Closing the Loop template  Please see resources at the Academic Planning website http://air.sfsu.edu/assessment/resources

Department _______ Computer Science ________________________

Department Contact _______ Prof. Bill Hsu, Chair ________________________

College __ COSE ________________________________

Please list your program learning goals.
Our learning goals are listed on our WWW site http://cs.sfsu.edu/prospective-students/mission-objectives

Learning objectives for CS Department BS program are below:

1. Students will be able to design, develop, document, and test software using current techniques.
2. Students will understand the fundamentals of computer architecture and computing theory
3. Students will be able to solve problems working in group settings.
4. Students will demonstrate the ability to give presentations and write technical reports.

What assessment finding(s) is the department addressing?

In last 2 years we specifically focused on the learning objectives below (# 1 and # 3 from the list above)

Students will be able to design, develop, document, and test software using current techniques.

Students will be able to solve problems working in group settings

This was motivated by identification of gaps in student knowledge as reported by faculty teaching our Software Engineering capstone course CSC 648, and the Programming Language Design course CSC 600. Similar deficiencies were pointed out by other faculty. Again, we find our high level learning objectives to be adequate, but that the curriculum needs to be modified to better address them.

Specific findings indicating gaps in the expected student knowledge necessary to satisfy above objectives were
1. Student programming skills need to be strengthened (irrespective of programming language)
2. Student system and UNIX skills are not adequate
3. Many students, due to our curriculum, can graduate without building a simple three-tier web application, (our web technologies class is an elective, not mandatory).

What was the process through which faculty considered a response to those findings? A department meeting? A special meeting about assessment? An end of the semester or academic year retreat? A department assessment or curriculum committee?

In fact, we applied all the methods mentioned above, following our standard policy of addressing these issues:
- Gaps were identified by instructors of CSC 648, and confirmed by several other faculty, especially faculty teaching CSC 600. This was brought up at our regular bi-monthly CS department meetings.
- A committee (including the CS chair) was formed to propose specific solutions e.g. curriculum changes
- Specific solutions were discussed at regular faculty meetings. Our Spring 2016 offsite meeting (January 2016) was devoted to specific curriculum change plans. Our envisioned solution is based on removing the required BIOL 100 course and replacing it with new 300-level CS course which would close the perceived gaps above.
- The CS Chair and CS Associate chair are initiating the paperwork to approve these changes.

What changes have you made or are you seeking to make in order to address the findings?

In summary, our proposed changes are:

- Remove mandatory BIOL 100 course (which is double-counted as GE), and use those units for a 300-level CS course to cover web technologies
- The CSC 412 lab course will be revised to provide more hands-on programming and Unix development

We have discussed our proposal with the Dean of Undergraduate Studies. Details will be discussed and finalized at an upcoming faculty off-site meeting.
What assessment activities do you plan to undertake next academic year? Is there a particular program learning goal that you would like to assess? Are there other assessment findings that you'd like to address? In light of your assessment work, changes in the field, or other influences, do you want to take the opportunity to revise the program goals next year? Will you move on to assess a different learning goal?

Our planned assessment activities after we implement curricular changes intended on closing specific gaps in student knowledge (as identified above) can be summarized in the following table, and will start after the updated curriculum is approved.

<table>
<thead>
<tr>
<th>Learning objective to be assessed</th>
<th>Class used for assessment</th>
<th>Assessment method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student programming skills need to be strengthened (irrespective of programming language)</td>
<td>CSC 600</td>
<td>CSC 600: specific assignments</td>
</tr>
<tr>
<td></td>
<td>CSC 648</td>
<td>CSC 648: review of student team project code</td>
</tr>
<tr>
<td>Student system and UNIX skills are not adequate</td>
<td>CSC 648</td>
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In addition to above assessments focused on current perceived gaps in student knowledge, we will continue evaluate the ability of students to collaborate in teams; this is an essential component of CSC 648.

We believe that our high level program goals are well defined and agnostic to technology changes, but we will continue to review specific needs that may require
curricular or class redesign. Note that changes to our curriculum requiring formal approval are ongoing.

Once the curriculum is changed, we will revisit our assessments to measure whether the changes helped address the gaps.