King Saud University

Electrical Engineering

Bachelor of Science Program

Student Outcomes

Achievement Policy

Last Update

September 2021

1 Introduction

The Electrical Engineering department is committed to provide quality education to its students. In particular, the Electrical Engineering program seeks to meet accreditation standards on national and international levels to ensure the continuous development and progress.

During the reaccreditation process with ABET, the program evaluator during the on-site visit highlighted the importance of having a policy that addresses initiating actions related to *student outcomes*. The accreditation committee discussed this issue and realized the importance of this point to guarantee consistency of imitating actions related to the level of achievement of each student outcomes.

The B.S. program in Electrical Engineering at King Saud University is accredited by the Engineering Accreditation Commission (EAC) of ABET https://www.abet.org

2 Summary of Assessment Process

The main features of the assessment process of student outcomes are highlighted next.

1. The EE program adopts the seven student outcomes, labeled as SO1 – SO7. The SOs are established based on ABET criteria, and are defined as

LABEL	Student Outcomes (SOs)
SO1	An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science, and mathematics.
SO2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

SO3	An ability to communicate effectively with a range of audiences.
SO4	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
SO5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
SO6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
SO7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

2. The update of student outcome assessment is done on a **six year cycle**. By the beginning of each cycle a *Mapping Table* is defined to identify the level of contribution of each course to the student outcomes.

3. The mapping table is discussed in the department specialty groups, the Academic Committee, and the Accreditation Committee. The Department Council finally discusses and approves the mapping table.

4. The course mapping table will not be modified after approval during the outcome assessment cycle, unless a major update is introduced to the plan of EE program.

5. The student outcomes assessment will include:
   - Direct assessment to measure directly the level of achievement of course outcome. The assessment will be based on particular homework assignments, quiz problems, midterm and final problems and class projects directed to particular learning outcome of the course.
   - Indirect assessment identifies opinions or thoughts about student knowledge, skills, attitudes, learning experiences and perceptions. Different surveys can be used as tools to gather information for indirect assessment.

6. Each course learning outcome shall be assessed by direct assessment methods, in addition to any other assessment tool adopted in the course.

7. Course instructor is responsible to submit the assessment report of his course at the end of the semester in an electronic version.

8. Instructors shall do their best to assess all the learning outcomes in the mapping table. Explanation about causes and circumstances associated with failure to assess any of course outcomes shall be included in the course report.

9. Course reports with more than one section shall be reviewed by course coordinator to ensure consistence of outcome assessment among various sections.

10. Course reports will be reviewed by academic group coordinators.

3   Target Values for Student Outcomes

- The target values of student outcomes are the internal benchmarks for each outcome.

- Target values are suggested by Accreditation Committee in consultation with academic group coordinators. The targets are discussed and approved in department council meeting.

- These target values will be reviewed every three years, at the beginning and in the middle of each assessment cycle of the assessment cycle.

- The following table presents current target values of student outcomes:

SO	SO1	SO2	SO3	SO4	SO5	SO6	SO7
Target	75%	75%	75%	75%	75%	75%	75%

4   Student Outcome Achievement Policy

EE program is committed to continuous improvement to guarantee the achievement of the targeted values of all student outcomes. The Student Outcome Achievement policy is set to guarantee the following:

1. *The program will provide graduates, who are able to appreciate, implement, and enhance their knowledge related to student outcomes SO1 and SO7.*

2. *The program will provide graduates, who lead successful engineering career with the practical hands on expertise related to student outcomes SO2 and SO6.*

3. *The program will provide graduates, who can prosper in their professional life, with sound skills related to student outcomes SO3, SO4 and SO5.*

5   Action Process

5.1 General Process

The action process initiated by a deficiency in achieving a particular student outcome depends on the level of this deficiency.

a. *If attainment level of student outcome at the end of an academic year is below the targeted value by a ratio of 0-10% of target value:*

- The accreditation committee will inform the group coordinators about this deficiency and the courses that highly contribute to this deficiency.
- The problem will be discussed at course level among course coordinator and instructors.
- If the problem persists for two academic years continuously then the matter will be discussed in the group meeting.
- Action plan will be identified and reported to accreditation committee AC. The AC reports these action plans on department council meetings.

b. *If attainment level of student outcome at the end of an academic year is below the targeted value by a ratio of 10-20% of target value:*

i. The accreditation committee will inform the group coordinators about this deficiency and the courses that highly contribute to this deficiency.

ii. The problem will be discussed in group meeting. If the problem persists for two academic years continuously then the matter will be discussed in the Department Council Meeting.

iii. Action plan will be identified and reported to accreditation committee AC. The AC reports these action plans in department council meetings.

c. *If attainment level of student outcome at the end of an academic year is below the targeted value by a ratio that exceeds 20% of target value:*

This should be an alarming situation and an immediate action is sought. The matter will be discussed in the Department Council Meeting.

Within the department, the flow of information will follow these four steps:

i. Course coordinator will submit the recommendation to the group coordinator.

ii. Action plans taken in group meeting will be forwarded to the department AC that reports the problem and recommendations to the department council to identify problems.

iii. The AC will investigate if the outcome target level itself is too high and report the findings to department council.

iv. The necessary actions will be identified on the department level.

5.2 Process for Outcomes SO1 and SO7 (Item 1 of Policy Statement):

In addition to the above-mentioned procedures, the following steps will to be taken if the percentage of attainment of any of these outcomes is below the targeted value:

i. A committee shall be formed from the department to discuss this issue with other departments in College of Engineering and compare findings.

ii. The committee will also contact related departments in College of Science.

5.3 Process for Outcomes SO2 and SO6 (Item 2 of Policy Statement):

In addition to the general procedures, the following steps will to be taken if the level of attainment of mentioned any of these outcomes is below the targeted value:

i. A committee will be formed to review the performance of practical experience course to students

ii. The findings will be discussed with the External Advisory Board and employers of public and private sectors.

5.4 Process for Outcomes SO3, SO4 and SO5 (Item 3 of Policy Statement):

In addition to the general procedures, the following steps will to be taken if the level of attainment of mentioned any of these outcomes is below the targeted value:

i. The students will be encouraged to take part in the seminar series organized by the Department to familiarize with current advancements in engineering & technology.

ii. A committee will be formed to review level of understanding of students to professional and ethical responsibility.

iii. A committee will be formed to contact the instructors in the preparatory year and get the level of achievement of prospective engineering students.

Electrical Engineering Program

The B.S. program in Electrical Engineering at King Saud University is accredited by the Engineering Accreditation Commission (EAC) of ABET https://www.abet.org