A Process to Qualify Courses for a Sustainability Catalog

- Sustainability Catalog (SUSCAT) background
- Academic Senate directive
- Design process used to develop the SUSCAT process
- SUSCAT process timeline, rubric, and GE Course Results

David Braun (EE), Scott Kelting (CM), Norm Borin (BUS)
California Polytechnic State University, San Luis Obispo.
Sustainability Learning Objectives

Cal Poly defines sustainability as the ability of the natural and social systems to survive and thrive together to meet current and future needs. Cal Poly students should be able to consider sustainability when making reasoned decisions.

Students should be able to:

1. Define and apply sustainability principles within their academic programs
2. Explain how natural, economic, and social systems interact to foster or prevent sustainability
3. Analyze and explain local, national, and global sustainability using a multidisciplinary approach
4. Consider sustainability principles while developing personal and professional values
WHEREAS, In May 2003, the Academic Senate endorsed the Talloires Declaration; and

WHEREAS, In August 2003, President Warren Baker signed the Talloires Declaration; and

WHEREAS, Provisions 3 and 4 of the Talloires Declaration focus on educating for environmentally responsible citizenship and on fostering environmental literacy; and

WHEREAS, The University has as one of its University Learning Objectives that graduates of Cal Poly should “Make reasoned decisions based on an understanding of ethics, a respect for diversity, and an awareness of issues related to sustainability”; and

WHEREAS, The University defined the term sustainability, as part of its Sustainability Learning Objectives, as being “the ability of the natural and social systems to survive and thrive together to meet current and future needs”; and
AS-787-14 Resolution on Sustainability 2/3

WHEREAS, The University’s Sustainability Learning Objectives state that students should be able to “Define and apply sustainability principles within their academic programs”; and

WHEREAS, Some Cal Poly students graduate without satisfying the sustainability element of the University Learning Objectives nor the Sustainability Learning Objectives; and

WHEREAS, Cal Poly has a responsibility to ensure that its graduates meet the sustainability element of the University Learning Objectives and the Sustainability Learning Objectives; and

WHEREAS, Some Cal Poly students will be employed in jobs requiring an understanding of sustainability; and

WHEREAS, There is a need to refine and develop more classes to help students meet the sustainability element of the University Learning Objectives and to meet the Sustainability Learning Objectives; and

WHEREAS, There is not currently an established system that designates and communicates whether a class meets the Sustainability Learning Objectives; and
WHEREAS, A list of University sustainability classes would be helpful to students and faculty; and

WHEREAS, A list of University sustainability classes would be helpful for programs wanting to incorporate sustainability into their curricula; and

WHEREAS, Other CSU campuses currently have lists of sustainability classes and catalog tags for these classes; and

WHEREAS, The Academic Senate Sustainability Committee has developed and tested a procedure to determine whether a class meets the Sustainability Learning Objectives; therefore be it

RESOLVED: That the Academic Senate Sustainability Committee be directed to develop a list of classes based on a revised Senate accepted assessment process that meet the Sustainability Learning Objectives and, by extension, the relevant portion of the University Learning Objectives; and be it further

RESOLVED: That faculty should be encouraged to develop new sustainability classes and to modify existing courses by including sustainability, especially interdisciplinary courses as well as courses satisfying General Education requirements; and be it further

RESOLVED: That the Academic Senate Sustainability Committee in conjunction with the Center for Teaching, Learning and Technology shall provide support for faculty seeking to teach classes involving sustainability; and be it further

RESOLVED: That the Academic Senate Sustainability Committee be directed to work with student and campus organizations, as well as Facilities, to identify opportunities to promote alternative approaches to sustainability education on campus that would further facilitate students explicitly meeting the learning objectives addressing sustainability.
Develop SUSCAT process using a Methodical Design Flow

1. Identify the process stakeholders
2. Define the stakeholders' needs
3. Translate the stakeholders' needs into requirements and specifications
4. Design a process to meet the requirements and specifications
5. Implement and test the policy

http://digitalcommons.calpoly.edu/senateresolutions/793/
Step 1: Identify the process stakeholders

1. Faculty and department heads who teach sustainability courses and want them listed on SUSCAT
2. Students who want to take sustainability courses
3. Faculty and staff who implement the policy by performing the review
4. Faculty and staff who maintain SUSCAT
5. The Academic Senate, Academic Senate Curriculum Committee, and the GE Governance Board
6. Academic Advisors
7. CSU Administrators
8. Faculty and department heads who would like to teach sustainability but don’t know how.
### Table I Stakeholder Needs Assessment

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Needs</th>
<th>Met?</th>
</tr>
</thead>
</table>
| Faculty and department heads who teach sustainability courses and want them listed on SUSCAT | 1. Simple and convenient process.  
2. Reproducible process  
3. Can appeal decision. | ✓    |
| Students who want to take sustainability courses                           | 1. Reproducible process.  
2. Process should identify all relevant sustainability courses.  
3. Should see results in catalog and PASS. | ☑   |
| Faculty and staff who implement the policy by performing the review        | 1. Simple and convenient process.  
2. Reproducible process. | ✓    |
| Faculty and staff who maintain SUSCAT                                      | 1. Easy to update.  
2. Automatically delist defunct courses.  
3. Automatically become aware of new course. | ✓    |
| The Academic Senate, Academic Senate Curriculum Committee, and the GE Governance Board | 1. Reproducible process.  
2. Serves students and faculty.  
3. Serves curricular needs.  
4. Serves course and catalog administrative needs. | ✓    |
| Academic Advisors                                                          | 1. Reproducible process.  
2. Process should identify all relevant sustainability courses.  
3. Should see results in catalog and PASS. | ☑   |
| CSU Administrators                                                         | 1. Report data on percentage of classes & number of classes meeting each Sustainability Learning Objective [SLO] | ☑   |
| Faculty and department heads who would like to teach sustainability courses but don’t know how. | 1. Clear Instructions | ✓    |
**TABLE II SUSCAT REVIEW POLICY REQUIREMENTS AND SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Marketing Requirements</th>
<th>Specifications</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>SUSCAT contains any course achieving at least two SLOs (Rubric score &gt;=6 AND at least 20% of course covers SLOs).</td>
<td>Policy approved by ASSC in 2012 and revised in 2014.</td>
</tr>
<tr>
<td>1, 2, 4</td>
<td>The ASSC reviews all GE courses.</td>
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<td>1, 2, 3, 4, 9</td>
<td>A process exists to handle faculty appeals of initial SUSCAT review decisions.</td>
<td>Provides checks and balances. Encourages inter-rater reliability.</td>
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<td>1, 2, 3, 4, 9, 10</td>
<td>The review process may require additional information such as course proposal forms, course modification form, ABET or other detailed Syllabus, and/or Expanded Course Outline.</td>
<td>Title and course description alone may not suffice to identify whether a course meets any of the SLOs.</td>
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<td>The ASSC reviews all new courses approved by the ASSC.</td>
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**Marketing Requirements**

1. Simple and convenient process.
2. Reproducible process
3. Can appeal decision.
4. Process should identify all relevant sustainability courses.
5. Should see results in catalog and PASS. Not specified yet.
6. Easy to update.
7. Automatically delist defunct courses.
8. Automatically become aware of new course.
9. Serves students and faculty.
10. Serves curricular needs.
11. Serves course and catalog administrative needs.
12. Report data on percentage of classes & number of classes meeting each SLO. Not specified yet.
Step 3: Translate the stakeholders' needs into requirements and specifications

Lessons learned during 2012 GE Course Review:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Based on the title and catalog description, many or most courses clearly DO NOT achieve at least two SLOs.</td>
<td>&gt; 90%</td>
</tr>
<tr>
<td>2. Based on the title, catalog description, and course proposal, some courses clearly DO achieve at least two SLOs.</td>
<td>Few</td>
</tr>
<tr>
<td>3. Based on the title, catalog description, and course proposal, some courses MAY or MAY NOT achieve at least two SLOs. This is a small group.</td>
<td>&lt; 10%</td>
</tr>
<tr>
<td>4. A relatively small fraction of GE courses achieve at least two SLOs.</td>
<td>6.7%</td>
</tr>
<tr>
<td>5. Only list courses in which students achieve at least two SLOs regardless of the instructor.</td>
<td></td>
</tr>
<tr>
<td>6. A two-part rubric covered the above cases. One part used title and catalog description only. The other part relied on a course proposal form, course modification form, ABET or other detailed Syllabus, and/or Expanded Course Outline.</td>
<td></td>
</tr>
</tbody>
</table>
Step 3: Translate the stakeholders' needs into requirements and specifications

Conclusions from Fall 2014 Rubric Norming Exercise

1. Students should achieve multiple SLOs during the course, and

2. Students achieve the SLOs during a meaningful fraction of the course.

### SUSCAT Evaluation Rubric

<table>
<thead>
<tr>
<th>Academic Senate Sustainability Committee SUSCAT Evaluation Rubric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Prefix &amp; Number</strong></td>
</tr>
<tr>
<td>Replace this cell with course Prefix &amp; Number, e.g. GEOG 301</td>
</tr>
<tr>
<td><strong>Course Title</strong></td>
</tr>
<tr>
<td>Replace this cell with course Title, e.g. Geography of Resource Utilization</td>
</tr>
<tr>
<td><strong>Course Description</strong></td>
</tr>
<tr>
<td>Replace this cell with course catalog description, e.g. A multicultural, world view of the interconnections of the following resource systems: food, energy, water, and non-fuel minerals. A pervading theme is the sustainability of these systems. 4 lectures. Prerequisite: Completion of GE Areas A, D3. Recommended: Junior standing. Fulfills GE D5 except for Social Sciences majors.</td>
</tr>
<tr>
<td><strong>GE Area, if any</strong></td>
</tr>
<tr>
<td><strong>Evaluator name:</strong> Joe Blow</td>
</tr>
<tr>
<td><strong>Evaluator User Name:</strong> <a href="mailto:jblow@calpoly.edu">jblow@calpoly.edu</a></td>
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### Initial Assessment Based on Course Title & Description

<table>
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<tr>
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<th>Points Possible</th>
<th>Points Actual</th>
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<tbody>
<tr>
<td>Yes, the course very likely achieves at least two of the four SLOs.</td>
<td>2</td>
<td></td>
</tr>
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<td>Maybe, the course might achieve one or more SLOs.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>No, the course doesn't seem to address the SLOs.</td>
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Cal Poly defines sustainability as the ability of natural and social systems to survive and thrive together to meet current and future needs.

### Assessment Based on Course Proposal or Syllabus

<table>
<thead>
<tr>
<th>Minimal Evidence Score = 0</th>
<th>Threshold Evidence Score = 1</th>
<th>Strong Evidence Score = 2 *</th>
<th>Superior Evidence Score = 3 **</th>
<th>Score</th>
</tr>
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<tr>
<td>SLO1: Students define and apply sustainability principles within their academic programs</td>
<td>Syllabus doesn’t mention SLO</td>
<td>Syllabus mentions SLO</td>
<td>Syllabus shows SLO student outcomes</td>
<td>Syllabus has SLO as a major course focus</td>
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<tr>
<td>SLO2: Students explain how natural, economic, and social systems interact to foster or prevent sustainability</td>
<td>Syllabus doesn’t mention SLO</td>
<td>Syllabus mentions SLO</td>
<td>Syllabus shows SLO student outcomes</td>
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<td>SLO3: Students analyze and explain local, national, and global sustainability using a multidisciplinary approach</td>
<td>Syllabus doesn’t mention SLO</td>
<td>Syllabus mentions SLO</td>
<td>Syllabus shows SLO student outcomes</td>
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<tr>
<td>SLO4: Students consider sustainability principles while developing personal and professional values</td>
<td>Syllabus doesn’t mention SLO</td>
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### Total Score (SLO1 - SLO4)

- Score: 0

20% or more of the course covers the SLOs.

- Yes/No: Yes

### Sustainability Course (Score >=6 AND 20% or more sustainability)

- No

If course doesn't address the SLOs, could it?

- Yes/No: Yes
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Step 4: Design a process to meet the requirements and specifications

SUSCAT Course Assessment Process Draft V4

- **GE Course Assessment**
  - Initial review
  - Yes → List
  - Maybe → Further Review
  - No → Don't List

- **Faculty Submit Courses**
  - Faculty member supplies review request
  - Assess by ASSC rep.
  - Yes → List
  - Maybe → Further Review
  - No → Don't List

- **ASSC Initiates Course Assessment**
  - Initial review
  - Yes → List
  - Maybe → Further Review
  - No → Don't List

†1 The ASSC representative reviews course number, title, and catalog descriptions in their college to determine a list of maybe and no courses.

†2 Further review in case of “Maybe” means the ASSC has three other ASSC faculty members evaluate the application in detail. Two or more yeses → yes. One yes and two maybes → yes. Other combinations → no. The ASSC may request more info, if desired.

†3 The review request contains the course number, title, catalog description and an explanation how the course meets at least two SLOs, accompanied by sufficient documentation (course proposal form, course modification form, ABET or other detailed Syllabus, and/or Expanded Course Outline) to support the case.
A Process to Qualify Courses for a Sustainability Catalog

- Sustainability Catalog (SUSCAT)
  http://suscat.calpoly.edu/

- http://www.academicsenate.calpoly.edu/content/acadsens_comm/sustainability

  http://digitalcommons.calpoly.edu/senateresolutions/793/

David Braun (EE), Scott Kelting (CM), Norm Borin (BUS)
California Polytechnic State University, San Luis Obispo.
FAQ 1 – Who wants a list of Sustainability Courses?

1. Students
2. Faculty
3. Advisors
4. The Academic Senate
FAQ 2 – What requirements/learning objectives change?

None
FAQ 3 – What forms get new check boxes?

None
FAQ 4 – Won’t this add work to all faculty members?

No, the only stakeholders this policy requires work from are:
1. ASSC Members
2. Miles Clark
These individuals are willing to do the work.
FAQ 5 – Doesn’t reviewing the whole catalog mean too much work for the ASSC?

No. The 2012 GE Course review shows the process doesn’t consume much time, primarily because <10% of courses teach the SLOs. assuming a similar or smaller fraction of catalog courses teach sustainability as GE courses.
RESOLVED: That all recommendations regarding which courses to list on SUSCAT be placed on the Academic Senate’s consent agenda.
University Learning Objectives

All students who complete an undergraduate or graduate program at Cal Poly should be able to:

- Think critically and creatively
- Communicate effectively
- Demonstrate expertise in a scholarly discipline and understand that discipline in relation to the larger world of the arts, sciences, and technology
- Work productively as individuals and in groups
- Use their knowledge and skills to make a positive contribution to society
- Make reasoned decisions based on an understanding of ethics, a respect for diversity, and an awareness of issues related to sustainability
- Engage in lifelong learning

*Academic Senate Resolution 651-07, approved by President Baker February 22, 2007*

http://www.academicprograms.calpoly.edu/academicpolicies/university_lo.html
http://ulo.calpoly.edu/
Diversity Learning Objectives

All Students who complete an undergraduate or graduate program at Cal Poly should be able to make reasoned decisions based on a respect and appreciation for diversity as defined in the Cal Poly Statement on Diversity, which is included in the catalog. They should be able to:

1. Demonstrate an understanding of relationships between diversity, inequality, and social, economic, and political power both in the United States and globally.
2. Demonstrate knowledge of contributions made by individuals from diverse and/or underrepresented groups to our local, national, and global communities.
3. Consider perspectives of diverse groups when making decisions.
4. Function as members of society and as professionals with people who have ideas, beliefs, attitudes, and behaviors that are different from their own.

-Academic Senate Resolution 663-08, approved by President Baker March 24, 2008

http://www.academicprograms.calpoly.edu/academicpolicies/diversity_lo.html
http://ulo.calpoly.edu/
Sustainability Learning Objectives

Cal Poly defines sustainability as the ability of the natural and social systems to survive and thrive together to meet current and future needs. In order to consider sustainability when making reasoned decisions, all graduating students should be able to:

- Define and apply sustainability principles within their academic programs
- Explain how natural, economic, and social systems interact to foster or prevent sustainability
- Analyze and explain local, national, and global sustainability using a multidisciplinary approach
- Consider sustainability principles while developing personal and professional values

*Academic Senate Resolution 688-09, approved by President Baker June 22, 2009*
RESOLUTION ON SUSTAINABILITY LEARNING OBJECTIVES

WHEREAS, On April 23 2004, the University signed the Talloires Declaration that committed Cal Poly to a ten-point action plan to implement sustainability; and

WHEREAS, The University Mission Statement concludes, “As an academic community, Cal Poly values free inquiry, cultural and intellectual diversity, mutual respect, civic engagement, and social and environmental responsibility;” and

WHEREAS, One of the seven University Learning Objectives states that all Cal Poly graduates shall “Make reasoned decisions based on an understanding of ethics, a respect for diversity, and an awareness of issues related to sustainability;” and

WHEREAS, The current WASC Reaccreditation self-study process has included sustainability as one of two crosscutting issues; and

Adopted: June 2 2009
WHEREAS, The 2007 Institutional Proposal for Reaffirmation of WASC Accreditation states that the University Learning Objectives will “continue to be a guide for both accountability and, most importantly, improvement of our educational effectiveness;” and

WHEREAS, Cal Poly’s 2009 Strategic Plan draft includes “Lead in Sustainability: Cal Poly will lead in sustainability through the educational preparation of our graduates, the research and scholarly contributions of our faculty, and the practices used throughout the University,” as one of seven primary strategic goals and identifies the need to create sustainability learning objectives; and

WHEREAS, The CSU Commitment to Sustainability considers “CSU’s best institutional practices, as well as its hallmark strengths – teaching, applied research, and community service – advocate for a special role for the CSU in sustaining the continued economic and ecological viability of the state;” and

WHEREAS, California Assembly Bill 32, the “Global Warming Solutions Act of 2006” establishes requirements to reduce greenhouse gas emissions in California that will require sweeping changes to California’s economy and society, and creates a critical need for polytechnic graduates well-versed in sustainability:

WHEREAS, The Academic Senate Sustainability Committee has been charged with the task to develop sustainability learning objectives, which they have done with input from various stakeholders; therefore be it

RESOLVED: That the Sustainability Learning Objectives shall be considered an addendum to the University Learning Objectives; and be it further

RESOLVED: That the Academic Senate recommend the University adopt the following Sustainability Learning Objectives as written.

Resources


