1. Department/Program Mission

Educational mission: The Electrical & Computer Engineering Department strives to contribute to the state, nation and world through the education of outstanding professionals and leaders in engineering. Our educational focus is on a broad, rigorous education in all areas of electrical and computer engineering with significant hands-on experiences. The programs will provide students with an understanding of engineering problem solving at all levels and an appreciation for engineering as a profession.

Objectives: The Electrical & Computer Engineering degree programs will provide students the foundation to:
- Succeed in professional career placement and practice as engineers, scholars and entrepreneurs;
- Grow their career through technical and professional activities and leadership roles;
- Contribute to society and economy through technical products, services and knowledge; and
- Adapt to an ever-changing world through continued education, through graduate study, professional development activities, independent learning or pursuit of follow-on degrees.

2. Graduate Learning Outcomes (GLO)

a. **Campus-Wide Student Learning Outcomes:**
   Programs must demonstrate that their graduates have:
   I. Knowledge: An ability to apply knowledge of subject matter within their field of study
   II. Communication: An ability to communicate effectively within their field of study.
   III. Critical Thinking: An ability to engage in productive critical thinking within their field of study.
   IV. Professional Development: An ability to develop professional within their field of study.

b. **Additional Program Specific Student Learning Outcomes (Optional)**

   N/A
3. **Mapping of Program’s Student Outcomes to Campus Student Learning Outcomes**

N/A

4. **Methods/Instruments and Administration**

Starting in Fall 2015 our assessment forms changed to the GLO surveys that are used across campus. Prior to that date, our department rated students in the same four categories (knowledge, communication, critical thinking, and professional development), but gave them only 3 rankings (does not meet expectation – unacceptable, meets expectation – acceptable, and exceeds expectation – outstanding). To allow uniform comparison prior to Fall 15, the older survey results were rescaled to give each student a ranking from 1-5, with a 1 assigned when the student received an “unacceptable” ranking, a 3 assigned when the student received an “acceptable” ranking, and a 5 when the student received an “outstanding” ranking. Scores were averaged among all committee members to give a single aggregate score from 1-5 for each area for each student.

5. **Findings**

ECE met its criteria for success each semester from Spring 11 – Spring 16 (up until April ‘16). The committee noted that there was a significant improvement in scores between the PhD comprehensive exam and the PhD defense in Fall 15 – Spring 16 (the semesters for which data was collected), which it viewed as positive indicator that faculty were taking the surveys seriously and that areas of concern were being identified as part of the exam. The committee was surprise to see that the scores for PhD students were lower than for MS students, but attributed this difference to the level of expectation faculty have for students in each group (e.g. a PhD should have significantly more knowledge to be rated “acceptable” in that category than a MS student). The committee also noted that the communication score was consistently among the weakest of the four measures.

6. **Continuous Improvement Changes**

Metric for success of our department is as follows. Regarding the GLO surveys, the committee decided that “80% or more of students should score a 3 or better in each category. No graduating MS or PhD students have a score lower than a 2 in any category”. Herein, a 3 is an “acceptable” rating and a 2 is “developing”. The four areas covered in the GLO survey are knowledge, communication, critical thinking, and professional development.

Although ECE met its criteria for success in this area, we plan to submit this issue to the graduate committee for further discussion on how to improve the communication capabilities of our graduates. In addition, since Fall 2015, our department admission requirements of GRE Verbal and English proficiency have been raised to 150 (from 148) and 92 (from 90), respectively. We expect a gradual improvement of communication capabilities over the coming years since it will take time to be able to see the impact.