Annual Assessment Report to the College 2012-13

College: ___Science and Math_____

Department: __Biology_____

Program: ___BS and BA_____

Note: Please submit report to your department chair or program coordinator, the assessment office and to the Associate Dean of your College by September 28, 2012. You may submit a separate report for each program which conducted assessment activities.

Liaison: _Virginia Oberholzer Vandergon_____

1. **Overview of Annual Assessment Project(s) (optional)**

1a. **Assessment Process Overview:** Provide a brief overview of the assessment plan and process this year.
The assessment process was overseen by the department assessment committee which is composed of five individuals including the Department liaison each representing an area in the department. Assessment results were gathered from the Biology core courses Biol106, 107, 322, 360 and 380. In addition results were also gathered from several other 300, 400 and 500 level courses. (see attached charts)

2. **Assessment Buy-In**

2. Describe how your chair and faculty were involved in assessment related activities. Did department meetings include discussion of student learning assessment in a manner that included the department faculty as a whole?
The chair looked over the data of this report and we will report this out to the department in a department meeting soon (Fall of 2013). Last year in Fall of 2012 we looked at the data from 2011-12 and discussed where are students are and where we wanted to see them. Currently, we are happy with our SLO's but not with the assessment questions. We have re-established our core curriculum groups who will look at the curriculum and assessment questions for each area within the core courses. Another benefit to doing this will be that designed questions could be asked longitudinally i.e. in a 100 level course and then again in a 300 level course. We also hope to have more buy-in from faculty (there are many new faculty in our department who were not originally involved in designing these questions) on performing the assessment in a valid way (see below for problems).

3. Student Learning Outcome Assessment Project: Answer questions according to the individual SLO assessed this year. If you assessed an additional SLO, report in the next chart below.

3a. Which Student Learning Outcome was measured this year?
SLO 1, Students can demonstrate knowledge of: a) the structure and metabolism of cells, b) the transmission and expression of genetic information, and c) the immediate and long term

(evolutionary) consequences of interactions between organisms and their environment.

3b. Does this learning outcome align with one of the following University Fundamental Learning Competencies? (check any which apply)

Critical Thinking_____ _____
Oral Communication___ _____
Written Communication__ _____
Quantitative Literacy____ _____
Information Literacy_____ _____
Other (which?)_____Content Knowledge_____

3c. Does this learning outcome align with University's commitment to supporting diversity through the cultivation and exchange of a wide variety of ideas and points of view? In what ways did the assessed SLO incorporate diverse perspectives related to race, ethnic/cultural identity/cultural orientations, religion, sexual orientation, gender/gender identity, disability, socio-economic status, veteran status, national origin, age, language, and employment rank?

This SLO is measuring basic knowledge in the life sciences. Students are provided many tools and resources which will help them gain this knowledge. This includes extended time on exams, interpreters, tutors etc.

3d. What direct and indirect instrument(s) were used to measure this SLO?

Multiple choice questions were embedded within the finals or given as a separate assessment on Moodle in both lower division and upper division core courses, data results are presented in attached charts.

3e. Describe the assessment design methodology: For example, was this SLO assessed longitudinally (same students at different points) or was a cross-sectional comparison used (comparing freshmen with seniors)? If so, describe the assessment points used.

We are beginning to gather this data longitudinally keeping track of students by id numbers so that their performance can be compared from their introductory courses 106/107 to their 300 level course responses. Unfortunately, getting all faculty on board to present the data in this way has been difficult. Our plan is to convince the faculty of the value of this type of data collection. Also, as will be mentioned below a re-write of the questions will be done this year.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the evidence was analyzed and highlight important findings from collected evidence. **SEE ATTACHED CHARTS**

For Biol106 (a lower division majors course) the average score on the assessment was 61.6, we found that students did about the same as last year in Biol106 (ave. score was 59.66 in 11-12). The biggest problem we encountered was buy-in from all faculty to give the assessment. Because of this the Chair of the Department has stepped in and is working on this for this year (13-14) so that **ALL** 106 students are assessed.

In Biol107 (the other half of the lower division majors course) the average was 56.4 which was quite a bit lower than last year's 67.1 despite the institution of Peer Learning Facilitators (PLF's(these were also available to the 106 students)). Originally the average for 107 was 65% but in looking at the data more closely it was discovered that one faculty member did the assessment as a homework Moodle quiz with unlimited time. When looking at the class results time stamps indicated that students took almost an hour to take a 10 question assessment and ultimately scored

on average 90%. The committee felt that this data could not be used as it did not adequately assess the knowledge base of these students. This prompted a more closer look at last year's data and it was discovered that a similar thing happened in one of the sections of Biol107 in the Fall of 2011. Most faculty embed their questions within their final this eliminating this bias. We are now going to be more insistent that faculty either embed the questions or ask these questions on a hardcopy in-class assessment for this coming year so we can get a more accurate reading of the knowledge base of these students.

In the upper division core course 322, 360 and 380 the averages were 49.8, 74.8 and 71.2% respectively. The assessments were again multiple choice questions embedded in the finals of these courses. The averages last year(2011-12) were 61.1, 76.8 and 73.1% respectively. We did institute the C or better in these courses (the students had to have a C or better in 106/107 or equivalent in a course if taken elsewhere) but though many faculty felt that students were doing better (antidotal) we did not see any increases and in fact saw a decline in Biol322. Also, PLF's were offered in some 300 level courses.

Last year we began to relook at question within the curriculum groups (see above) but since all questions will be relooked at no changes were instituted, this is going to happen this year.

3g. Use of Assessment Results of this SLO: Were assessment results from previous years or from this year used to make program changes in this reporting year?
Type of change:
changes to course content/topics covered_____
course sequence_____
addition/deletion of courses in program_____
describe other academic programmatic changes_____
student support services_____**PLF**_____
revisions to program SLOs_____
assessment instruments_____ _____
describe other assessment plan changes_____
Have any previous changes led to documented improvements in student learning? (describe)

Some programs assess multiple SLOs each year. If your program assessed an additional SLO, report the process for that individual SLO below. If you need additional SLO charts, please cut & paste the empty chart as many times as needed. If you did NOT assess another SLO, skip this section.

3. Student Learning Outcome Assessment Project: Answer questions according to the individual SLO assessed this year. If you assessed an additional SLO, report in the next chart below.

3a. Which Student Learning Outcome was measured this year?

SLO2, Students can demonstrate specialized knowledge in one or more disciplines of Biology.

3b. Does this learning outcome align with one of the following University Fundamental Learning Competencies? (check any which apply)

Critical Thinking____ **SLO2**_____
Oral Communication___ _____
Written Communication__ _____
Quantitative Literacy____ _____
Information Literacy_____ _____
Other (which?)_____

3c. Does this learning outcome align with University's commitment to supporting diversity through the cultivation and exchange of a wide variety of ideas and points of view? In what ways did the assessed SLO incorporate diverse perspectives related to race, ethnic/cultural identity/cultural orientations, religion, sexual orientation, gender/gender identity, disability, socio-economic status, veteran status, national origin, age, language, and employment rank?
This SLO involves critical thinking, problem solving and specialized knowledge. Students are provided many tools and resources which will help them gain this knowledge. This includes extended time on exams, interpreters, tutors etc.

3d. What direct and indirect instrument(s) were used to measure this SLO?
Multiple choice questions embedded in the finals of upper division courses.

3e. Describe the assessment design methodology: For example, was this SLO assessed longitudinally (same students at different points) or was a cross-sectional comparison used (comparing freshmen with seniors)? If so, describe the assessment points used.
Currently, SLO 2 is not measured in 106/107 courses but it is intended to be measured over the years so we are hopeful that we can collect consistent data and determine if there are any differences over time in the outcomes of the assessments.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the evidence was analyzed and highlight important findings from collected evidence. **SEE ATTACHED CHARTS**
In the upper division core course 322, and 360 the averages were 49.8 and 74.8% respectively. We were hoping to see increases in the averages for these courses since the C or better grade in Biol106/107 was instituted. This didn't happen so the Core Curriculum committees are going to have to assess whether 1. The questions are addressing the content knowledge we want our students to have and 2. Whether we are seeing a correlation with these assessment averages and the grades these students are receiving in the course.

3g. Use of Assessment Results of this SLO: Were assessment results from previous years or from this year used to make program changes in this reporting year?
Type of change:
changes to course content/topics covered_____
course sequence_____
addition/deletion of courses in program_____
describe other academic programmatic changes_____
student support services_____ **SI**_____
revisions to program SLOs_____
assessment instruments_____ _____
describe other assessment plan changes_____
Have any previous changes led to documented improvements in student learning? (describe)

3. Student Learning Outcome Assessment Project: Answer questions according to the individual SLO assessed this year. If you assessed an additional SLO, report in the next chart below.

3a. Which Student Learning Outcome was measured this year?

SLO 3, Students are aware of and/or capable of using new and existing methods and technologies in these disciplines.

3b. Does this learning outcome align with one of the following University Fundamental Learning Competencies? (check any which apply)

Critical Thinking_____ _____
Oral Communication__ _____
Written Communication__ _____
Quantitative Literacy____SLO3 _____
Information Literacy_____
Other (which?)_____

3c. Does this learning outcome align with University's commitment to supporting diversity through the cultivation and exchange of a wide variety of ideas and points of view? In what ways did the assessed SLO incorporate diverse perspectives related to race, ethnic/cultural identity/cultural orientations, religion, sexual orientation, gender/gender identity, disability, socio-economic status, veteran status, national origin, age, language, and employment rank?

This SLO assess students' ability to perform experiments and analyze data. The Biology department accommodates all learner types and students with disabilities. In every lab classroom there are accessible lab benches, all equipment and supplies are provided along with demonstrations on how to use everything. Diverse perspectives are allowed within the realm of science. The underlying definition of science is evidence based, therefore students can discuss their ideas and perspectives and provide the scientific evidence to support them.

3d. What direct and indirect instrument(s) were used to measure this SLO?

Multiple choice questions embedded in the finals of upper division courses.

3e. Describe the assessment design methodology: For example, was this SLO assessed longitudinally (same students at different points) or was a cross-sectional comparison used (comparing freshmen with seniors)? If so, describe the assessment points used.

See 3d for SLO2 and we also are going to try and measure SLO3 in some of the laboratory courses that are attached to the major. Though we proposed that last year the core curriculum groups did come to consensus on what the content needs to be in these course but have yet to re-evaluate the assessment questions and design lab course specific assessments. Some faculty did share that students on average were testing on lab practical exams at about 76% but these exams are not consistent across lab courses.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the evidence was analyzed and highlight important findings from collected evidence. **SEE ATTACHED CHARTS**

In the upper division core course 360 and 380 the averages were 74.8 and 71.2% respectively. As stated above we would like to assess SLO3 in laboratory courses. The lab courses have evolved over the years to accommodate new techniques and tools in Biology. It would be beneficial to assess

these as they are necessary skills for students that go on to graduate degrees or out into the biotech world.

3g. Use of Assessment Results of this SLO: Were assessment results from previous years or from this year used to make program changes in this reporting year?
Type of change:
changes to course content/topics covered_____
course sequence_____
addition/deletion of courses in program_____
describe other academic programmatic changes_____
student support services_____**SI**_____
revisions to program SLOs_____
assessment instruments_____ _____
describe other assessment plan changes_____
Have any previous changes led to documented improvements in student learning? (describe)

3. Student Learning Outcome Assessment Project: Answer questions according to the individual SLO assessed this year. If you assessed an additional SLO, report in the next chart below.

3a. Which Student Learning Outcome was measured this year?
SLO 4, Students demonstrate facility in applying the methods of scientific inquiry, including observation, hypothesis testing, data collection, and analysis.

3b. Does this learning outcome align with one of the following University Fundamental Learning Competencies? (check any which apply)

Critical Thinking_____ _____
Oral Communication___ _____
Written Communication_ _____
Quantitative Literacy____SLO 4_____
Information Literacy_____ _____
Other (which?)_____

3c. Does this learning outcome align with University's commitment to supporting diversity through the cultivation and exchange of a wide variety of ideas and points of view? In what ways did the assessed SLO incorporate diverse perspectives related to race, ethnic/cultural identity/cultural orientations, religion, sexual orientation, gender/gender identity, disability, socio-economic status, veteran status, national origin, age, language, and employment rank?
The nature of science and students' knowledge of how science works is what this SLO is focusing on, so human aspect of science includes embracing all ideas no matter where they come from and then designing and testing these ideas. Part of the progression of science is the creativity of the individual scientists and the ability to test their ideas. Given that SLO4 certainly aligns with the University's commitment.

3d. What direct and indirect instrument(s) were used to measure this SLO?
A few faculty embedded some multiple choice questions into in class assessments on scientific thinking.

3e. Describe the assessment design methodology: For example, was this SLO assessed longitudinally (same students at different points) or was a cross-sectional comparison used (comparing freshmen with seniors)? If so, describe the assessment points used.

This SLO had such a small sample size that it would be hard to make comparisons but the idea would be that more faculty assess in the lower and upper division course so that a longitudinal approach could be done on students' ways of thinking about the nature of science.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the evidence was analyzed and highlight important findings from collected evidence. **SEE ATTACHED CHARTS**

The average score was 69.3% but again the sample size was so small that not much can be concluded from this data.

3g. Use of Assessment Results of this SLO: Were assessment results from previous years or from this year used to make program changes in this reporting year?

Type of change:

changes to course content/topics covered_____

course sequence_____

addition/deletion of courses in program_____

describe other academic programmatic changes_____

student support services_____ _____

revisions to program SLOs_____

assessment instruments_____**Added assessments for SLO 4 need to get more buy-in**____

describe other assessment plan changes_____

Have any previous changes led to documented improvements in student learning? (describe)

The committee in Biology made available a question bank of scientific process/method questions and asked several classes to evaluate their return rate was low.

3. Student Learning Outcome Assessment Project: Answer questions according to the individual SLO assessed this year. If you assessed an additional SLO, report in the next chart below.

3a. Which Student Learning Outcome was measured this year?

SLO 5, Ability to engage the biology literature and to communicate scientific information verbally and/or in writing

3b. Does this learning outcome align with one of the following University Fundamental Learning Competencies? (check any which apply)

Critical Thinking_____ _____

Oral Communication___**SLO5**_____

Written Communication__**SLO5**_____

Quantitative Literacy____ _____

Information Literacy_____**SLO5**_____

Other (which?)_____

3c. Does this learning outcome align with University's commitment to supporting diversity through

the cultivation and exchange of a wide variety of ideas and points of view? In what ways did the assessed SLO incorporate diverse perspectives related to race, ethnic/cultural identity/cultural orientations, religion, sexual orientation, gender/gender identity, disability, socio-economic status, veteran status, national origin, age, language, and employment rank?

This more than any other SLO allows for diversity and different perspectives to be addressed. Again, the point of science is to question and look for evidence to support answers. This can be done in a variety of ways and this SLO allows for these ideas to be formulated and presented.

3d. What direct and indirect instrument(s) were used to measure this SLO?

SLO 5 was assessed using a standard rubric developed in the department to measure criteria for these reports/projects. These reports, both Oral and written were part of the course assessments given already so faculty were asked to fill-in a template rubric.

3e. Describe the assessment design methodology: For example, was this SLO assessed longitudinally (same students at different points) or was a cross-sectional comparison used (comparing freshmen with seniors)? If so, describe the assessment points used.

See above, currently we do not assess this SLO in lower division courses but it is something the committee could visit in the future.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the evidence was analyzed and highlight important findings from collected evidence. **SEE ATTACHED CHARTS**

Sample size too small to draw any conclusions. The committee is hopeful that more faculty will share their students' results.

3g. Use of Assessment Results of this SLO: Were assessment results from previous years or from this year used to make program changes in this reporting year?

Type of change:

changes to course content/topics covered_____

course sequence_____

addition/deletion of courses in program_____

describe other academic programmatic changes_____

student support services_____ _____

revisions to program SLOs_____

assessment instruments_____ _____

describe other assessment plan changes_____

Have any previous changes led to documented improvements in student learning? (describe)

4. Assessment of Previous Changes: Present documentation that demonstrates how the previous changes in the program resulted in improved student learning.

Peer learning facilitators were introduced for the 300 level courses this past academic year. Also, the requirement of a C or better in Biol106 and 107 (or an equivalent course from another institute) was instituted. Though we did not see the gains we had hoped for in these upper division courses we are hopeful that as we better train the PLF's and we adjust our assessment questions to better measure the content in these courses longitudinally we will see gains.

We are currently looking at our curriculum for the core courses and then we will be adjusting our assessments to better mirror what is being taught in these courses. Though we were a bit disappointed in the scores we feel that lessons were learned and discussion was had by the faculty on better ways of teaching.

On another note, this academic year 2013-14 we are instituting iPad courses and have begun using them in the 106 and 107 courses. We predict that the first year of use will bring about a dip in the assessment averages as students and faculty grapple with the best use of technology tools but we also predict that there will be a deeper learning of the topics that get covered. As the core curriculum teams look at the content they can adjust the types of assessment tools we are currently using. We believe that in the long run our students will have a much stronger foundation of critical thinking, problem solving, global perspectives, information literacy and ways of communicating because of the change in pedagogy that will occur with the introduction of new tools for learning.

5. Changes to SLOs? Please attach an updated course alignment matrix if any changes were made. (Refer to the Curriculum Alignment Matrix Template, http://www.csun.edu/assessment/forms_guides.html.)

No

6. Assessment Plan: Evaluate the effectiveness of your 5 year assessment plan. How well did it inform and guide your assessment work this academic year? What process is used to develop/update the 5 year assessment plan? Please attach an updated 5 year assessment plan for 2013-2018. (Refer to Five Year Planning Template, plan B or C, http://www.csun.edu/assessment/forms_guides.html.)

Our old 5yr plan included guiding our students through the Biology programs in a more timely manner. We feel that by instituting the C or better in the 106/107 course our students are better prepared for the 300 level courses and will be on track to graduate as well as finish in normative time (4 years). We have also provided more assistance to our student thorough the institution of the PLF and SI sections in both the 100 and 300 level core courses.

With the integration of hybrid and iPad courses we will have to redo our 5 year plan. We will upload a new 5 yr plan at the beginning of next semester. This is something we feel that the core curriculum teams should be involved in outlining.

7. Has someone in your program completed, submitted or published a manuscript which uses or describes assessment activities in your program? Please provide citation or discuss.

No not at this time though there are plans to assess and compare iPad courses to non-iPad courses and that would certainly be publishable.

8. **Other information, assessment or reflective activities or processes not captured above.**

As stated above we need to change some of the ways that assessment is being done within individual classrooms. One way that the committee hopes to see this is through a better description to the faculty as to what assessment is and is not. Many faculty seem to feel threatened because they feel this will be used against them in evaluating their teaching. If we can get faculty to understand that assessments are not necessarily designed to have students get 100% and that instead they are a way to measure growth and possibly weakness (not in the individual instructor but rather the program or course curriculum) we hope to have not only more buy-in but healthy discussions on what we can learn from assessment. We also believe that restructuring some of the outdated questions (some of these are over 7 years old) we can get more involvement from the newer faculty. We believe that some faculty are seeing the value of these assessments and that they will be a catalyst to getting others on board.