

# Electrical & Computer Engineering (MS & ME)

## PG 1 More Undergraduates Pursuing Master's

### Goal:

To increase the number of undergraduates pursuing master's degrees.

### Evaluation Method:

The ECE Admissions and Retention Committee will track the number of U.S. MS and ME candidates.

### Results:

Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:

## PG 2 Prepare Graduates for Graduate Study and/or Engineering Profession~~Quality and Relevance of Program~~

### Goal:

To graduate students who are prepared for further graduate study and employment as engineers.

~~To continuously improve the quality and relevance of the program.~~

### Evaluation Method:

The ECE Graduate Curriculum Committee will track job placement data collected from exit surveys.

~~The evaluation method will consist of input from industrial, peer, alumni, and employer visits/panels as well as the evaluation of student performance on selected assignments in core graduate classes by course committees.~~

### Results:

Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:

## SLO 1 Knowledge

**Outcome:**

Ability to identify, formulate and solve electrical and computer engineering problems.

**Assessment Method:**

Student Learning Outcomes (SLO) for the ECE master's program are assessed through selected assignments, tests/quizzes, or projects in one of nine courses in the five research areas. While there is no single course required for the master's degree, nearly every one of our students will take at least one of the nine key courses spread across the five research areas. The areas and core courses are below.

The five research/teaching areas and the core course(s) in that area:

## Electronics

EEE 5320 – Bipolar Analog IC Design

EEE 5322 – VLSI Circuits and Technology

## Signals &amp; Systems

EEL 5544 – Noise in Linear Systems

EEL 5525 – Foundations of Digital Signal Processing

## Devices

EEE 5400 – Future of Microelectronics Technology

EEE 5426 – Introduction to Nanodevices

## Computer

EEL 5718 – Computer Communications

EEL 5764 – Computer Architecture

## Electromagnetics and Energy Systems

EEL 6486 – Electromagnetic Field Theory & Applications 1

These courses were chosen to ensure that every student receiving the degree will be assessed at least once during their program. In practice at least 90% of students are assessed in at least two courses.

Each course is overseen by a course committee comprising the faculty in the corresponding area. These committees meet once each spring to evaluate how well the courses and the assessment tools are serving the needs of the students.

**SLO Not Assessed This Year:**

false

**Results:**

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

**SLO 2 Skills**

**Outcome:**

Ability to use applied mathematical techniques. Ability to use modern engineering tools for practice at an advanced level.

**Assessment Method:**

Student Learning Outcomes (SLO) for the ECE master's program are assessed through selected assignments, tests/quizzes, or projects in one of nine courses in the five research areas. While there is no single course required for the master's degree, nearly every one of our students will take at least one of the nine key courses spread across the five research areas. The areas and core courses are below.

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EEE 5322 – VLSI Circuits and Technology

Signals & Systems

EEL 5544 – Noise in Linear Systems

EEL 5525 – Foundations of Digital Signal Processing

Devices

EEE 5400 – Future of Microelectronics Technology

EEE 5426 – Introduction to Nanodevices

Computer

EEL 5718 – Computer Communications

EEL 5764 – Computer Architecture

Electromagnetics and Energy Systems

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#### **SLO Not Assessed This Year:**

false

#### **Results:**

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

## **Electrical & Computer Engineering (PhD)**

### **~~PG 1 Quality & Relevance of Program~~**

#### **~~Goal:~~**

~~To continuously improve the quality and relevance of our program.~~

#### **~~Evaluation Method:~~**

~~The evaluation method will consist of input from industrial, peer, alumni, and employer visits/panels as well as the evaluation of student performance on selected assignments in core graduate classes by course committees.~~

#### **~~Results:~~**

~~Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:~~

## **PG ~~12~~ Diversify International Program**

### **Goal:**

To diversify our international program.

### **Evaluation Method:**

Faculty Admissions and Recruiting Committee tracks international student numbers.

### **Results:**

~~Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:~~

## **PG ~~23~~ Increase Number of US PhD Students**

### **Goal:**

To increase the number of US students in our PhD program.

### **Evaluation Method:**

Faculty Admissions and Recruiting Committee tracks U.S. application numbers.

### **Results:**

~~Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:~~

## ~~PG 4 Expand Size and Scope of Program~~

### ~~Goal:~~

~~To expand the size and scope of our PhD program.~~

### ~~Evaluation Method:~~

~~Comparison to peer institutions, number and quality of publications, continuation and growth of research contracts and grants.~~

### ~~Results:~~

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

## **SLO 1 Knowledge**

### **Outcome:**

Ability to identify, formulate and solve engineering problems. Ability to critically read and integrate engineering research literature

### **Assessment Method:**

The thesis proposal is an important requirement for the Ph.D. degree. The thesis committee will assess this outcome based on oral and written components of the thesis proposal defense.

### **SLO Not Assessed This Year:**

false

### **Results:**

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

## **SLO 2 Skills**

### **Outcome:**

Ability to use applied mathematical and/or modern experimental techniques. Ability to use modern engineering tools for practice at an advanced level.

### **Assessment Method:**

The thesis committee will assess this outcome based on the oral and written components of the thesis proposal defense.

### **SLO Not Assessed This Year:**

false

### **Results:**

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

## **SLO 3 Professional Behavior**

### **Outcome:**

Ability to communicate effectively.

### **Assessment Method:**

The thesis committee will assess this outcome based on the oral and written components of the thesis proposal defense.

### **SLO Not Assessed This Year:**

false

### **Results:**

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

# **Electrical Engineering (BSEE)**

## **PG 1 Broad Education**

### **Goal:**

Provide a broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

### **Evaluation Method:**

This program goal is evaluated on a scale of 1 to 5 with 5 (outstanding), 4 (mastered), 3 (achieved), 2 (minimally achieved), and 1 (not achieved). Students must achieve a score of 3 or higher in each of the assessment scores in order to demonstrate achievement of the program goal. The courses to be used for assessment purposes are listed below.

EEL 3000 – Introduction to Electrical & Computer Engineering

EEL 4924C – Electrical Engineering Design 2

### **Results:**

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

## **PG 2 Professional and Ethical Responsibility**

### **Goal:**

Instill an understanding of professional and ethical responsibility.

### **Evaluation Method:**

This program goal is evaluated on a scale of 1 to 5 with 5 (outstanding), 4 (mastered), 3 (achieved), 2 (minimally achieved), and 1 (not achieved). Students must achieve a score of 3 or higher in each of the assessment scores in order to demonstrate achievement of the program goal. The courses to be used for assessment purposes are listed below.

EEL 3000 – Introduction to Electrical & Computer Engineering  
EEL 4924C – Electrical Engineering Design 2

### **Results:**

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

## **SLO 1 Content Knowledge (CK1)**

### **Outcome:**

Identify, describe, and interpret mathematics, science and engineering principles to electrical engineering problems.

### **Assessment Method:**

Assessment in two designated courses of individual assignments targeted to each particular Student Learning Outcome (SLO).

Each SLO is evaluated on a scale of 1 to 5 with 5 (outstanding), 4 (mastered), 3 (achieved), 2 (minimally achieved), and 1 (not achieved). Students must achieve a score of 3 or higher in on at two of the assessment scores in order to demonstrate achievement of the SLO. The courses to be used for assessment purposes are listed below.

EEL 3008 – Physics of Electrical Engineering  
EEL 3135 – Signals and Systems

### **SLO Not Assessed This Year:**

### **Results:**



**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

## **SLO 2 Critical Thinking (CT1)**

### **Outcome:**

Design and conduct electrical engineering experiments as well as analyze and interpret data.

### **Assessment Method:**

Assessment in two designated courses of individual assignments targeted to each particular Student Learning Outcome (SLO).

Each SLO is evaluated on a scale of 1 to 5 with 5 (outstanding), 4 (mastered), 3 (achieved), 2 (minimally achieved), and 1 (not achieved). Students must achieve a score of 3 or higher in on at two of the assessment scores in order to demonstrate achievement of the SLO. The courses to be used for assessment purposes are listed below.

EEL 3701C – Digital Logic and Computer Systems  
EEL 4924C – Electrical Engineering Design 2

### **SLO Not Assessed This Year:**

### **Results:**

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

## **SLO 3 Critical Thinking (CT2)**

### **Outcome:**

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.

### **Assessment Method:**

Assessment in two designated courses of individual assignments targeted to each particular Student Learning Outcome (SLO).

Each SLO is evaluated on a scale of 1 to 5 with 5 (outstanding), 4 (mastered), 3 (achieved), 2 (minimally achieved), and 1 (not achieved). Students must achieve a score of 3 or higher in on at two of the assessment scores in order to demonstrate achievement of the SLO. The courses to be used for assessment purposes are listed below.

EEL 3923C – Electrical Engineering Design 1  
EEL 4924C – Electrical Engineering Design 2

**SLO Not Assessed This Year:**

**Results:**

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**

**SLO 4 Communication (C1)**

**Outcome:**

Convey technical data and design information effectively for a range of audiences using a variety of methods and media.

**Assessment Method:**

Assessment in two designated courses of individual assignments targeted to each particular Student Learning Outcome (SLO).

Each SLO is evaluated on a scale of 1 to 5 with 5 (outstanding), 4 (mastered), 3 (achieved), 2 (minimally achieved), and 1 (not achieved). Students must achieve a score of 3 or higher in on at two of the assessment scores in order to demonstrate achievement of the SLO. The courses to be used for assessment purposes are listed below.

EEL 3000 – Introduction to Electrical & Computer Engineering

EEL 4924C – Electrical Engineering Design 2

**SLO Not Assessed This Year:**

**Results:**

**Use of Results - DO NOT USE STARTING 2016-2017 AND FORWARD - Use Programmatic Use of Results Field Instead:**