

2012-2013 Annual Program Assessment Report

Please submit report to your department chair or program coordinator, the Associate Dean of your College and the assessment office by Monday, September 30, 2013. You may submit a separate report for each program which conducted assessment activities.

College: Engineering and Computer Science

Department: Mechanical Engineering

Program: Mechanical Engineering

Assessment liaison: Dr. Robert Ryan

1. Overview of Annual Assessment Project(s). Provide a brief overview of this year's assessment plan and process.

This year was devoted to the ABET re-accreditation process for our program. Learning outcomes were assigned to specific faculty members. Assessment data collected over the past five years was assembled and analyzed to evaluate the attainment of each outcome. Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work. A score in percent was produced for each outcome by averaging the results from each of the various assessment instruments. These percent scores are reported below for each outcome.

A Self Study Report was written and sent to ABET in June to begin the formal review process. The process will culminate in a site visit on October 6 to 8, 2013.

2. Assessment Buy-In. 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 was actively involved, along with the assessment liaison, with monitoring the progress of assessment activities in the department. The status of the assessment process was discussed at every department meeting during the past academic year. Several status reports were given by the assessment liaison during department meetings to help keep the process on track.

During Spring 2013, each faculty member presented their reviews for their assigned outcomes. The results of each review were discussed, and subsequently included in the Self Study Report.

The chair and assessment liaison were responsible for writing the Self Study Report.

- 3. Student Learning Outcome Assessment Project. Answer items a-f for each SLO assessed this year. If you assessed an additional SLO, copy and paste items a-f below, BEFORE you answer them here, to provide additional reporting space.**

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

- a) an ability to apply knowledge of mathematics, science, and engineering

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Quantitative Literacy

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 80%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

b) an ability to design and conduct experiments, as well as to analyze and interpret data

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Quantitative Literacy

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 71%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

- c) an ability to design a mechanical/thermal system, component, or process to meet desired needs

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Quantitative Literacy
- Information Literacy

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 72%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

d) an ability to function on multidisciplinary teams

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Oral Communication
- Written Communication
- Quantitative Literacy

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 76%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

- e) an ability to identify, formulate, and solve engineering problems

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 75%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

f) an understanding of professional and ethical responsibility

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 74%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

g) an ability to communicate effectively

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Oral Communication
- Written Communication

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 71%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

h) the broad education necessary to understand the impact of engineering solutions in a global and societal context

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Information Literacy

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 outcome potentially relates to diverse perspectives of different cultures, but our current assessment does not address this relationship.

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 72%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

- i) a recognition of the need for, and an ability to engage in lifelong learning

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Quantitative Literacy
- Information Literacy

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 82%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

- j) a knowledge of contemporary issues

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Quantitative Literacy
- Information Literacy

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 outcome potentially relates to diverse perspectives of different sectors of society, but our current assessment does not address this relationship.

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 70%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

k) an ability to use the techniques, skills and modern engineering tools necessary for engineering practice

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Quantitative Literacy
- Information Literacy

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 73%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

- l) a knowledge of chemistry and calculus-based physics with depth in at least one

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Quantitative Literacy

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 81%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

m) applied advanced mathematics through multivariate calculus and differential equations

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Quantitative Literacy

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 63%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

n) familiarity in statistics and linear algebra

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Quantitative Literacy

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 65%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

o) ability to work professionally in both thermal and mechanical areas

3b. Does this learning outcome align with one or more of the university's Big 5 Competencies? (Delete any which do not apply)

- Critical Thinking
- Quantitative Literacy

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?

N/A

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

Assessment instruments included individual course evaluations by faculty, surveys conducted by Education Benchmarking, Inc. (EBI), evaluations of student presentations, senior exit interviews and surveys, an alumni survey, and faculty evaluation of samples of student course work.

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.

Longitudinal assessment or cross-sectional comparisons were not used. Some of the assessment instruments were used on an annual basis so trends with time could be observed. Examples include the EBI Senior Survey and senior exit interviews performed by the chair.

3f. Assessment Results & Analysis of this SLO: Provide a summary of how the results were analyzed and highlight findings from the collected evidence.

A score in percent was produced for this outcome by averaging the results from each of the various assessment instruments. These percent score for this outcome was 73%. A list of recommendations, based on the assessment of all the SLO's, was produced for consideration at a department retreat in late October. These recommendations are summarized at the end of this report.

3g. Use of Assessment Results of this SLO: Describe how assessment results were used to improve student learning. Were assessment results from previous years or from this year used to make program changes in this reporting year? (Possible changes include: changes to course content/topics covered, changes to course sequence, additions/deletions of courses in program, changes in pedagogy, changes to student advisement, changes to student support services, revisions to program SLOs, new or revised assessment instruments, other academic programmatic changes, and changes to the assessment plan.)

This year's focus was on the SLO assessment and preparation of the Self Study Report. There were no significant program changes implemented this academic year.

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

As noted above, there were no significant program changes in the past year. Our program did implement some major changes in our design courses in Fall of 2009. Our current assessment results (particularly indirect assessments like senior exit interviews) do show some improvement in student satisfaction with the instruction in the area of design, although continued direct assessment is required to provide proof on a more quantitative basis. Complete documentation of our current assessment results is available in Criterion 4 of our Self Study Report.

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.)

There are no changes in the alignment of courses and outcomes.

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 current five year plan was used to plan the timing and frequency of our assessment activities, such as the assessment of individual courses, collecting survey data, evaluating student presentations in the capstone course, and the analysis of the data on a program level. The timing of the assessment activities in our plan is driven by the requirements of our ABET assessment process. Since the ABET review is currently in its final stages, at this time we have made no changes to our five year plan. There are some changes for suggestions which have been raised in our Self Study Report (see Item #8). Depending on the results of the

ABET review, and our own internal review which will take place in a department retreat in late October, there may be some changes to the five year plan going forward. We plan to submit an updated five year plan at that time.

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.

None in the past year.

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

The following is a list of recommendations that evolved from the assessment process and which were stated in the Self Study Report. At this time there has been no effort to prioritize these recommendations. Priorities will be set by the results of the ABET review and discussions at the department retreat. It is already clear that there should be a focus on outcomes which scored less than 70% (outcomes m and n).

The recommendations provided by the department faculty are divided into three different categories: i) those related directly to changes to courses or curriculum; ii) those related to activities outside the classroom; and iii) those related to the assessment process.

i) Changes to Courses/Curriculum

- Review the content of ME 335/L, ME 435, and 435L to check for gaps or redundancies
- Consider adding ME 335/L as a prerequisite for ME 435 and 435L
- Improve instruction in ME 335/L in the area of basic concepts related to probability distributions
- Place greater emphasis on proper interpretation of experimental results in ME 491
- Consider ways to apply probability and statistics in senior courses
- Expand opportunities for using MATLAB, LabVIEW, and VBA in senior courses
- Integrate more design experiences into senior elective courses
- Continue expansion of senior design topics into areas that incorporate societal and environmental issues
- Provide opportunities in the program (outside of senior design) to create designs which integrate mechanical and thermal concepts
- Integration of outcome (f) in ME 482 and ME483

- Provide clear definition of ethics educational components discussed in class and embed in assignments
- Implement strategies for improving technical writing instruction
- Improve quality of feedback given to students on graded written reports (perhaps through use of a uniform rubric)
- Improve connection between topics in math prerequisite courses and applications in upper division engineering courses

ii) Activities Outside the Classroom

- Offer workshops to students related to teamwork skills
- Continue offering ethics workshop each semester, perhaps with a stronger assessment component
- Continue to encourage student participation in research, and professional societies such as ASME and SHPE
- Encourage ME faculty to become more proficient with different software packages
- Offer workshops and host competitions on software skills to better prepare students for senior design projects
- ME faculty should be encouraged to work more closely with faculty teaching prerequisite courses (both inside and outside the Department).

iii) Changes to Assessment Processes

- Outcome (l) is effectively captured by the assessment of outcome (a). Separate analysis of this outcome provides no useful program benefit, so it should be deleted as an outcome in future assessments
- Consider deleting outcome (o) and absorb its assessment into outcome (c), since there is substantial overlap
- Fundamental courses should be assessed more frequently
- Assessment processes should be adapted to obtain a better measure of the retention of prerequisite material
- Continue to administer senior design preparation survey on an annual basis
- Continue focused assessment on design skills to assess ongoing impact of program changes to the design stem
- Revise rubrics for presentation and report evaluations to incorporate outcome (h) more effectively
- Map the performance criteria for lifelong learning into more courses above freshman level by improving communication with instructors regarding the criteria and their specific benchmarks. For example, the skill of doing literature review and gathering information to make engineering solutions is emphasized in many courses, but this outcome was not mapped to these course evaluations.
- Use embedded questions on exams in upper division engineering courses to assess specific math skills.
- Assess the impact of taking ME 280 (a new version of the differential equations course) versus Math 280.