

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

ACADEMIC SENATE

GENERAL EDUCATION COMMITTEE

**Majority** REPORT TO

THE ACADEMIC SENATE

Referral Numbers:

- GE-002-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in Chemical Engineering
- GE-003-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in the Aerospace Engineering Program
- GE-004-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in the Civil Engineering Program
- GE-005-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in the Construction Engineering and Management Program
- GE-006-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in the Computer Engineering Program
- GE-007-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in the Electrical Engineering Program
- GE-008-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in the Electromechanical Engineering Technology Program
- GE-009-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in the Electronics Systems Engineering Technology Program
- GE-010-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in the Industrial Engineering Program
- GE-011-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in the Mechanical Engineering Program
- GE-012-167, Satisfaction of GE Subarea A3 by Completion of the B.S. in the Manufacturing Engineering Program

General Education Committee

Date: March 1, 2017

Executive Committee  
Received and Forwarded

Date: March 29, 2017

Academic Senate

Date: April 5, 2017  
**FIRST READING**

## **BACKGROUND:**

In January 2013, the California State Board of Trustees approved amendments to Title 5, instituting a maximum of 120 semester units for baccalaureate degrees (AA 2013 02) with exemptions for the degrees of Bachelor of Architecture, Bachelor of Landscape Architecture, Bachelor of Fine Arts, and Bachelor of Music.

In March 2016, each department prepared and submitted a “Request for Exception to Baccalaureate Unit Limits” form to the Chancellor’s Office. The programs submitted under semester conversion ranged from 126 to 131 units; all at or below the current system acceptable maximum of 131 units.

Upon review of the exception forms, the Assistant Vice Chancellor Christine Mallon provided the recommendation that more double counting of major and GE requirements (particularly “Golden Four”) be undertaken.

The referral recommends the satisfaction of the GE area A3 (Critical Thinking) requirement by completion of the BS in Engineering. The referral recommends that the learning objectives for this subarea are accomplished within the courses containing aspects of the engineering design process.

## **RECOMMENDED RESOURCES CONSULTED:**

The following resources were consulted:

- M. Ronald Yeung, Interim Associate Dean for Academic Programs & Student Services, College of Engineering
- Sharon Hilles, Dean, CLASS
- Sara Garver, Associate Dean, CLASS
- Liliane Fucaloro, Chair, English and Foreign Languages
- Dale Turner, Chair, Philosophy
- Larisa Preiser-Houy, Interim Assoc. VP for Undergraduate Programs, Division of Academic Affairs (answer received after vote)
- Francelina A. Neto, Director of Semester Conversion (answer received after vote)

## **DISCUSSION**

The GE Committee is charged with executing the general education requirements accordance with Executive Order 1100, and evaluating GE course proposals.

Across the CSU system, engineering programs provide an applied, problem-solving approach to developing the necessary critical-thinking skills and reasoning techniques to satisfy the critical thinking general education requirement for CSU graduates. Throughout the engineering curricula, students learn, discuss, and evaluate the role of engineering in society and nature. Of the 15 campuses in the CSU system (other than CPP) that have accredited

engineering programs, 11 campuses grant satisfaction of the GE critical thinking requirement by the completion of degree. The “learn-by-doing” pedagogy of CPP allows students to directly apply their critical thinking skills to real-world problems, and enable students to gain a better understanding of their individual roles and responsibilities in society.

The referral demonstrates that GE student learning outcomes (SLOs) for subarea A3 are achieved through the engineering design process. In particular, major courses in which students learn and practice the engineering design process. In these courses, students use the engineering design process to solve open-ended complex problems and design projects. The mapping of the course student outcomes to the GE SLO and assessment methods for each of the GE student learning outcomes are listed in the referral. It is important to note that the GE student learning outcomes are achieved in multiple courses throughout the major and are not strictly limited to one course. This mechanism allows for introduction, development and mastery of the SLO’s throughout the major curriculum.

The referral also provides details showing that the FTES’s for the Philosophy, and English and Foreign Department’s will not decrease with the approval of this referral. The conversion of a 4 quarter-unit to a 3 semester-unit GE course leads to a 12.5% increase in contact hours (40 to 45 contact hours). This directly increases the amount of FTES’s awarded per GE course by 12.5%. The Philosophy, and English and Foreign Languages Departments offer GE courses in multiple subareas. Therefore, they will not experience a decrease in FTES accounts as the campus converts to a semester system and this policy is implemented.

#### Concerns during Consultation

Several concerns were raised and addressed during the consultation process with the Dean’s, Departments and Administrators.

This referral does not weaken or decrease the number of units of the CPP general education program for engineering students, relative to other CSUs. With the approval of this referral, CPP engineering students will still have the most robust general education among CSU’s engineering majors. The majority of CSU’s engineering majors are required to satisfy less than 48 units to complete their general education requirements.

The recommendation that the Critical Thinking GE requirement is satisfied by completion of an engineering program has been provide by the Chancellor’s Office and the Chancellor is executor of the EO 1100. It is worth noting that the Chancellor and other CSU campuses may have a different interpretation of EO 1100 in regards to Critical Thinking than our campus. Cal Poly Pomona is the only campus that limits the courses offering for A3 to two courses (PHL 202 and ENG 130). One the argument against this referral is that only the Philosophy and English departments are capable of offering A3 Critical Thinking courses. However, the majority of CSU campuses offer several A3 courses which are taught by range of departments: Natural Science, Women Studies, Computer Engineering, Computer Science, Geography, Information Systems, Visual &

Public Art, Mathematics and Education. Similarly, there is a diversity of A3 courses offered at the local community colleges which feed into Cal Poly Pomona such as Business, Computer science, History, Psychology, and Counseling courses. Approximately 45% of Cal Poly Pomona's population are transfer students and are required to complete their A3 GE requirement prior to attending CPP since it is one of the "Golden Four" core competencies. The articulation agreements between the community college and other CSUs campuses with Cal Poly Pomona are established by the Chancellor Office, and not by Cal Poly Pomona. In this regard, it is possible that a large percentage of CPP students currently satisfy the A3 requirement with courses outside the field of Philosophy or English prior to transferring.

In addition, the recommendation was made that the CLA+ test should be considered to assess the critical thinking ability of engineering students. Currently, there are not assessment methods, rubrics and/or CLA+ testing that are employed at Cal Poly Pomona to verify that students are gaining the critical thinking skills taught in A3 courses. It is inappropriate to apply a double standard for engineering students, so if assessment of critical thinking is introduced then it should be applied to **all** students. In regards to the CLA+ testing across the country, students in the fields of science and engineering consistently score higher on the CLA+ test than students in the fields of social sciences, humanities and languages, and business (The Council for Aid to Education Annual CLA+ National Results). These differences in scores across disciplines are significant at the  $p < 0.05$  level, indicating that there is a correlation between the CLA+ score and field of study. This demonstrates the inherent nature of critical thinking throughout the science and engineering disciplines.

### **RECOMMENDATION:**

A majority of the GE Committee recommends that GE-002-167 thru GE-012-167 be approved.