**Major Assessment Report Template**

Please either download this document and provide a response to each question in the appropriate section or cut and paste all six questions into a word document and provide a response for each one. E-mail your assessment report(s) to the Director of Assessment, Dr. Melissa Jordine (mjordine@csufresno.edu). Please complete a separate report for each B.A/B.S. and M.A/M.S. program offered by the department.

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| **Department and Degree: Electrical and Computer Engineering****Assessment Coordinator: Dr. Youngwook Kim**1. **What learning outcome(s) did you assess this year?** List all program outcomes you assessed (if you assessed an outcome not listed on your department SOAP please explain). Do not describe the measures or benchmarks in this section Also please only describe Major assessment activities in this report.

Graduates of the Electrical/Computer Engineering program are expected to achieve the following student learning outcomes.1. "an ability to apply knowledge of mathematics, science, and engineering"
2. "an ability to design and conduct experiments, as well as to analyze and interpret data"
3. "an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability"
4. "an ability to function on multi-disciplinary teams"
5. "an ability to identify, formulate, and solve engineering problems"
6. "an understanding of professional and ethical responsibility"
7. "an ability to communicate effectively"
8. "the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context"
9. "a recognition of the need for, and an ability to engage in life-long learning"
10. "a knowledge of contemporary issues"
11. "an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice"
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| 1. **What assignment or survey did you use to assess the outcomes and what method (criteria or rubric) did you use to evaluate the assignment?** If the assignment (activity, survey, etc.) does not correspond to the activities indicated in the timeline on the SOAP, please indicate why. Please clearly indicate how the assignment/survey is able to measure a specific outcome. If after evaluating the assessment you concluded that the measure was not clearly aligned or did not adequately measure the outcome please discuss this in your report. Please include the benchmark or standard for student performance in your assessment report (if it is stated in your SOAP then this information can just be copied into the report). An example of an expectation or standard would be “On outcome 2.3 we expected at least 80% of students to achieve a score of 3 or above on the rubric.”

In the AY2017-AY2018, we have evaluated SLO a-k using diverse assessment tools. They include exit survey, course assessment, student faculty forum alumni survey, and lab report. It is noted that we did not use embedded questions because it has been used two times already in a 6-year ABET cycle. 1. **Exit Surveys**

Exit surveys captured information from all SLOs. Surveys were conducted in Fall 2017 and Spring 2018; 18 EE students and 15 CompE graduating seniors completed the survey. A compilation of the data is included in the following bar charts. EE students

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SLO | *a* | *b* | *c* | *D* | *e* | *f* | *g* | *h* | *i* | *j* | *k* |
| Average | 4.46 | 4.21 | 4.01 | 4.38 | 4.45 | 4.22 | 4.08 | 3.9 | 4.32 | 3.58 | 3.83 |

CompE students

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SLO | *a* | *b* | *c* | *D* | *e* | *f* | *g* | *h* | *i* | *j* | *k* |
| Average | 4.38 | 4 | 3.92 | 4.28 | 4.46 | 4.20 | 4.20 | 3.86 | 4.19 | 3.64 | 4.27 |

1. **Student-Faculty Forum**

In the annual student-faculty forum held in Spring 2018, a SLO survey was conducted as a follow-up of the discussions and identified issues; total 26 students, 13 EE and 13 CE students completed the survey. In the survey, students outcomes are break downed to four levels; none, deficiency, weakness, and concern. To quantify the result, we assigned scores to the four levels shown in the following table. Then, we provide a chart that provide a data summary.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SLO Breakdowns | None | Deficiency | Weakness | Concern |
| Score | 5 | 4 | 3 | 2 |

  *a b c d e f g h i j k* EE students

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SLO | *a* | *b* | *c* | *D* | *e* | *f* | *g* | *h* | *i* | *j* | *k* |
| Average | 4.5 | 3.75 | 3.59 | 3.83 | 4.27 | 4.45 | 4 | 3.41 | 4.25 | 3.72 | 4.41 |

CompE students

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SLO | *a* | *b* | *c* | *D* | *e* | *f* | *g* | *h* | *i* | *j* | *k* |
| Average | 4.38 | 4.38 | 3.91 | 4.08 | 4.5 | 4.07 | 3.92 | 3.83 | 4.5 | 3.6 | 4.15 |

 The data shows that most of SLOs meet the department’s standard of 3.75. However, SLO-c, h, and j were lower than the department standard so they need attention.1. **Industry Advisory Council**

The ECE Industry Advisory Council meeting was held on Nov 3, 2017. In the meeting, IAC members intensively discussed the program educational objectives to check whether the mission statement of the ECE department is in line with mission statement of the University. One minor language change on the first program educational objective has been proposed to clarify the meaning. The IAC endorsed the proposed revision of the language. However, it should be noted that this change does not affect any prior endorsement by students and alumni because it is a minor language change. Previous Language: ‘Have grown technically and be productive in their respective workplaces’Revised Language: ‘Have grown technically to the level sufficient to be productive in their respective industry workplace’ 1. **Faculty Focus Group**

A weekly faculty meeting is held in the ECE department and assessment is a recurring agenda item. In AY2017-2018 the embedded question assessment plan has been a topic of multiple faculty meetings. Additionally, compiled assessment data is presented to faculty during the weekly faculty meetings and discussed how the SLOs that are under the department’s standard can be improved. In addition, SOAPs have been updated. 1. **Culminating Experience (Poster Session and Oral Presentations)\***

On the project day, the electrical and computer engineering students presented their culminating experience projects at a technical poster session (LCOE Projects Day). Senior EE and CompE students form interdisciplinary teams to work on year-long design projects and they present their works together. Total 22 projects were presented in the project day. Faculty members evaluated 30 projects and ICA members evaluated 15 projects. The summary of the data collected is as follows.

|  |  |  |
| --- | --- | --- |
| Oral and Written CommunicationSLO g | Clarity | 4.19 |
| Eye Contact | 4.26 |
| Express Ideas | 3.95 |
| Answer Questions | 4.26 |
| Poster Quality | 4.11 |
| **Average** | **4.15** |
|  |  |  |
| Technical ContentSLO e & k | Methodology | 4.07 |
| Engineering Tools | 4.14 |
| Creativity | 3.90 |
| Argument | 3.88 |
| Conclusions | 3.47 |
| Accomplishments | 3.88 |
| Engineering Skills | 4.14 |
| **Average** | **3.92** |
|  |  |  |

EE students

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SLO | *a* | *b* | *c* | *D* | *e* | *f* | *g* | *h* | *i* | *j* | *k* |
| Average | NA | 4.28 | 4.05 | 4.33 | 4.15 | NA | 3.88 | 4.1 | NA | 4.2 | 4.52 |

CompE students

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SLO | *a* | *b* | *c* | *D* | *e* | *f* | *g* | *h* | *i* | *j* | *k* |
| Average | NA | 4.53 | 4.05 | 4.33 | 4.15 | NA | 3.88 | 4.1 | NA | 4.2 | 4.52 |

Most of subcategories of SLOs showed that they satisfied the department standard of 3.75. The overall scores are acceptable. However, there should be efforts to enhance to improve significance of conclusions. The scores of the creativity has been identified low historically but it has been improved a little bit in this academic year.  |
| 1. **What did you discover from the data?** Discuss the student performance in relation to your standards or expectations. Be sure to clearly indicate how many students did (or did not) meet the standard for each outcome measured. Where possible, indicate the relative strengths and weaknesses in student performance on the outcome(s).

**SLO-a****Assessment Results Analysis (AY2017-2018):** The overall attainment score was 86.8% (4.34), which is above the 75% target level. All the attainment score met the desired target level. **Actions**: The attainment score met the desired target level. No further action was warranted.**SLO-b****Assessment Results Analysis (AY2017-2018):** The overall attainment score was 85.6% (4.28), which is well above the 75% target level. The results from all assessment tools show satisfactory results. Once again the result from the Student/Faculty Forum was slightly below the standard.**Action:** The attainment score met the desired target level. No further action was warranted.**SLO-c****Actions (AY2017-2018):** The overall attainment score was 79.2% (3.96), which is above the 75% target level. All assessed results except from the student/faculty forum showed that the evaluation is above the department standard. **Actions:** The attainment score met the desired target level. No further action was warranted.**SLO-d****Assessment Results Analysis (AY2017-2018):** The overall attainment score was 86.8% (4.34), which is above the 75% target level. The score are same as that of the previous year. It is noted here that the scores from all evaluation tools are above the department standard including Embedded Questions. **Actions:** The attainment score met the desired target level. No further action was warranted.**SLO-e****Assessment Results Analysis (AY2017-2018):** The overall attainment score was 84.8% (4.24), which is above the 75% target level. The scores from all tools were above the department standard of 3.75. **Actions:** The attainment score met the desired target level. No further action was warranted.**SLO-f****Assessment Results Analysis (AY2017-2018):** The overall attainment score was 89.4% (4.47), which is above the 75% target level. The scores from all tools were far above the department standard of 3.75. **Actions:** The attainment score met the desired target level. No further action was warranted.**SLO-g****Assessment Results Analysis (AY2017-2018):** The overall attainment score was 81.4% (4.07), which is above the 75% target level. The scores from all assessment tools except Lab Report were above the department standard of 3.75.  **Actions:** The attainment score met the desired target level. No further action was warranted. **SLO-h****Assessment Results Analysis (AY2017-2018):** The overall attainment score was 79.4% (3.83), which is slightly above the 75% target level. The score from Student/Faculty forum and Alumni Survey were below the department standard of 3.75. **Actions:** Even though scores from two assessment tool were below 3.75, the average satisfied the department standard. It is necessary to take a careful attention at results from the Student/Faculty forum and Alumni Survey in the future, but no further action was warranted at this point. **SLO-i****Assessment Results Analysis (AY2017-2018):** The overall attainment score was 85.4% (4.27), which is above the 75% target level. The score from all the assessment tools used were above the department standard of 3.75. **Actions:** The attainment score met the desired target level. No further action was warranted. **SLO-j****Assessment Results Analysis (AY2017-2018):** The overall attainment score was 79.4% (3.81), which is slightly above the 75% target level. The score from Exit Survey, Student/Faculty Forum, and Alumni Survey were below the department standard of 3.75. **Actions:** Even though the attainment score met the desired target level, the average score is close to the department standard. Therefore, it is necessary to monitor SO - j in the future.  **SLO-k****Assessment Results Analysis (AY2017-2018):** The overall attainment score was 87.4% (4.30), which is slightly above the 75% target level. The score from all the assessment tools used were above the department standard of 3.75.  **Actions:** The attainment score met the desired target level. No further action was warranted. |
| 1. **What changes did you make as a result of the data?** Describe how the information from the assessment activity was reviewed and what action was taken based on the analysis of the assessment data.

Based on the assessment of SLO a-k, No further action was warranted at this point. However, the ECE faculty have modified courses and developed new courses to improve our curriculum. 1. A new course of ECE81 has been added to the ECE curriculum to emphasize algorithmic design from an engineering perspective with a focus on engineering applications and problem solving. The ECE81 course is equivalent to CSCI 41 course.
2. A course improvement on embedded systems was done (ECE 178).
3. New elective course in cryptography which is offered as a topic course in Spring 2018 (ECE 191T). This course has been converted to a regular ECE elective course effective in Fall 2018 called ECE 156.
4. A new senior level elective course called ECE122L has been added to the ECE curriculum effective in Fall 2018. The use of Python programing in development of IoT is the core part of this lab course.
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| 1. **What assessment activities will you be conducting in the 2018-2019 AY?** List the outcomes and measures or assessment activities you will use to evaluate them. These activities should be the same as those indicated on your current SOAP timeline; if they are not please explain.

Based on the current SOAP, the ECE department will conduct the following assessment activity.  1. Exit Surveys
2. Embedded questions
3. Industry Advisory Council Meeting
4. Culminating Experience including Poster Sessions/Oral Presentations
5. Student-Faculty Forums
6. Faculty focus group

 In particular, we will include the assessment of the use of engineering standard in identified ECE courses and senior design course. We will design a new rubrics for senior design course.  |
| 1. **What progress have you made on items from your last program review action plan?** Please provide a brief description of progress made on each item listed in the action plan. If no progress has been made on an action item, simply state “no progress.”

**Action 1**: The faculty reviewed the assessment plan and confirmed that the current SOAP is a complete and strong. **Action 2**: To have a proper mix of faculty expertise, the department hired two new ECE faculty members with expertise in areas that expand and complement the existing expertise. **Action 3**: Lab development is continuing to take place every year.**Additional Guidelines:** If you have not fully described the assignment then please attach a copy of the questions or assignment guidelines. If you are using a rubric and did not fully describe this rubric (or the criteria being used) than please attach a copy of the rubric. If you administered a survey please consider attaching a copy of the survey so that the Learning Assessment Team (LAT) can review the questions. |