

Adopted: June 5, 2018

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

AS-852-18

**RESOLUTION ON CHANGE OF DEGREE DESIGNATION FROM B.A. TO B.S. FOR
LIBERAL ARTS AND ENGINEERING STUDIES (LAES)**

- 1 WHEREAS, The Liberal Arts and Engineering Studies (LAES) program is
2 requesting that its current BA in Liberal Arts and Engineering Studies
3 be designated as a BS in Liberal Arts and Engineering Studies; and
4
- 5 WHEREAS, No course work or program structure must be altered to
6 accommodate a switch from BA to BS, the LAES degree as it stands
7 meets all the requirements for the BS degree and is a major that fits
8 with those typically awarding BS degrees; this recommended change
9 has been carefully evaluated and endorsed by the College of
10 Engineering Curriculum Committee, the College of Liberal Arts
11 Curriculum Committee, is endorsed by the Deans of both the Colleges
12 of Engineering and Liberal Arts, and has been endorsed by the
13 Academic Senate Curriculum Committee; therefore be it
14
- 15 RESOLVED: That the Academic Senate of the California State University of San Luis
16 Obispo approve the request to change the designation of the B.A. for
17 Liberal Arts and Engineering Studies to a B.S.

Proposed by: LAES Co-Directors: Dr. David Gillette and
Dr. Michael Haungs

Date: May 10, 2018

Proposal for Revised Degree Designation, BA to BS for LAES

Program: Liberal Arts and Engineering Studies
Colleges: College of Engineering and College of Liberal Arts
University: Cal Poly, San Luis Obispo, CA.
Proposed by LAES Co-Directors: Dr. David Gillette, Dr. Michael Haungs

Introduction

The Liberal Arts and Engineering Studies (LAES) program is a hybrid undergraduate degree that combines Engineering and the Liberal Arts. The program has been running since 2009, with over 70 students currently enrolled, and over 70 successfully-employed graduates. Coursework for the major is split between courses offered by the Colleges of Engineering and Liberal Arts, with slightly more courses required from the College of Engineering to provide students with the technical training needed to be successful in their chosen fields.

Due to the prerequisite demands required for student access to and success with the upper-level engineering courses in this degree, the first two years of study for the LAES degree are very similar to the curricula for most BS engineering degrees at Cal Poly, requiring all the same support courses in calculus, physics and chemistry. Even though the LAES program brings together engineering and liberal arts study and scholarship, the overall focus of the degree is on the scientific, mathematical and technological concepts that serve as the foundation for all the program's core courses and then culminate in senior project work that involves design, invention, leadership, and applied problem solving. The bulk of our alumni's careers are clustered in engineering and technical fields. Since inception, the LAES degree has always had an intense focus on the STEM areas for scholarship, production and professional development. This proposal requests changing the degree from its current BA designation to a BS designation in order to align it with other BS programs per Cal Poly's academic policies¹ and to better capture the technical focus of the degree our students earn. Letters of support from the Deans of both colleges are attached.

Rationale for Change

The use of the BA designation for the degree was the result of early discussions at Cal Poly about how to identify this emerging degree, which was (and remains) the first and only degree in the CSU jointly offered between the Colleges of Engineering and Liberal Arts. One of the initial points offered regarding designating LAES as a BA was due to the fact that LAES was not seeking ABET accreditation. Once the program was up and running, it quickly became clear that ABET accreditation has little to no impact upon how the CSU (and other state and national educational institutions) determine the difference between what classifies as a BA or a BS curriculum, the latter of which "is normally awarded in such majors as the physical and biological sciences, engineering, and agriculture." As the program moved from its pilot to fully-approved phase with the CSU Chancellor's office, faculty, students and commercial partners working with LAES began to ask why LAES was a BA and not a BS degree—all these parties

¹ <https://academicprograms.calpoly.edu/content/academicpolicies/policies-undergrad/ba-bs-difference>

have pointed out that based on their in-depth understanding of the LAES curriculum, program scope, and commercial/community project work, the BS designation for the degree would be a more accurate representation of the degree.

We request that the LAES degree now be designated as a BS-granting degree so it will be accurately represented to incoming students, to potential employers of our students, and to other programs around the country who (in various ways) are attempting to build LAES programs of their own. No course work or program structure must be altered to accommodate this switch from BA to BS. The LAES degree has, from inception, required students to progress through a BS-level curriculum and therefore our students should now, going forward, receive a proper BS designation on their degree.

Cal Poly's Academic Senate Curriculum Committee distinguishes between the two degrees as follows (emphasis added):

1. Both the Bachelor of Arts and the Bachelor of Science degrees should have a reasonable balance of three components:

- A major providing depth of preparation in an academic or professional field.
- General education providing basic university-level education in science and mathematics, in the social sciences, in the arts and humanities, and in human communication.
- Electives chosen to fit the student's preferences or needs. (It is recognized that the number of these electives may be fewer in some degrees because of accreditation requirements, but the inclusion of some electives is important.)

2. Bachelor of Arts Degree:

- is usually less specialized than a Bachelor of Science degree.
- requires a minimum of 180 quarter units for the degree; 36 units are required in the major, of which at least 18 units are at the 300-400 level.
- is normally awarded in such majors as the languages, literature, other humanities, and history.

3. Bachelor of Science Degree:

- *typically involves technical fields.*
- *requires a minimum of 180 quarter units for the degree; 54 units are required in the major, of which at least 27 quarter units are at the of 300-400 level.*
- *is normally awarded in such majors as the physical and biological sciences, engineering, and agriculture.*

Curriculum Overview

The LAES degree requires 180 units of study to complete the degree. 40 units of that work must be completed in the same math, physics and chemistry courses required for all BS engineering degrees at Cal Poly. This is then accompanied by 35 additional units of course work students must complete with engineering courses, with at least 4 units of those courses completed at the 300-400 level, and at least 4 units completed at the 400 level or above. By the time students complete the degree, they have received at least 27 quarter units of technical work at the 300-400 level, consistent with the requirements for a BS degree.

When the STEM-based prerequisites in the program (math, physics, chemistry) are combined with their required engineering concentrations, students in LAES are required to successfully complete 75 units of study in STEM courses offered from Cal Poly's BS-granting programs. If students then use engineering courses to complete their electives for the degree as well, they finish the LAES degree with at least 89 units of study with STEM-based coursework out of a

180-units degree, just two units short of exactly half of their degree requirements. Because LAES students are required to also complete the Area F courses for GE, and the Area B2 courses in life sciences, those additional eight units of study, if counted as STEM-related work, would mean that LAES students spend more than half their study in LAES with STEM-related courses. This more than fulfills the requirements for a BS degree designation at any college in the CSU and elsewhere in the state of California. The table below shows a summary breakdown of the technical units required in the degree.

LAES Degree Requirements, focusing on STEM-related courses

40 units	STEM prerequisites; Math, engineering Physics, engineering Chemistry
35 units	Engineering Concentration (4 hours at 300-400, 4 hours at 400 or above)
75 units	Total: STEM Prerequisites + Engineering Concentration
4 units	Area B2 Life Sciences
4 units	Area F Technology
83 units	Total: STEM prerequisites + Engineering Concentration + GE
14 units	Total Possible Engineering courses used for Electives, brought in with transfer
97 units	Total: STEM prerequisites + Engineering Concentration + GE + Electives
180 units	Total: Full Degree with Engineering + Liberal Arts + GE

In summary, the LAES degree meets all the requirements for the BS degree: it involves a technical field; requires 54 units in the major, with the minimum 27 units of upper-division work; and is a major that fits with those typically awarding BS degrees (i.e., the physical and biological sciences, engineering, and agriculture). It should be noted BS degrees are granted in the College of Liberal Arts in Anthropology/Geography, Child Development, Graphic Communication, Journalism, and Psychology, and in the College of Science and Math in Liberal Studies, suggesting that the technical areas for the BS degree are somewhat broadly defined. Thus, LAES can be represented appropriately as another technical program at Cal Poly that grants the BS.

BA LIBERAL ARTS AND ENGINEERING STUDIES

2015-2017

updated
10.03.18

Units Required 180

NOTE: This document can be used as a compact display of courses and other curricular requirements at the time of publication of the 2015-2017 catalog. The Degree Progress Report must be used to track students' progress in all degree requirements, throughout their Cal Poly career.

Note: No major or concentration courses may be selected as credit/no credit.

MAJOR COURSES (126-127)	Units
CHEM 124 Gen Chem/Engr (B3/B4) ¹	4
ENGL 149 Tech Writing for Engineers (A3) ¹	4
LAES 301 Proj-Based Learning	4
LAES 302 Adv Proj-Based Learning	4
LAES 461 Senior Project (or other approved senior project course)	4
LAES 462 Capstone Senior Seminar	4
MATH 141 Calculus I (B1) ¹	4
MATH 142 Calculus II (B1) ¹	4
MATH 143 Calculus III (B5) ¹	4
MATH 241 Calculus IV	4
MATH 244 Linear Analysis I	4
PHYS 141 General Physics IA	4
PHYS 132 General Physics II	4
PHYS 133 General Physics III	4
STAT 312/ 321/ 350	4
Engineering Concentration (Minimum 8 units at 300-400 level)	34-35
Liberal Arts Concentration or ICS (Minimum 12 units at 300-400 level)	24
Study Abroad or Global Perspectives courses (300-400 level)	8

GENERAL EDUCATION (GE)	40-52
72 units required, 20-32 of which are specified in Major, depending on conc	
Minimum of 12 units required at the 300 level.	
Area A Communication	8
A1 Expository Writing	4
A2 Oral Communication	4
A3 Reasoning, Argument & Writing (4 units in Major) ¹	
Area B Science and Mathematics	4
B1 Mathematics/Statistics (8 units in Major) ¹	
B2 Life Science	4
B3 Physical Science (4 units in Major) ¹	
B4 One lab with either B2 or B3	
B1-B5 Elective (4 units in Major) ¹	
Area C Arts and Humanities	16
C1 Literature	4
C2 Philosophy	4
C3 Fine/Performing Arts (may be in concentration)	0-4
C4 Upper-division elective (may be in concentration)	0-4
Area D/E Society and the Individual	20
D1 The American Exp (40404)	4
D2 Political Economy	4
D3 Comp Social Institutions	4
D4 Self Dev (CSU Area E)	4
D5 Upper-division elective	4
Area F Technology (upper div) (may be in concentration)	4
FREE ELECTIVES ^{2,3}	1-14

- OTHER DEGREE REQUIREMENTS:**
- Cal Poly, Higher Ed, and Major GPA must all be at least 2.00
 - For students admitted Fall 2016 and after, a grade of C- or higher is required in GE A1, A2, A3, and one GE B1 course
- All students must complete:**
- United States Cultural Pluralism Requirement
 - Graduation Writing Requirement
 - 60 units Upper Division (any 300-400 level classes)
 - Upper Division units in the Major: 27
 - Residency Requirements: See Degree Progress Report for details

¹ Required in Major; also satisfies GE
² Students must complete 60 upper-division units and a total of 180 units overall. Additional units may be required.
³ If GE courses are used to satisfy Support or Concentration requirements, additional units may be required to complete the 180 total unit requirement or 60 units of upper division.

MEMORANDUM

Cal Poly | Office of the President



To: Dustin Stegner
Chair, Academic Senate

Date: July 2, 2018

From: Jeffrey D. Armstrong
President

Jeffrey D. Armstrong

Copies: K. Enz Finken
M. Pederson
J. Meagher
R. Goel
L. Schlemer
D. Epperson
D. Valencia-Laver
J. Teramoto Pedrotti
B. Self

Subject: Response to Academic Senate Resolution AS-852-18 - Resolution on Change of Degree Designation from B.A. to B.S. for Liberal Arts and Engineering Studies (LAES)

I am pleased to approve the above-entitled Academic Senate resolution. The proposal to change the degree designation from B.A. to B.S. for Liberal Arts and Engineering Studies will now be sent to the Chancellor's Office for approval.

Please express my appreciation to the Academic Senate members for their attention to this important curricular matter.