Summary of EEE Assessment Activities for AY 2012-13

List of EEE Department Assessment Activities:

- The EEE Assessment Committee began their work in the spring 2012 semester by revising the Student Learning Outcomes (SLO) for the BS degree in EEE to align with ABET's new requirements. (Note that SLO's refer to what a student should know at graduation.) In the past, ABET had allowed EEE to define our own SLO's and then map them to ABET's a-k student outcomes. However, ABET has since changed this and now requires us to use their a-k student outcomes as our Student Learning Outcomes, although they will allow us to add additional SLO's beyond a-k, if needed. The EEE Assessment Committee carefully reviewed and discussed the then existing 1-15 SLO's used by EEE, comparing them to ABET's a-k student outcomes. We concluded that ABET's a-k student outcomes covered everything that EEE's 1-15 SLO's did, so no further student outcomes needed to be added. The EEE Assessment Committee then recommended to the full EEE Faculty that we adopt ABET's a-k Student Learning Outcomes for our BS program. The EEE faculty approved the use of a-k as our BS SLO's.
- The second task taken on by the EEE Department Assessment Committee during the spring 2012 semester was to lead the EEE faculty to renew our efforts to collect assessment data. Since the EEE Department uses course-embedded assessment, this meant collecting data in each class regarding how well students are accomplishing the Course Outcomes (CO's) for each course. In order to allow the mapping of these results to the new a-k program-level SLO's for the BS degree, it was also necessary to update the ABET Course Outlines for each course to include a mapping of the Course Outcomes for that course to the new EEE a-k program-level SLO's. To assist the faculty with this, the
  EEE Assessment Committee provided templates for course outlines, rubrics, and assessment data, as well as examples of how to use each of these. In addition, the EEE Assessment Committee set up a location on the EEE faculty shared drive where faculty could submit their results, and also led several faculty discussions regarding how to use these templates. The EEE faculty were strongly and repeatedly encouraged to gather assessment data, as well as update the course outlines and rubrics for their classes.

- To assist faculty with their updates to course outlines, rubrics, etc., the entire existing course outlines were placed on the EEE Faculty shared drive for easy access. In addition, a web site that was used for assessment during our last ABET review which contains course outlines, rubrics, etc., was once again made available to our faculty.

- Since the recently adopted EEE Policies and Procedures document established the role of Course Coordinator for each class, whose responsibilities include leading the effort to gather and submit assessment materials (course outlines, rubrics and assessment data) for their classes, it was important to assign Course Coordinators for each class to ensure these duties were carried out. Accordingly, during spring 2012 the EEE Assessment

Committee drove the creation and adoption by the EEE faculty of a full list of Course Coordinators for all of our classes.

- During the summer of 2012 the EEE Assessment Committee worked together with the Sacramento State Office of Institutional Research (OIR) to conduct a survey of EEE alumni. Since the standard survey used by OIR didn't directly address key portions of the EEE Educational Objectives (EO's) for what our BS students should know 5 years after graduation, we requested that OIR add additional questions to cover these EO's, which they did.

- At the beginning of the fall 2012 semester the EEE Assessment Committee began to examine the results of the previous semester's assessment efforts. Unfortunately, we found that many EEE faculty had not followed through on the requested data collection and updates to their course outlines and rubrics. Discussions regarding the reasons for this occurred in several EEE faculty meetings. Reasons included confusion regarding exactly what needed to be done, and inertia on the part of many faculty. There was also a notable lack of commitment and "buy in" to the assessment process by many faculty. To address this, the EEE Assessment Committee led a special workshop on assessment for the EEE faculty, both to clarify the process and provide examples of how to use the assessment templates previously provided. The committee also strongly and repeatedly emphasized the need to gather assessment data, as well as to update the course outlines and rubrics for each class. Still, many EEE faculty did not comply with these requests.

- In order to improve the ownership and "buy in" to the assessment process by the EEE faculty, the EEE Assessment Committee decided to update the EEE Assessment Plan Since the EEE Assessment Plan in existence at that time had never been formally voted on and approved by the full EEE faculty, it was our sincere hope that having the faculty debate and approve such a plan would both reduce confusion and improve compliance with out assessment procedures. An update to the existing EEE Assessment Plan was also needed for other reasons, including to change it to agree with the newly adopted a-k SLO's for the BS degree in BS. The effort by the EEE Assessment Committee to review and update the EEE Assessment Plan began during the fall 2012 semester, and continued during the spring 2013 semester. This effort culminated in the approval of a new EEE Assessment Plan during spring 2013.

- In addition, in order to resolve any confusion on the part of the EEE faculty as well as to encourage compliance with assessment requests, during the spring 2013 semester the EEE Assessment Committee held a series of small group meetings with each of the Course Coordinators. This allowed the Course Coordinators to ask for detailed help with their assessment efforts on a 1-to-1 basis. These meetings proved to be extremely valuable for many faculty, as it became clear during the course of these meetings that there was still a great deal of confusion regarding exactly how to implement the course-embedded assessment process used by EEE.

- In addition to the OIR Alumni Survey previously mentioned, to gather data regarding the EEE Educational Objectives (EO's) for what our BS students know 5 years after graduation the EEE Assessment Committee organized 2 EEE faculty visits to local industry who hire our students. During the fall 2012 semester the EEE faculty visited Barco, and during the spring 2013 semester the EEE faculty visited CA ISO. The comments from industry regarding our BS program in EEE were generally very positive during these visits; however a detailed analysis of these results is still pending.

- To make the overall assessment process easier for the EEE faculty, during the summer of 2013 the EEE Assessment Committee is working to improve the EEE assessment web site. The goal is to make it very easy for faculty to both submit and review assessment results. An effort has also begun to investigate the possibility of using MS SharePoint in the future to ease the compilation and analysis of assessment data.

- Graduate programs and mixed signal certificate learning goals/objectives were updated and submitted to the office of graduate studies (attached in the appendix).

Appendix

EEE Graduate Program Learning Goals/Objectives

Goal/Objective	Outcome (Assessment Components)
The goal is to select some key core and elective classes in the EEE graduate program, and assess student performance. Based on student performance (1- below expectation; 2-meets expectation; 3- above expectation), changes in course curriculum, methods etc. are reviewed and changes made, if necessary.	A knowledge of core and advanced E&EE topics (Assessment component* 1)
The goal is to select some of the advanced core/elective courses and Masters' project/thesis reports, to assess students' depth and expertise in their chosen area of study. Additionally, industry visits may also be utilized to meet with student alumni, and assess their success in their area of work.	Depth in at least one area of E&EE out of *Analog/Digital Electronics, Control Systems, Communications and Power*. (Assessment components 1,2,3)
The goal is to assess students' expertise in use of modern hardware and software tools, as applied to their coursework and more importantly in their culminating experience, be it thesis, project or comprehensive exam.	The ability to use contemporary engineering techniques and tools for analysis and design. (Assessment component 1,2)
The goal is to assess students' oral and written communication skills, by reviewing course material, and thesis/project reports, and evolve more effective methods of instruction to improve communication skills, if required.	The ability to communicate effectively (Assessment component 1,2)

The Student Learning Outcomes (SLOs) listed above are the **four** most important from the original **ten** outcomes.

***Assessment Components:** 1- Course based assessment, 2- Assessment of culminating experience (Thesis/project/comprehensive exam), 3- Surveys from industry

CpE Graduate Program Learning Goals/Objectives

Goal/Objective	Outcome (Assessment Components)
The goal is to select some key core and elective classes in the CpE graduate program, and assess student performance. Based on student performance (1- below expectation; 2-meets expectation; 3-above expectation), changes in course curriculum, methods etc. are reviewed and changes made, if necessary.	The ability to apply knowledge of mathematics, science and engineering to solve problems in CpE (Assessment components* 1,2)
The goal is to select some of the advanced core/elective courses and Masters' project/thesis reports, to assess students' depth and expertise in their chosen area of study.	A knowledge of core and advanced CpE topics (Assessment components* 1,2)
The goal is to assess students' expertise in use of modern hardware and software tools, as applied to their coursework and more importantly in their culminating experience, be it thesis, project or comprehensive exam.	The ability to work with modern instrumentation, software and hardware, design and perform experiments, and analyze and interpret the results. (Assessment components* 1,2)
The goal is to assess students' non-academic abilities and qualities such as communication skills and ethics. This can be assessed by appropriate training to work in group projects for coursework, and Masters' thesis/projects Additionally, industry visits may also be utilized to meet with student alumni, and assess their gain of these abilities from their graduate program, and the extent of benefit to current work responsibilities.	Recognition of the need for and an ability to engage in life-long learning. (Assessment components* 1,2,3)

The Student Learning Outcomes (SLOs) listed above are the **four** most important from the original **ten** outcomes.

***Assessment Components:** 1- Course based assessment, 2- Assessment of culminating experience (Thesis/project/comprehensive exam), 3- Surveys from industry

Mixed Signal Certificate Learning Goals/Objectives

Goal/Objective	Outcome (Assessment Components)
The goal is to select some key that are required to be taken for satisfying the Mixed Signal Design Certificate requirements, and assess student performance. Based on student performance (1- below expectation; 2-meets expectation; 3- above expectation), changes in course curriculum, methods etc. are reviewed and changes made, if necessary.	This requires studying multiple subjects such as amplifier design, device physics and matching, analog layout techniques, and key mixed-signal circuit blocks (Assessment component* 1)
The goal is to assess students' expertise in use of modern hardware and software tools, as applied to the courses required for the Mixed Signal Design Certificate program, and to the thesis, project or comprehensive exam, which are the ultimate culminating experience of the EEE graduate program.	In addition, students learn the methods and tools used to design and layout ICs (Assessment component* 1,2)
The goal is to assess student performance in the courses embedded in the Mixed Signal Design Certificate program, and to maintain consistency between the certificate program, and the EEE Graduate curriculum, to avoid any redundancy in student requirements.	Fully embedded within the Master's Degree program offered by the Department of Electrical & Electronic Engineering (Assessment component* 1)
The goal is to utilize industry visits to meet with student alumni, and assess their gain of these abilities from their certificate program, and obtain feedback to improve the program, if required.	Provides potential employers with evidence of the skills students have developed (Assessment component* 3)

***Assessment Components:** 1- Course based assessment, 2- Assessment of culminating experience (Thesis/project/comprehensive exam), 3- Surveys from industry