY ACADEMIC SENATE				
Program Name or Course Number, Title	**ASCC recommendation/ Other**	**Academic Senate**	**Provost**	**Term Effective**
ENGL 425 English Clinical Experience Seminar (2), 2 seminars	Recommended for approval 1/21/16.	On consent agenda for 2/9/16 meeting.		

V. **Special Reports:**
- A. **Summary of Program Review, Assessment Findings, and Actions for programs completed in 2014-2015 by Mary Pedersen** (pp. 4-14).
- B. **University Union Referendum Overview by Vittorio Monteverdi, ASI Board of Directors Chairman.**

VI. **Business Items**:
- A. **[TIME CERTAIN 4:00 P.M.] Resolution on Academic Senate Curriculum Committee Membership:** Brian Self, Curriculum Committee chair, first reading (p. 15).
- B. **Resolution to Add the Function of Task Forces:** Gary Laver, Academic Senate chair, first reading (p. 16).

VII. **Discussion Item**:
Definition of Membership of the General Faculty in the *Constitution of the Faculty*: Gary Laver, Academic Senate chair (pp. 17-18).

VIII. **Adjournment**:

CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, California 93407
ACADEMIC SENATE

MINUTES OF THE
ACADEMIC SENATE MEETING
Tuesday, January 19, 2016
UU220, 3:10 to 5:00pm

I. Minutes: M/S/P to approve the Academic Senate minutes from October 27, 2015, November 17, 2015, and December 1, 2015.

II. Communication(s) and Announcement(s): none.

III. Reports:

A. **Academic Senate Chair (Laver):** Margaret Bodemer will be serving on the Academic Senate as the part-time representative.

B. **President's Office (Armstrong):** President Armstrong gave a campus update that emphasized the need for more revenue. The presentation can be found at: http://content-calpoly-edu.s3.amazonaws.com/academicsenate/1/presentations/2015-2016/campus_update.pdf

C. **Provost (Enz Finken):** The external evaluators for the General Education program will be on campus the week of January 25-29. The visit is a good way to get feedback on the GE program and how it can be improved.

D. **Vice President Student Affairs:** none.

E. **Statewide Senate:** none.

F. **CFA (Archer):** The bargaining negotiations are still in the fact-finding stage. After the fact-finding process is complete, there will be a two-week blackout period before their report is released. CFA is also contacting labor councils to get strike sanctions. Glen Thorncroft asked about the status of this year's equity II raises and whether or not equity I was cut in half. The provost stated that they are fully committed to $500,000 for this year.

G. **ASI Representative (Monteverdi):** Several students are writing a resolution against oil being shipped by train due to Philips 66's plans to ship oil through San Luis Obispo.

IV. Consent Agenda:

The following item was approved by consent: CHEM 454 Functional Polymeric Materials (4).

V. Special Reports:

A. **The Logistics of Commencement:** Keith Humphrey, Vice-President for Student Affairs, gave a presentation on the changes happening to the commencement ceremonies. The presentation can be find at: http://content-calpoly-edu.s3.amazonaws.com/academicsenate/1/presentations/Commencement_sm_presentation.pdf

B. **Online evaluations:** Ken Brown, Faculty Affairs Committee chair, Dustin Stegner, Instruction Committee chair, and Al Liddicoat, Associate Vice Provost, Academic Personnel spoke on the online teacher evaluation system and timeline currently being developed and tested.

C. **Report on Active Shooter**: George Hughes, University Police Chief, gave a report on the various safety practices we have on campus as well as the efforts UPD has done to prepare for emergencies such as an active shooter. See video RUN. HIDE. FIGHT at https://www.youtube.com/watch?v=5VcSwejU2D0

VI. Adjournment: 5:00pm

Submitted by,

Alex Ye
Academic Senate Student Assistant

Summary of Program Review, Assessment Findings, and Improvement Actions
Academic Programs & Planning, Mary Pedersen, Jack Phelan
Program Reviews Completed in 2014-2015
Feb. 2, 2016

Ten of the ABET accredited Engineering programs completed the campus assessment process during the 2014-15 AY. The following table lists the programs and the department chairs/ faculty responsible for the assessment reports.

Program	Department Chairs/Faculty
Architectural Engineering, CAED	*Al Estes, ARCE (CAED)*
Biomedical Engineering, CENG	*Rich Savage, BMED (CENG)*
Civil Engineering, CENG	*Ashraf Rahim, CE (CENG)*
Computer Engineering, CENG	*John Oliver, CE (CENG)*
Computer Science and Software Engineering, CENG	*Phillip Nico, CSC-SE (CENG)*
Electrical Engineering, CENG	*Dennis Derickson, EE (CENG)*
Industrial & Manufacturing Engineering, CENG	*Daniel Waldorf, IE (CENG)*
Materials Engineering, CENG	*Linda Vanasupa, MATE (CENG)*
Mechanical Engineering, CENG	*Christopher C. Pascual, ME(CENG)*
BioResource and Agricultural Engineering, CAFES	*Stuart Styles, Art MacCarley, (CAFES)*

Summary of Findings

The assessment results of the ten programs summarized below ranged from developing to highly developed. Almost all of the Engineering programs measured each of the eleven ABET-required program learning outcomes (PLOs) and utilized both direct and indirect measures in their assessment. A number of direct measures were used to assess overall student performance including Senior Projects, Mid-term exams, Final exams, the Fundamentals of Engineering (FE) exam, the Writing Proficiency Exam, 3F Online Quizzes, Senior Project Evaluations, Industry Advisory Board (IAB) assessments, and faculty assessments of major courses. The most common indirect methods used across a majority of the Engineering programs included student, faculty, employer, and alumni surveys as well as industry advisory board surveys and feedback. Senior Exit Interviews were another form of indirect assessment used by several programs.

Internal survey results from students, faculty and alumni across the nine Engineering programs indicated high levels of satisfaction and achievement tied to the eleven learning outcomes being measured. The industry advisory board and employer survey results also revealed very positive findings. For example, over 90% of the Mechanical Engineering employer survey results reported student performance as either above or exceeding discipline-specific skills and standards. Internal and external surveys also identified specific areas to be addressed. For example, the BMED program found that their senior, alumni, and industrial advisory board surveys recommended students receive stronger training in solid modeling experience and familiarity with topics in the area of 3F Professionalism and Ethics; particularly in their ability to identify areas of ethical concerns involving topics such as non-disclosure agreements, conflict of interest, and intellectual property agreements. The BMED program responded by adding a solid modeling class ME 228, which is now required for all students. The program also improved the coverage of 3F by emphasizing professionalism and ethics more deliberately in their BMED 450 class.

Several programs conducted assessments using senior projects, demonstrating strong achievement of important student learning outcomes and areas for improvement. For example, Industrial Manufacturing and Engineering observed positive results in design, problem-solving, communication, and modern tools. The ability to communicate effectively (Outcome G) received high importance levels but revealed lower attainment levels in Architectural Engineering. The BMED program identified the senior project as possibly overlapping with the senior design experience, having the potential to influence graduation rates.

Levels of attainment in the area of writing were mostly uniform among Engineering programs, many reporting developing to average levels of achievement. The Writing Proficiency Exam (WPE) was the most common measure for writing across the engineering programs with results indicating that Engineering students have a 67% pass rate on average.

The majority of Engineering programs have made a number of meaningful changes and improvements to their curriculum based on assessment findings, including revisions or augmentations of course content, new course offerings, and improvements in labs. Some programs identified additional areas outside of the curriculum needing improvement, such quality of faculty advising in Mechanical Engineering. A few programs were still in the developing stages of assessment and are continuing to gather and analyze data to finalize their program action plans.

1) Architectural Engineering, CENG

Briefly summarize the findings from the student learning outcomes assessments and indicate if the desired levels of learning were achieved.

The Architectural Engineering program (ARCE) conducts a rigorous ABET-driven assessment that collects data from direct measures based on student work and performance on the Fundamentals of Engineering (FE) examination and the GWR writing exam as well as indirect measures from surveys taken by students, faculty, alumni, and industry advisory board. Performance measures are established for each outcome and conclusions are drawn annually using a fast loop program assessment process. Based on a prescribed approach, a score is provided for each outcome and longitudinal data over time allows the program to observe trends. The results are then used to make changes in the curriculum.

The most recent FE exam in 2012 indicates student performance above the national average in all but one subject area. Students completing the Graduation Writing Requirement (GWR) exam indicate a pass rate of 75% with a mean score of 7.6, which was average for the College of Engineering and above average for the overall Cal Poly pass rate (approx 70%). Data collected from surveys administered to students, faculty, employers, and alumni ask questions related to learning outcomes and objectives. Learning outcomes (F), an understanding of professional and ethical responsibility, (G), an ability to communicate effectively, and (J), a knowledge of how the built environment is related to contemporary issues, are noted as needing to be addressed by the program. Outcome (G) received high importance levels and lower attainment levels indicating a need for greater attention from the program.

Briefly describe the improvement actions taken based on findings.

The faculty, students and advisory board have been engaged in deciding what constitutes the core of the ARCE program. The faculty created four sub-committees that looked at the introductory courses, support courses, analysis courses and design courses. Each committee reexamined the course

objectives and course content for the courses falling into each category. The program has made changes in the mode of instruction in several courses to gain efficiencies. The efficiencies will be gained by putting more students in the classroom and by changing the mode of instruction from laboratory or activity to lecture mode. A number of courses were added, modified or eliminated to achieve the desired results. ARCE 475 was added as mandatory course. ARCE 351 was eliminated as well as other advanced structural electives from the program. The faculty identified elements that cannot be changed or reduced versus the areas of the program where reductions can occur with minimum impact on the program.

Indicate any other findings from the program review.

The ARCE program maintains comprehensive preparation of course notebooks, which are assigned to faculty members teaching the course during the academic year illustrating that all faculty members are involved in the assessment process. Course notebooks are available for all supporting courses that ARCE students take. The course notebooks contain the course syllabus, course outcome matrix, course assessment, homework, quizzes, projects, examinations, labs, and supplemental handouts

2) Biomedical Engineering, CENG

Briefly summarize the findings from the student learning outcomes assessments and indicate if the desired levels of learning were achieved.

The Biomedical Engineering program employs a variety of assessment instruments to provide redundant measures of student outcome performance. The instruments include both direct and indirect measures run by program faculty, while others are conducted through centralized processes through the CENG Dean's Office. The Dean's Office also helps to collect and organize data from campus-wide sources. Direct measures of learning outcomes and their performance levels include: Employer Surveys (moderate), Writing Proficiency Exam (strong), 3F Online Quizzes (strong), Senior Project Evaluation (strong), IAB Assessment of Outcomes (strong), and Faculty Assessment of Major Courses (strong). Indirect measures include the Graduating Senior Survey (moderate), and the Alumni Survey (moderate).

A number of areas were identified in response to the assessment findings. First, students were found to be lacking in solid modeling experience. The evidence came out of the senior surveys, alumni surveys, industrial advisory board feedback, and design faculty observations. Second, students were found to lack familiarity with topics in the area of 3F Professionalism and Ethics. In particular, their ability to identify areas of ethical concerns involving topics such as non-disclosure agreements, conflict of interest, and intellectual property agreements. Third, the senior project was identified as overlapping with the senior design experience and lack of completion was hindering graduation rates in the college of engineering at Cal Poly.

Briefly describe the improvement actions taken based on findings.

A solid modeling class (ME 228) was added and required of all students to address the issue of lack of solid modeling experience. This class also improves BMED student access to other ME design sequence classes that can help improve their technical skills. For the issue concerning the senior project overlapping with the senior design experience and possibly generating a lack of completion and hindering the graduation rates in the college of engineering, the program reduced the number of units

to graduation to a maximum of 192 units by modifying the curriculum to make BMED 455-456 the senior project.

Finally, to address the area of 3F Professionalism and Ethics, the program chose to improve coverage by emphasizing professionalism and ethics more deliberately in the contemporary issues in biomedical engineering class (BMED 450) and also require students to address ethics and professionalism in the capstone design course (BMED 455/6).

Indicate any other findings from the program review.

The faculty is at the center of the assessment process. Faculty members receive and evaluate inputs from external constituents including the results of the direct and indirect measures tied to their program learning outcomes. Based on the data from the faculty, the curriculum committee strategizes, reports back, and then discusses program improvements with the faculty. The curriculum review process includes both program education objectives and outcomes. Presently, the program has completed extensive program evaluation for outcomes using input from the embedded course indicators and feedback from the Industrial Advisory Board (IAB).
The BMED program underwent its first ABET accreditation review in Fall 2015. The review went well and anticipates notification of their accreditation status in August 2016. If approved the back date for students graduating with an ABET accredited degree should begin October 2014.

3) Civil Engineering, CENG

Briefly summarize the findings from the student learning outcomes assessments and indicate if the desired levels of learning were achieved.

The Civil Engineering (CE) program assessed all eleven of their program learning outcomes using a variety of direct and indirect measures. Indirect measures include an examination via senior surveys. Direct measures include results from the FE Exam, the Writing Proficiency Exam (WPE), the Senior Project, quizzes, midterms and final exam results. The 2014-15 data is currently under evaluation and data analyses are being conducted.

Briefly describe the improvement actions taken based on findings.
Based on the forthcoming data analysis, the program anticipates changes to the senior design curriculum, which will be discussed, evaluated and implemented as needed. In addition, other changes to the CE curriculum will occur to address any concerns observed after data analyses is complete.
Indicate any other findings from the program review.

This is the first year after the most recent ABET visit of Fall 2014. Data is still being collected and will then undergo analyses and evaluation.

4) Computer Engineering, CENG

Briefly summarize the findings from the student learning outcomes assessments and indicate if the desired levels of learning were achieved.

The Computer Engineering (CPE) program uses a variety of assessment instruments to provide baseline measures of student learning outcome performance via triangulation of direct and indirect assessment measures. Each of the assessment instruments is described in terms of outcome coverage and in terms of their direct or indirect methods. Program assessment measures included: Senior Surveys, Employer Surveys, Writing Proficiency Exam, 3F Online Quizzes, Junior Prerequisite Exam, Project Outcomes Improvement, and CPE 103 & CPE 453 Control Questions.

The voluntary Senior Survey revealed that students are on average at least very satisfied in all outcomes except (H) and (J), which indicate they are less satisfied but still rate themselves as "above" satisfied, which was not to the level where the CPE faculty were convinced action needed to be taken. Results of the Employer Survey indicate a mismatch between how employers rate CPE graduates and the importance of the learning outcomes. These included (E) Problem Solving, (G) Communications and (I) Life-long Learning. The correlation between the graduate survey and how employers rate the graduates indicates graduates are realistic about their level of attainment of the program learning outcomes. For the Writing Proficiency Exam (WPE), an improved lab report template was distritbuted and may partially explain why CPE student pass rates have improved. The Junior–Level Exam revealed that there are some concerns with EE and CPE students being able to retain some fundamentals of the EE side of the CPE program, an issue that will be addressed as a program improvement project. In the CPE 453 and 103 Control, results indicated some concern that students only show a rudimentary ability to analyze recurrence relationships after their 3rd quarter of the introduction to programming sequence.

Briefly describe the improvement actions taken based on findings.

It is noted that some of the improvement projects were started by the CPE faculty, some were started by the CSC faculty and some were started by the EE faculty. In all cases, the improvement projects sought to improve outcomes of CPE students, as well as EE students and CSC students. New assessment efforts addressing 3F on Professionalism and Ethics involved ABET Committee discussions of university-wide and college-wide information sources. Results seemed compelling enough to begin more focused efforts resulting in an on-line '3F Quiz'. Quiz questions were inspired by the related coverage on the FE exam. The quiz is administered to seniors in parallel with senior surveys. The decision was to move the discrete structures course (CSC/CPE 141) to an upper division course to improve retention of the material. In addressing Problem Solving, data from faculty assignments and exams in CSC/CPE 349, data from employer surveys, alumni surveys and a "readiness quiz" given in CSC/CPE 349 support the need for action steps. All these data sources support the importance of problem solving and rigorous thinking and that students' ability in this area could be improved. These changes will be effective in the next catalog cycle (2015-2017) and the department will be carefully monitoring its effect using data from both CSC/CPE 349 and CSC 445.

Indicate any other findings from the program review.

The responsibility for running various assessment processes in the Computer Engineering program is distributed between program, college, and university levels. Because the CPE program is interdisciplinary and based upon the Computer Science and Electrical Engineering Departments, assessment methods are annotated as originating from the CPE program, from the CSC, and EE home departments, or by the College of Engineering. Implementation of action plans indicated that the impact of adding a single review assignment in a single course was not measurable and therefore did not yield positive improvement results, but deemed a low-cost effort nonetheless. The curriculum committee concluded that a review of assignments itself are not likely to be impactful when

implemented in isolation. If review assignments are coupled with review instruction, the effort may have a longer lasting impact and is the likely next step in continuous improvement efforts in the computer and electrical engineering curriculum.

5) Computer Science and Software Engineering, CENG

Briefly summarize the findings from the student learning outcomes assessments and indicate if the desired levels of learning were achieved.

Both Computer Science (CSC) and Software Engineering (SE) assessed each of their eleven Program Learning Outcomes (22 total) from required major courses using rubrics that were usually, but not always, developed by course coordinators in consultation with other faculty who regularly teach the courses. The rubrics were scored by instructors teaching the course during the term the assessment data was being gathered. There were very few cases where there was more than one individual evaluating any particular learning outcome. The main exception is Senior Project where there is a standard rubric but it is applied by each individual advisor. To date, the program has not made attempts to standardize this scoring process.

Briefly describe the improvement actions taken based on findings.

Assessment results were summarized by ABET coordinators and presented to the curriculum committee. The curriculum committee then made recommendations for closing the loop to the full faculty. This resulted in two additional measures to close the loop in CSC and SE. For both Computer Science outcomes (F) and Software Engineering outcome (G): the ability to communicate effectively with a range of audiences, and a Term Paper with rubric was introduced in the course CSC 300. For Computer Science learning outcome (J), the ability to apply mathematical foundations; and Software Engineering outcome (B), the ability to design and conduct experiments and analyze and interpret data, a CSC 349 Final Project with rubric was introduced.

Indicate any other findings from the program review.

The data for 2014-15 are still being gathered and this process will be repeated in Fall 2015 with the curriculum committee and the faculty.

6) Electrical Engineering, CENG

Briefly summarize the findings from the student learning outcomes assessments and indicate if the desired levels of learning were achieved.

The Electrical Engineering Program has three primary Program Educational Objectives (PEOs), namely to 1) excel in the electrical engineering profession; 2) embrace life-long learning as a necessary component to remain current in their profession; and 3) pursue graduate degrees for enhanced skills and opportunities. To evaluate these program objectives, the program Curriculum Committee initiated definitions of a detailed set of essential skills that should be present when each program outcome is achieved. These skills provide the specific metrics used to determine whether or not expected outcomes have been achieved by current students and graduates. A variety of direct and indirect measures are used to assess all 28 skills including the Junior Exam, Senior Exam, EE Multidisciplinary Project Questions, Senior Project Analysis, 3F Ethics On-line Quizzes, Writing Proficiency Exam, Fundamentals of

Engineering Exam, Employer Surveys, Industrial Advisory Board Surveys, Senior Surveys, and Alumni Surveys. A 100 page documentation of analysis results informed the program's continuous improvement process by identifying key areas for improvement based on the assessments.

Briefly describe the improvement actions taken based on findings.

The EE program identified several issues for program improvement. Most of these remain ongoing and are being built upon. Key examples of EE program improvement investigations include the Senior Project design experience, student retention of information, variability of faculty teaching effectiveness, and 3F Ethics and Professionalism improvement.

7) Industrial & Manufacturing Engineering, CENG

Briefly summarize the findings from the student learning outcomes assessments and indicate if the desired levels of learning were achieved.

Industrial and Manufacturing Engineering's comprehensive assessment includes a wide variety of direct and indirect measures that assess all eleven of their Program Learning Outcomes. This multi-method assessment approach includes a triangulation of results to capture students' strengths and weaknesses and is aimed at providing a broad view of student achievement. Assessment measures include Employer Surveys, the Writing Proficiency Exam (WPE), an Online Quiz for Professionalism and Ethics, Senior Project Evaluations, Senior Exam, Senior Exit Interviews, and Alumni Surveys.

The Employer Surveys, which cover all 11 PLO's indicates the MfgE program is very highly valued by employers. Through three years of surveys, all evaluation items for employer satisfaction save one have ranked higher than 3.5 out of 5. Survey findings identify one area for improvement as the performance of Cal Poly MfgE graduates ability to see engineering solutions in a global and societal context. The Writing Proficiency Exam (WPE) indicates that MfgE students perform approximately as well or better than Cal Poly pass rates overall (70% pass rate). The online Quiz results show a 75-80% rate of correctly answering quiz questions, which is slightly above the average across the College of Engineering at Cal Poly. The Senior Project Evaluations reveal the design (Outcome 3-C), problem-solving (Outcome 3-e), communication (Outcome 3-g), and modern tools (Outcome 3-k) evaluations have very positive results that consistently average well over 3.0. The Senior Exam outcomes indicate a consistent trend of average scores above 65% over the past three exams. The Senior Exit Interviews indicate that students about to graduate from the MfgE program are extremely satisfied with nearly all the learning outcomes they've achieved and are very happy with the education they've received.

Briefly describe the improvement actions taken based on findings.

Ethics, manufacturing engineering programming skills, and large-scale enterprise IT/IS concepts were areas related to student learning identified for targeted improvement. Follow-up analyses will be done in future cycles, once suggested actions have been implemented. Instructional quality and innovation and equipment/facilities updates were additional areas identified for improvement. The action framework used (background, current condition, goal/target condition, root cause analysis, changes/implementation plan, confirmation, and follow-up) indicate an effective model that can be used in other areas.

Indicate any other findings from the program review.
Assessment methods used include a comprehensive combination of direct and indirect measures (from students, alumni, and employers) with an emphasis on more summative (i.e., senior level) measurements, which may be a function of accreditation requirements. At the same time, the methods used at this level (graduate writing exam, senior project evaluation, senior exam, senior surveys, senior exit interviews) provide a multi-faceted look at many of the issues under consideration and the degree to which students (and alumni) demonstrated achievement of required skills.

8) Materials Engineering, CENG

Briefly summarize the findings from the student learning outcomes assessments and indicate if the desired levels of learning were achieved.

Materials Engineering assessed the following four program learning outcomes during the 2014–2015 academic year: (L) ability to apply advanced science and engineering principles to material systems, (M) an integrated understanding of the scientific and engineering principles underlying the four elements of the field: structure, processing, properties and performance related to material systems, (N) ability to apply and integrate knowledge from each of four elements of the field to solve materials selection and design problems, and (O) ability to utilize experimental, statistical, and computational methods consistent with the goals of the program.

Assessment results were derived from the capstone senior project, which consists of 1) an oral presentation and a technical conference format; 2) a written report describing the motivation, societal relevance, scientific and technical background, experimental methodology, results, discussion and recommendations; 3) a poster presentation at a college wide exposition. Assessment results indicate that all of the PLOs measured were being achieved at the expected level with an acceptable number of rankings falling short (5%). It was noted that at no time did any of the reports fall below the 1.5 rating, with 25 of 27 of the reports having a mean rating above 2. For the senior project presentations assessed by external judges, all of whom are practicing engineers with experience ranging from 5 to 30 years, 95% of the ratings demonstrate that the presentations were of equal or better quality than presentations by practicing engineers at technical conferences. The grand mean for all presentations was 2.3 with only one of 22 students receiving a mean score of less than two (1.7).

Briefly describe the improvement actions taken based on findings.

The assessment findings indicate successful achievement of the learning outcomes measured. However, reflective assessments by the tenured faculty committee expressed interest in enhancing the computational elements within the larger MATE. For Strategic Action (1) Computational Proficiency, results revealed that the scope of senior projects was narrow this year (confirmed by external advisory board feedback), so there is an identified need to create a larger topical breath to better represent a full arrangement material systems encountered by graduating materials engineers. For Strategic Action (2) Augment Content, the external advisory board insisted on the need to grow the faculty base for the department and the program identified the pathway to do this is through creative collaborations with other programs. For Strategic Action (3) Creative Partnerships, negotiations and their results will be considered in late 2015.

Indicate any other findings from the program review.

Although the data indicate the program is both stable and successful by traditional measures, faculty members recommend additional strategic actions that leverage the agility a small faculty affords. At least two of the faculty members have piloted computational activities in 2014–2015. Another attended a workshop over the summer for the purpose of integrating widely used engineering computational software tool into existing courses.

9) Mechanical Engineering, CENG

Briefly summarize the findings from the student learning outcomes assessments and indicate if the desired levels of learning were achieved.

The Mechanical Engineering program uses an array of assessment instruments to measure their program learning outcomes. Direct and indirect assessment measures are employed by program faculty, and external processes are run through the CENG Dean's Office (e.g. the Senior Surveys and 3F Online Quizzes). The direct measures of learning outcomes and their performance levels include the following nine elements. 1) *Senior Exam*: the level of performance has remained roughly the same or greater than the minimum acceptable performance level of 55%, which identified a need to emphasize calculus techniques in various junior level classes to give students more practice. 2) *Fundamentals in Engineering Exam*: in all subject areas except one (probability and statistics), the students have performed above the national average. 3) *Employer Surveys*: over 90% of the surveys report students as either above or exceeding standards. 4) *Senior Survey*: overall average is above adequate. Students feel they have the skills to evaluate basic geometrical quantities and mathematical expressions. 5) *Writing Proficiency Exam*: a minimum passing score is 8 or 67%, no results provided. 6) *3F Online Quizzes*: ME students performed better or just as well as their peers in CENG 7) *ME 318 Lab Final*: student performance level was above the minimum performance level of 55%. 8*) ME 440 Optimization Exercise:* overall performance on this assessment was approximately 85%. 9) *ME 428, 430, 440 Oral Presentations*: student performance is consistently around 80%, which is above the minimum acceptable performance level of 55%.

Briefly describe the improvement actions taken based on findings.

The following is a list of the major ME program improvements implemented:

- *Dynamics and Calculus Level of Knowledge*: faculty recommended that these calculus techniques be reinforced in various classes in their senior year including ME 318, ME 347, and ME 343.
- *Design of Experiments*: plan to introduce experimental design to students in their freshman year to allow them more practice in other lab and design classes before they get to senior project.
- *Senior Project Experience and Use of Technical Resources*: starting in Fall 2013, the freshman year design experience was changed (see next).
- *Freshman Year Experience*: starting in Fall 2013, a six-unit sequence was introduced (ME 128, ME 129, ME 130, ME 163, and then ME 251), though it will take a few years before any trend in skill performance can be attributed to this change.
- *Programming Skills*: faculty will continue to work with the Computer Science Department to make the changes to CSC classes effective for all ME students and will also help students by giving them more practice.
- *Improved quality of faculty advising*: As a result of low ratings on the quality of faculty advising

on the senior survey, the faculty are pursuing enhanced advising as an improvement area.

- *Improvement in Professionalism and Ethics*: faculty are pushing forward with a new handbook intended to help prepare students for senior project, industry sponsored projects, and for their career with concepts associated with 3F.

Indicate any other findings from the program review.

Responsibility for running various assessment processes is distributed between the program, college and university levels in order to help institutionalize efforts, provide sustainability, and promote best practices.

10) BioResource and Agricultural Engineering, CAED

Briefly summarize the findings from the student learning outcomes assessments and indicate if the desired levels of learning were achieved.

BRAE employs a variety of direct and indirect assessment measures. The program evaluates student outcomes and performance metrics with course level instruments including test questions, homework assignments, lab assignments, project reports, and project presentations. For problem-oriented exam questions, grading rubrics and assigned multiple reviewers are utilized whenever possible. Key direct measures include the Senior Project, the Writing Proficiency Exam and the Fundamentals of Engineering (FE) exam. Indirect measures include Faculty, Employer, Alumni and Senior Surveys.

Most assessments are run by BRAE faculty while others are run by the CENG Dean's Office and other campus offices. The Dean's Office also helps to collect and organize data from campus-wide sources. Instruments have various strengths and weaknesses due to their modality. During the prior evaluation period, FE exam results revealed overall pass rates of around 50% indicating some basic problems that needed to be addressed. As a result, BRAE faculty developed several ways to help students prepare for the exam and the pass rates have improved to 66% over the last several years to. Employer and alumni surveys indicate satisfactory achievement of programs objectives, and that students graduating from the BRAE program tend to be of very good overall quality and well prepared for industry. Survey data also reveal that graduates are performing well in positions of professional responsibility and leadership in multi-disciplinary system-oriented environments emphasizing problem solving.

Briefly describe the improvement actions taken based on findings.

BRAE program faculty periodically review the results of various assessment tools, and consider action items as needed. For example, BRAE recently dropped the number of technical elective units from 10 to 6 units changing the overall unit load to 188 units. This was done in response to a CSU initiative to get majors to drop their overall unit load to 180 units. Since this was done there has been pressure to relax the rule for engineering majors within the CSU. In some cases, assessment review is done on an individual basis. Review of course grades and review of student course evaluations are done by individual instructors. In most other cases, reviews are done by faculty as a whole, during special ABET-focused meetings, or during regular Department meetings. Course improvements involving changes within one or more courses have been implemented after consensus decisions arrived at during ABET-focused Department meetings. Changes in course mode, level, units, title, and description go through

approvals beyond the Department. Program improvements involving curricular changes are implemented through the normal University process for the proposal and approval of curricular changes. The majority of curriculum changes come from the individual departments.

Indicate any other findings from the program review.

On-going assessment processes are run at the program-, college-, and university-levels. BRAE has developed three Program Educational Objectives based on information gathered from constituencies (students, alumni, faculty, industry, graduate schools, Cal Poly, and the State of California) through surveys, evaluations, reports from the Career Services Center and other institutional sources, and personal communications. The BRAE program's various assessment processes include outcome-specific descriptions, expectations, evaluations and summaries. Documentation of these data and processes is stored on two 'PolyLearn' sites: 'ABET-Committee-BRAE' and 'ABET-Committee-CENG'. Data indicates that increasing numbers of graduates are going to graduate schools and to careers in non-traditional environments such as environmental engineering firms.

Adopted:

ACADEMIC SENATE
Of
CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, CA

AS-__-15

RESOLUTION ON ACADEMIC SENATE CURRICULUM COMMITTEE MEMBERSHIP

WHEREAS, The campus reorganization in 2011 made the library part of Information Services and there was no distinction made on whether the Curriculum Committee representative would be from the Library or from another area of Information Technology Services (ITS); and

WHEREAS, The Curriculum Committee sees value in having both an ITS representative and a Library representative on the committee due to the evolving nature of curricular delivery; therefore be it

RESOLVED: That the Academic Senate bylaws section I.2.a (Academic Senate Curriculum Committee membership) be amended as shown below:

College representatives shall be either the current chair or a current member of their college curriculum committee. The Professional Consultative Services representative shall be an academic advisor for one of the colleges. Ex officio members shall be the Associate Vice Provost for Academic Programs and Planning or designee, the Director of Graduate Education or designee, the Vice Provost for Information Services/Chief Information Officer or designee, the Dean of Library Services or designee, a representative from the Office of the Registrar, and an ASI representative.

Proposed by: Academic Senate Curriculum Committee
Date: December 4, 2015

Adopted:

ACADEMIC SENATE
of
CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, CA

AS-___-15

RESOLUTION TO ADD THE FUNCTION OF TASK FORCES

RESOLVED: That the *Bylaws of the Academic Senate* be amended as follows:

VIII. COMMITTEES

A. GENERAL

The functional integrity of the Academic Senate shall be maintained by the committee process. The committee structure shall include standing committees staffed by appointment or ex officio status, elected committees staffed by election, and ad hoc committees or task forces staffed either by appointment or election as directed by the Academic Senate Executive Committee. The Executive Committee may create ad hoc committees or task forces as it deems necessary for specific purposes, which, in the judgment of the Academic Senate Chair, cannot be handled adequately by the standing committees. Only the Executive Committee is authorized to create ad hoc committees or task forces, and these shall report to the Academic Senate by way of the Executive Committee.

Proposed by: Academic Senate Executive Committee
Date: March 11, 2015
Revised: May 27, 2015

Discussion Item

Definition of Membership of the General Faculty in the *Constitution of the Faculty*

ARTICLE I. MEMBERSHIP OF THE GENERAL FACULTY

~~Voting members of the General Faculty of Cal Poly shall consist of those persons who are employed at Cal Poly and belong to at least one of the following entities: (1) full-time academic employees holding faculty rank whose principal duty is within an academic department, unit, or program; (2) faculty members in the Pre-Retirement Reduction in Time Base Program; (3) full-time probationary and/or permanent employees in Professional Consultative Services as defined in Article III.1.b of this constitution; (4) full-time coaches holding a current faculty appointment of at least one year; (5) lecturers holding full-time appointments of at least one year in one or more academic departments, units, or programs; or (6) lecturers with a current assignment of 15 WTUs for at least three consecutive quarters.~~

Voting members of the General Faculty of Cal Poly shall consist of those persons who are employed at Cal Poly and belong to at least one of the following entities:

(1) full-time or part-time (PRTBs, FERPs, and faculty with reduction in time base) tenured/tenure-track instructional faculty

(2) lecturers holding full-time appointments of at least one year, or who have had three consecutive quarters with an ~~assignment~~ appointment of 15 WTUs per quarter;

(3) part-time lecturers holding appointments for at least six consecutive years;

(4) full-time or part-time (including PRTBs, FERPs, and faculty with reduction in time base) tenured/tenure-track counselors or library faculty unit employees;

(5) full-time or part-time probationary and/or permanent employees in ~~Professional Consultative Services (PCS) which include (a) librarians; (a) counselors (SSP: SSP-ARI, SSP-ARII, and SSP-ARIII);~~ (a) student services professionals (SSPs III and IV); and (b) physicians;

(6) full-time temporary ~~employees in PCS holding appointments of at least one year which include~~ (a) librarians; (b) counselors (SSP: SSP-ARI, SSP-ARII, and SSP-ARIII); (c) student services professionals (SSPs III and IV); (d) physicians; and (e) coaches; holding appointments of at least 12 consecutive months;

(7) part-time temporary ~~employees in PCS holding current employment of at least six consecutive years which include~~ (a) librarians; (b) counselors (SSP: SSP-ARI, SSP-ARII, and SSP-ARIII); (c) student services professionals (SSPs III and IV); (d) physicians; and (e) coaches; and holding appointments for at least six consecutive years;

~~(8) faculty participating in the Faculty Early Retirement Program (FERP);~~

Members of the General Faculty, including department chairs/heads, shall not cease to be members because of any assigned time allotted to them for the carrying out of duties consistent with their employment at Cal Poly. "Visiting Personnel," visiting faculty, and volunteer instructors shall not be members of the General Faculty. Members of the General Faculty who are on leave for at least one year shall not be voting members during their leave.

Nonvoting membership in the General Faculty shall consist of all academic personnel not included in the voting membership.

ARTICLE III. THE ACADEMIC SENATE

Section 1. Membership

(a) Colleges with fewer than 30 faculty members (~~full-time~~ tenured/tenure-track instructional faculty) shall elect two senators. All other colleges shall elect three senators, plus one additional senator for each additional 30 faculty members or major fraction thereof.[1]

(b) Designated personnel in Professional Consultative Services ~~(excepting directors)~~ as defined in Article I. Section 4-6 will follow the same formula for representation as used by the colleges (Article III. Section 1 (a)) ~~shall be represented in the Academic Senate by the formula of one senator per each fifteen members or major fraction thereof:~~[2]

~~(1) Full-time probationary or permanent Librarians; and~~

~~(2) Full-time probationary or permanent (a) counselors; (b) student services professionals [SSP]: SSP I-academically related, SSP II-academically related, and SSP III-academically related; (c) SSPs III and IV; (d) Cooperative Education lecturers; and (e) physicians.~~

~~(3) Full-time coaches holding a current faculty appointment of at least one year.~~

(c) Part-time lecturers in an academic department/teaching area and part-time student services professionals (SSPs III and IV); physicians; and coaches; ~~employees in Professional Consultative Services,~~ other than those who are members of the General Faculty as defined in Article I, will be represented by one voting member in the Senate.

(d) Senators acting in an at-large capacity are the current Academic Senate Chair, the immediate Past Academic Senate Chair, and the CSU academic senators. All at-large positions shall be voting positions except for the Academic Senate Chair which is a nonvoting position except when the Chair's vote is needed to break a tie.

(e) Elected senators and officers must be voting members of the General Faculty as defined in Article I with an appointment for their term of service.

(f) Ex officio, nonvoting members are (1) the President of the University or designee, (2) the Provost or designee, (3) one representative from among the academic deans, (4) the ASI President, (5) the Chair of ASI Board of Directors, and (6) the Vice President for Student Affairs.

[1] All calculations are based on employment data from October of the academic year of the election

[2] ~~All calculations are based on employment data from October of the academic year of the election~~