Adopted: June 4, 2019

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

AS-879-19

RESOLUTION ON SUBJECT AREA GUIDELINES (I) FOR GENERAL EDUCATION 2020

WHEREAS, Cal Poly's Academic Senate has approved the *Template for General Education 2020*; and

WHEREAS, Implementation of the new *Template* requires the establishment of course criteria and educational objectives for all General Education courses; therefore, be it

RESOLVED: That the Academic Senate of Cal Poly approve the attached *Subject Area Guidelines* covering Areas A and B in the *Template for General Education 2020*; and be it further

RESOLVED: That these *Guidelines* be used for the review and implementation of pre-existing and proposed General Education courses from Areas A and B within the 2020–2021 and subsequent catalogs.

Proposed by: General Education Governance Board
Date: May 14, 2019

General Education Subject Area Guidelines

The General Education (GE) program is compliant with CSU requirements and is uniquely tailored to our comprehensive polytechnic education. At Cal Poly all curriculum, including General Education curriculum, is designed and taught by faculty with appropriate training and disciplinary expertise. Educational objectives are expectations for student learning, achievement of which can be periodically assessed. Course criteria are expectations for course design that will be used in the consideration of the course proposal, course modifications, and course renewal. Educational objectives and course criteria for General Education subject areas are included below. General Education class instruction includes the opportunity for skill acquisition, development, evaluation, and self-reflection.

English Language Communication and Critical Thinking

Area A

Speaking, writing, and reasoning skills are foundational for developing and demonstrating communication competency. The purpose of GE Area A is to enhance students' abilities in listening, speaking, reading, and writing through active-learning and practice. Speaking and writing are fundamental modes of expression that rely on the principles of rhetoric, sound reasoning, and critical thinking. Area A courses also examine the ethics of communication and explore issues related to diversity and inclusion. Overall, courses in Area A prepare students to communicate in effective, ethical, and inclusive ways across disciplines and in a globalized context.

The Area A sequence assumes that the mastery of well-reasoned and effective communication must be achieved over time. Development of these foundational communication skills is crucial to a student's success at the university and beyond. Courses in Area A illustrate why the general education program is a vital component of a student's educational experience and allow a student to experience how the general education program supports and enhances the curriculum of their major.

Oral Communication – A1

The purpose of GE Subarea A1 is to help students develop their oral communication skills in English by examining principles of listening, speaking, reading, writing, and analyzing audiences from a rhetorical perspective. The ethics of oral communication is also explored, with attention to issues related to diversity and inclusion. Learning objectives are organized in a scaffolded manner; as students achieve lower-numbered objectives, it is expected that they will apply that knowledge in achieving higher-numbered objectives.

A1 Educational Objectives

Upon completion of a qualifying A1 course, students should be able to:

EO1 Explain how audience and rhetorical situation influence topic, genre, content, style, and delivery in creating and presenting effective oral communications;

EO2 Practice a recursive process of reading, writing, speaking, and listening in composing and revising oral communications;

EO3 Demonstrate information literacy through the successful search, discovery, critical evaluation, and ethical reporting of information;

EO4 Employ sound reasoning, effective organization, and accuracy in expression based on audience awareness and an understanding of cultural differences in communication norms and practices;

EO5 Use effective listening skills by studying and practicing the principles of active listening;

EO6 Compose persuasive effective, ethical, and inclusive oral communications.

A1 Criteria

The course proposal and expanded course outline for courses in A1 must clearly indicate how the course meets *each* of the following criteria:

CR1 Students complete a minimum of 3 original oral presentation assignments with:

a. At least one informative presentation;
b. At least one persuasive presentation;
c. A total of at least 21 minutes of graded speaking time per student across oral presentation assignments;

CR2 Instructional materials and course content (e.g., readings, examples used in class, course assignments) incorporate contributions made by individuals from diverse and/or underrepresented[1] groups;

CR3 As appropriate, address issues of sustainability;

CR4 Course capacity is set at 18–22 students.

[1] By "diverse" we intend the definition of diversity found in the Cal Poly Statement on Diversity and Inclusivity (https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1807&context=senateresolutions). By "underrepresented groups" is intended groups who are currently underrepresented and historically marginalized groups.

Written Communication – A2

The purpose of GE Subarea A2 is to teach writing, rhetoric, and composition and to help students develop their written communication skills in English by examining rhetorical principles of reading, writing, and analyzing audiences. The ethics of written communication should also be explored with attention to issues related to diversity and inclusion. Learning objectives are organized in a scaffolded manner; as students achieve lower-numbered objectives, it is expected that they will apply that knowledge in achieving higher-numbered objectives.

A2 Educational Objectives

Upon completion of a qualifying A2 course, students should be able to:

EO1 Explain how audience and rhetorical situation influence topic, genre, content, and style in composing effective written communications;

EO2 Practice a recursive writing process that includes drafting, peer review, revision, and editing;

EO3 Recognize that the writing process is necessary to the discovery, development, and clarification of ideas;

EO4 Demonstrate information literacy through the successful search, discovery, critical evaluation, and ethical reporting of information;

EO5 Employ sound reasoning, effective organization, and accuracy in expression based on audience awareness and an understanding of cultural differences in communication norms and practices;

EO6 Compose persuasive written arguments that advocate on issues of personal and/or social import using sound reasoning and evidence.

A2 Criteria

The course proposal and expanded course outline for courses in A2 must clearly indicate how the course meets *each* of the following criteria:

CR1 Students complete a minimum of 4 writing sequences including non-fiction narrative writing, rhetorical analysis, and argument;

CR2 Students write a minimum of 3,000 words across all writing assignments; instructors may choose to include tasks like revision plans, topic proposals, and post-writing reflections in their word count;

CR3 Meet all other criteria for GE writing-intensive courses (GE Writing Intensive Requirements);

CR4 Instructional materials and course content (e.g., readings, examples used in class, course assignments) incorporate contributions made by individuals from diverse and/or underrepresented groups;

CR5 As appropriate, address issues of sustainability;

CR6 Course capacity is set at 18–22 students.

Critical Thinking & Communication – A3

The purpose of GE Subarea A3 is to help students develop their reasoning skills in English by examining principles of argumentation, reasoning, and logic across the range of modalities and technologies in which composing occurs. Courses in Subarea A3 enable students to assess the reasoning strategies and ethics of their own and others' communication. The ethics of communication are also explored, with attention to issues related to diversity and inclusion. Given that critical thinking is often explored and expressed through modes of communication, A3 courses are designated as writing intensive. Learning objectives are organized in a scaffolded manner; as students achieve lower-numbered objectives, it is expected that they will apply that knowledge in achieving higher-numbered objectives.

A3 Educational Objectives

Upon completion of a qualifying A3 course, students should be able to:

EO1 Identify the rhetorical strategies used to make arguments in a variety of situations and for a range of audiences from diverse backgrounds and experiences;

EO2 Describe the ethical and cultural dimensions of argument;

EO3 Recognize lines of reasoning, including inductive processes, deductive processes, and formal and informal fallacies of language and thought;

EO4 Distinguish matters of fact from issues of judgment or opinion and use them appropriately to reach well-supported factual or judgmental conclusions;

EO5 Analyze and evaluate arguments using the principles of rhetoric and formal logic;

EO6 Compose oral or written arguments that advocate on issues of social import using sound reasoning and evidence.

A3 Criteria

The course proposal and expanded course outline for courses in A3 must clearly indicate how the course meets *each* of the following criteria:

CR1 Enrollment prerequisites list completion of Area A2;

CR2 Students complete at least one writing assignment focused on analysis and/or argumentation;

CR3 Meet all other criteria for GE writing-intensive courses (GE Writing Intensive Requirements);

CR4 Instructional materials and course content (e.g., readings, examples used in class, course assignments) incorporate contributions made by individuals from diverse and/or underrepresented groups;

CR5 As appropriate, address issues of sustainability;

CR6 Course capacity is set at 18–24 students or fewer.

Scientific Inquiry and Quantitative Reasoning

Area B

In Area B students will develop a basic understanding of the nature, scope, successes and limitations of mathematics, statistics, computer science, as well as the physical and life sciences. Lower-division Area B courses introduce fundamental concepts of each discipline, and as a result should not be interdisciplinary in nature. For all students these courses provide a foundation for understanding and navigating an increasingly technological society. Consequently, courses should place the basic knowledge presented in a larger context and show the breadth of application to other disciplines and/or daily life. In addition, students also learn to make reasoned arguments based on qualitative and quantitative evidence/data in these courses. An integral part of our polytechnic identity, these courses also provide essential foundational knowledge for more advanced study in mathematics, statistics, computer science, the physical and life sciences, and engineering. As a result, these courses also emphasize analyzing mathematical, statistical, scientific, and computational problems using logic, fundamental principles, and quantitative analysis. Courses in this area should include an appropriate writing component as a way for students to develop and demonstrate their understanding of basic scientific, mathematical, statistical, and computational concepts.

Physical Sciences – B1

The physical sciences include astronomy, chemistry, geology, physics and related subjects that explore the non-living world.

B1 Educational Objectives

After completing an Area B1 course, students should be able to:

EO1 Describe the processes by which scientific knowledge is generated, including systematic observation and hypothesis-driven experimentation (including the ability to generate testable predictions), leading to the creation and/or refinement of theories used in the physical sciences;

EO2 Analyze scientific problems using logic, fundamental principles in the physical sciences, and quantitative analysis, including: identifying whether additional information is needed, obtaining and evaluating appropriate information, and applying it to a specific problem in the physical sciences;

EO3 Describe the science that underlies phenomena related to topics which arise in other disciplines and/or daily life;

EO4 Articulate fundamental scientific concepts using appropriate vocabulary;

EO5 Identify and evaluate the limits of models, data, and/or analytical techniques;

EO6 Write about scientific concepts and ideas clearly and make reasoned arguments based on qualitative and quantitative evidence/data.

B1 Criteria

The course proposal and expanded course outline for courses in B1 must clearly indicate how the course meets each of the following criteria:

CR1 Develop the skills and foundational knowledge needed to study topics presented in upper division Area B courses;

CR2 Require disciplinary appropriate writing assignments that comprise at least 10% of overall course grade (e.g., lab reports, math proofs, essay questions, word problems, exam questions).

Life Sciences – B2

B2 Educational Objectives

After completing an Area B2 course, students should be able to:

EO1 Describe the processes by which scientific knowledge is generated, including systematic observation and hypothesis-driven experimentation (including the ability to generate testable predictions), leading to the creation and/or refinement of existing theories that are used in the life sciences;

EO2 Describe and explain one or more of the major themes in the life sciences;

EO3 Analyze scientific problems using logic, fundamental principles in the life sciences, and quantitative analysis, including: identifying whether additional information is needed, obtaining and evaluating appropriate information, and applying it to a specific problem in the life sciences;

EO4 Describe the science that underlies phenomena related to topics which arise in other disciplines and/or daily life;

EO5 Articulate fundamental scientific concepts using appropriate vocabulary;

EO6 Identify and evaluate the limits of models, data, and/or analytical techniques;

EO7 Write about scientific concepts and ideas clearly and make reasoned arguments based on qualitative and quantitative evidence/data.

B2 Criteria

The course proposal and expanded course outline for courses in B2 must clearly indicate how the course meets each of the following criteria:

CR1 Develop the skills and foundational knowledge needed to study topics presented in upper division Area B courses;

CR 2 Describe and explain at least one of the major themes in the life sciences: a) the molecular, cellular, genetic, and physiological mechanisms underlying life; b) the evolution and diversity of life; c) ecological interactions of organisms with each other and with their environment;

CR3 Require disciplinary appropriate writing assignments that comprise at least 10% of overall course grade (e.g., lab reports, math proofs, essay questions, word problems, exam questions).

Laboratory Experiences – B3

B3 Educational Objectives

Students typically satisfy B3 requirements while simultaneously taking a B1 or B2 course. After completing an Area B3 course, students should be able to:

EO1 Demonstrate the ability to apply hands-on disciplinary practices associated with the life sciences and/or physical sciences in a lab, observational, and/or other experimental setting;

EO2 Formulate, refine, and evaluate empirically predictions and/or problems using models and simulations that predict and show relationships among variables between systems and their components in the natural, physical, and/or designed worlds;

EO3 Design and conduct an investigation to answer questions by providing evidence for and testing conceptual, mathematical, statistical, physical, and/or empirical models;

EO4 Analyze and interpret data using tools, technologies, and/or models (e.g., computational, mathematical, statistical) to make valid and reliable scientific claims;

EO5 Apply scientific reasoning, theory, and/or models to construct explanations and/or designs that are supported by multiple and independent sources of evidence and address counter-arguments;

EO6 Construct, use, and present arguments or counter-arguments based on data and evidence;

EO7 Write about scientific concepts and ideas clearly and make reasoned arguments based on qualitative and quantitative evidence/data;

EO8 Work collaboratively in groups with people who have ideas, beliefs, attitudes, and behaviors that are different from their own.

Mathematics/Quantitative Reasoning – B4

B4 Educational Objectives

Mathematics/quantitative reasoning includes mathematics, statistics, and computer science. Area B4 should not exclusively focus on learning a programming language.

After completing an Area B4 course, students should be able to:

EO1 Analyze mathematical, statistical, and/or computational problems using mathematical abstraction, logic, and fundamental principles and techniques of the mathematical or statistical sciences;

EO2 Describe the quantitative and/or computational aspects that underlie phenomena related to topics which arise in other disciplines and/or daily life;

EO3 Apply techniques in mathematics, statistics, and/or computer science to formulate and develop strategies to solve problems in other disciplines and/or daily life;

EO4 Articulate fundamental mathematical, statistical, and/or computational concepts using appropriate vocabulary;

EO5 Identify and evaluate the limits of models, data, analytical techniques, and/or computational techniques;

EO6 Demonstrate proficiency and fluency in using mathematical abstraction, computation, logic and/or statistical analysis to reason quantitatively and qualitatively.

B4 Criteria

The course proposal and expanded course outline for courses in B4 must clearly indicate how the course meets each of the following criteria:

CR1 Develop the skills and knowledge needed to study more advanced topics presented in upper division Area B courses;

CR2 Require disciplinary appropriate writing assignments that comprise at least 10% of overall course grade (e.g., lab reports, math proofs, essay questions, word problems, exam questions).

Upper-Division B

Upper Division B applies the basic scientific, mathematical, statistical and/or computational knowledge developed in lower division B courses to the in-depth study of topic(s) in these areas. Upper division B courses may allow students to meaningfully engage with problems in a new or more advanced area of mathematics, statistics, the physical or natural sciences, or computer science and emphasize depth over breadth. Alternatively, upper division courses may integrate core concepts from lower division courses in Area B and other disciplines to address scientific and/or technological decision making. These courses should explore the interplay between science, mathematics, statistics, and/or computer science and social, commercial and/or economic considerations in making rational, ethical, and humane decisions. These courses may be interdisciplinary in nature. All courses in this area should include an appropriate writing component as a way for students to develop and demonstrate their understanding of basic scientific, mathematical, statistical, and computational concepts.

Upper-Division B Educational Objectives

After completing an Upper-Division B course, students should be able to:

EO1 Integrate the concepts from lower-division courses in Area B;

EO2 Use quantitative evidence to support an idea or argument, in alternative forms, including visual and/or written form;

EO3 Satisfy at least one of the following objectives:

a) Apply the fundamental scientific, mathematical, statistical, or computational concepts from the lower-division courses to address and meaningfully engage with problems in new or more advanced areas.
b) Articulate the considerations (which may include scientific, mathematical, computational, technical, economic, commercial, and social) that are necessary for making rational, ethical, and humane scientific and/or technological decisions.

Upper-Division B Criteria

The course proposal and expanded course outline for courses in Upper Division B must clearly indicate how the course meets each of the following criteria:

CR1 Course requires at least completion of A1 Oral Communication, A2 Written Communication, and A3 Critical Thinking, and B4 Mathematics/Quantitative Reasoning as pursuant to EO 1100-Revised (section 2.2.3); some courses will require additional pre-requisites as course content dictates;

CR2 Require disciplinary appropriate writing assignments that comprise at least 10% of overall course grade.

TEMPLATE FOR GENERAL EDUCATION 2020

Standard GE Template

The standard template includes the following distribution of courses:

Area A: English Language Communication and Critical Thinking		
A1	Oral Communication	4
A2	Written Communication	4
A3	Critical Thinking	4
	Total Units in Area A	**12**

Area B: Scientific Inquiry and Quantitative Reasoning		
B1	Physical Science	4
B2	Life Science	4
B3	Laboratory Activity	in B1 or B2
B4	Mathematics/Quantitative Reasoning	4
Upper-Division B		4
	Total Units in Area B	**16**

Area C: Arts and Humanities *Lower-division courses in Area C must come from three different prefixes*.		
C1	Arts: Arts, Cinema, Dance, Music, Theater	4
C2	Humanities: Literature, Philosophy, Languages other than English	4
Lower-Division C Elective – *Select a course from either C1 or C2*		4
Upper-Division C		4
	Total Units in Area C	**16**

Area D: Social Sciences		
D1	American Institutions (Title 5, Section 40404 Requirement)	4
D2	Lower-Division D – *Select courses from two different prefixes*	8
Upper-Division D		4
	Total Units in Area D	**16**

Area E: Lifelong Learning and Self-Development	
Lower-Division E	4
Total Units in Area E	**4**

GE Electives in Area B, C, and D	
GE Electives – *Select courses from two different areas; may be either lower- or upper-division levels.*	8
Total Units in GE Electives	**8**

TOTAL UNITS IN GENERAL EDUCATION PROGRAM	**72**

GE Template for High-Unit Programs

The template includes the following distribution of courses for qualifying high-unit programs:

Area A: English Language Communication and Critical Thinking		
A1	Oral Communication	4
A2	Written Communication	4
A3	Critical Thinking	4
	Total Units in Area A	**12**

Area B: Scientific Inquiry and Quantitative Reasoning		
B1	Physical Science	4
B2	Life Science	4
B3	Laboratory Activity	in B1 or B2
B4	Mathematics/Quantitative Reasoning	8
Upper-Division B		4
Area B Electives		8
	Total Units in Area B	**28**

Area C: Arts and Humanities *Lower-division courses in Area C must come from three different prefixes*.		
C1	Arts: Arts, Cinema, Dance, Music, Theater	4
C2	Humanities: Literature, Philosophy, Languages other than English	4
Lower-Division C Elective – *Select a course from either C1 or C2*		4
Upper-Division C		4
	Total Units in Area C	**16**

Area D: Social Sciences		
D1	American Institutions (Title 5, Section 40404 Requirement)	4
D2	Lower-Division D	4
Area D Elective – *Select either an additional lower-division D2 or an upper-division D course*		4
	Total Units in Area D	**12**

Area E: Lifelong Learning and Self-Development	
Lower-Division E	4
Total Units in Area E	**4**

TOTAL UNITS IN GENERAL EDUCATION PROGRAM	**72**

High-Unit Programs

Consistent with EO 1100-R (2.2.5), Cal Poly recognizes the need to offer consideration to high-unit major degree programs. Cal Poly's definition of a high-unit program in the GE template included herein is equivalent to our definition of "engineering programs" from the prior GE template: all programs within the College of Engineering along with the other ABET accredited programs of ARCE and BRAE. Only these programs will be considered high-unit major degree programs.

Writing Component

All General Education courses must have an appropriate writing component. In achieving this objective, writing in most courses should be viewed primarily as a tool of learning (rather than a goal in itself as in a composition course), and faculty should determine the appropriate ways to integrate writing into coursework. The writing component may take different forms according to the subject matter and the purpose of a course. Outside of the GE areas specified below, at least 10% of the grade in all GE courses must be based on appropriate written work (e.g., lab reports, math proofs, essay questions, word problems, exam questions).

GE areas A2, A3, Upper-Division C, and Upper-Division D are designated as Writing Intensive. All courses in these areas must include a minimum of 3,000 words of writing and base 50% or more of a student's grade on written work. GE area C2 is also designated as Writing Intensive, but all courses in this area must include a minimum of 2,000 words of writing and base 50% or more of a student's grade on written work. All Writing Intensive courses must include process-oriented writing instruction in which faculty provide ongoing feedback to students to help them grasp the effectiveness of their writing in various disciplinary contexts. The kind and amount of writing must be a factor in determining class sizes.

OFFICE OF THE PRESIDENT

MEMORANDUM

To: Dustin Stegner
Academic Senate Chair

From: Jeffery D. Armstrong
President

Date: July 3, 2019

Copies: Mary Pedersen
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Subject: Response to AS-879-19 Resolution on Subject Area Guidelines (I) for General Education 2020

I am pleased to acknowledge and support the above-entitled Academic Senate resolution.

The guidelines to subject areas A and B, as outlined in this resolution, are necessary to ensure the currency of the curriculum and to align with the GE Template 2020. I appreciate the efforts of the General Education Governance Board, the GE Area A and B Committees and the Senate members to take action on this matter.

Please extend my thanks to the Academic Senate members for their prompt attention to this matter.