

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

ACADEMIC SENATE

ACADEMIC PROGRAMS COMMITTEE

REPORT TO

THE ACADEMIC SENATE

AP-001-167

Reinstatement of Options for the Master of Science in Electrical Engineering Program  
(MSEE)

Academic Programs Committee

Date:

Executive Committee  
Received and Forwarded

Date: November 16, 2016

Academic Senate

Date: November 30, 2016  
FIRST READING  
January 11, 2017  
SECOND READING

## **BACKGROUND**

In 2014 the faculty of the MSEE Program, in response to new initiatives and collaborative opportunities (e.g. classes offered off-campus in Lancaster), requested that the Options within the program be discontinued. This was approved in referral AS-2451-134/AP (AP-002-134). At the time, it was believed that a more loosely-structured, general program would be suitable for the wide range of student and industrial interests and needs. Since then, declining student enrollments, and emphatic student requests for a degree with a distinctive emphasis noted on the diploma/transcript, have signaled to the Electrical and Computer Engineering (ECE) Department that reinstatement of its original Options for the MSEE program (Computer Engineering, Communications and Signal Processing, and Control and Robotics) would be more attractive to students and more conducive to enrollments. Moreover, the original opportunity that motivated this termination of Options has since undergone significant changes. Consequently, as documented below, the ECE Department is requesting that its three previous Options for the MSEE program be reinstated immediately, under quarters, rather than delayed until semesters in 2018.

## **RESOURCES RECOMMENDED**

- Faculty (faculty@cpp.edu)
- Department Chairs (chairs@cpp.edu)
- Associate Deans (associate\_deans@cpp.edu)
- Deans (deans@cpp.edu)

## **RESOURCES CONSULTED**

- Phyllis Nelson, Professor and Chair, Department of Electrical and Computer Engineering
- Halima El Naga, Professor and Graduate Program Coordinator, Department of Electrical and Computer Engineering
- Associate Deans

We did not email all faculty, chairs, and Deans because this referral is rather specialized in scope; it was felt that Associate Deans would be the appropriate conduits for identifying people in their Colleges with relevant interests, concerns, and knowledge. Additionally, the strongest interest in this issue is in the College of Engineering, and three Engineering departments (Mechanical, Civil, and Engineering Technology) are represented on the AP Committee; between them and the input of ECE faculty it was felt that we had received sufficient breadth of perspectives within the College of Engineering. Finally, the documentation received with the referral (see below) includes a memo from Dr. Ronald Yeung, Interim Associate Dean in the College of Engineering, indicating that the proposal had been reviewed and supported by the College of Engineering Graduate Committee.

## **DISCUSSION**

From the documentation provided with the referral, as well as commentary from ECE faculty, it became clear that the decision of 2014 has had a negative effect on the marketability of the degree, and thus the attractiveness of the program to students, many of whom have full-time jobs and will only commute to Cal Poly Pomona for a truly distinctive program. Moreover, discussions with ECE Department representatives and other Engineering faculty made it clear that Options can be reinstated without additional resources.

In its discussions and fact-finding, the AP Committee became aware that the original decision to discontinue the MSEE Options had been somewhat controversial; the concern of this Committee was that if the curricular decision is reversed now then in a few years it may be reversed again. However, in the previous decision (to discontinue Option) key stakeholders had not been consulted: Students. Because of the strong student support for Options the AP Committee is confident that the reinstatement of Options would be a sustainable, popular decision, one that will not be reversed again.

Another question considered by the Committee was whether reinstatement of Options could be delayed until 2018. The ECE Department has submitted a semester program proposal that includes the original 3 options under the MSEE program. One way or another, the MSEE program will have Options in 2018, and reinstating them immediately under quarters would thus not bring any disruption to students under semesters in 2018. Moreover, immediate reinstatement of options would help ensure program sustainability by making the program more attractive for enrollments in 2017.

A final issue, raised by four faculty in the ECE department, is that the reinstatement of options was approved by the Graduate Committee of the ECE Department but sent for college-level review without a vote of the full department. Consultation with Dr. Phyllis Nelson, Chair of ECE, indicated that the department has empowered committees to handle certain curricular tasks and send their products to the College level for the next phase of review without votes of the entire department. Moreover, two of the concerned faculty participated in the meeting of the Graduate Committee (confirmed by meeting minutes provided to the AP Committee by Dr. Phyllis Nelson), and no apparent concerns were raised by any ECE faculty during college-level review. On that basis, we have received email confirmation (see separate documents provided with report) from Dr. Ronald Yeung, Associate Dean of Engineering, affirming that the College of Engineering, the body closest to the procedures of the ECE Department, considers the proposal for reinstatement of options to have passed appropriate department-level review. Finally, it is the opinion of the AP Committee that offering three graduate Options in diverse areas of Electrical and Computer Engineering means that the department is making a broad set of commitments rather than favoring one faction of the department over another; it is therefore hard to see a lack of fairness here.

### **RECOMMENDATION**

The Academic Programs Committee recommends approval of AP-001-167 Reinstatement of Options for the Master of Science in Electrical Engineering per the revised curriculum (provided by the ECE Department) below.

**Revised Curriculum:****MSEE Guidelines**

- Students are allowed to take up to 13 units at the ECE 400 level with graduate advisor approval. Other restrictions may apply as detailed in the University Catalog.
- Students are allowed to take up to 8 units of 599 courses.
- A one-course deviation from the curriculum may be granted and endorsed by the faculty advisor on the student's program of study form.
- Any other curriculum deviations must be approved, through a petition, by the Graduate Committee of the Electrical and Computer Engineering Department.

Candidates for the degree of Master of Science in Electrical Engineering must satisfy the following requirements:

1. Develop, file, and complete a program of study \*
2. Pass the Graduation Writing Test
3. Complete 46 units of coursework with a grade point average of 3.00 or better, of which:
  - a. At least 10 units must be in Breadth courses
  - b. A minimum of 16 units must be ECE graduate courses
  - c. A maximum of 12 units must be approved technical electives

MS Thesis (4-6 units) EGR 696 or 2 units of Directed Study (EGR 691) followed by 2 units of Master's Degree Project (EGR 692) \*\*

\* A student in consultation with a faculty advisor will develop a program of study in the areas of expertise offered by the ECE Department. The program of study should be planned before completion of 12 units. The MSEE program should be completed within 7 years.

\*\* 2 units of Directed Study (EGR 691) is a part of the Master's Degree Project.

**MSEE Curriculum**

The Master of Science in Electrical Engineering (MSEE) has three options:

1. The Communications and Signal Processing Option covers current communication techniques and signal processing schemes.
2. The Computer Engineering Option covers current topics in Computer Engineering and related areas.
3. The Control and Robotics Option under covers current topics in Control and Robotics and related areas.

**Detailed Curricula of the MSEE Options****1. Communications and Signal Processing Option**

**A. Option Breadth Courses** ..... 10 units

- [ECE 543 - Stochastic Processes \(4\)](#)
- [ECE 544 - Communication Theory \(4\)](#)
- [ECE 500 or 400 - Laboratories \(2\)](#)

**B. Option Elective Courses** ..... 16 units minimum

A minimum of 16 units selected from the following list with advisor approval:

- [ECE 409 - Digital Communication Systems \(4\)](#)
- [ECE 410 - Microwave Systems \(4\)](#) and
- [ECE 410L - Microwave Engineering Laboratory \(1\)](#)
- [ECE 428 - Digital Signal Processing II \(4\)](#)
- [ECE 436 - Optical Fiber Communications \(4\)](#)
- [ECE 448 - R.F. Design \(4\)](#)
- [ECE 542 - Digital Image Processing \(4\)](#)
- [ECE 551 - Digital Signal Processing \(4\)](#)
- [ECE 554 - Wavelet Theory and Applications \(4\)](#)
- [ECE 560 - Information Theory and Coding \(4\)](#)
- [ECE 562 - Advanced Microwave Engineering \(4\)](#)
- [ECE 563 - Solid State Microwave Devices and Circuits \(4\)](#)
- [ECE 565 - Radar Signal Processing \(4\)](#)
- [ECE 566 - OFDM and CDMA Systems \(4\)](#)
- [ECE 586 - Satellite Communication \(4\)](#)
- [ECE 589 - Antenna Theory \(4\)](#)
- [ECE 597L - Wireless and Digital Communication Laboratory \(2\)](#)
- [ECE 599/599A/599L - Special Topics for Graduate Students \(1-4\)](#)
- [ECE 644 - Advanced Communication Systems \(4\)](#)
- [ECE 651 - Advanced Signal Processing \(4\)](#)

**C. Support Electives .....12 units maximum**

A maximum of 12 units selected from the following list with advisor approval:

- [ECE 400/500/600 or CS 400/500/600 \(3-4\)](#)

**2. Computer Engineering Option**

**A. Option Breadth Courses ..... 10 units**

- [ECE 515 - Matrix Methods \(4\)](#) or [ECE 543 Random Processes \(4\)](#)
- [ECE 585 - Computer Organization \(4\)](#)
- [ECE 500 or 400 - Laboratories \(2\)](#)

**B. Option Elective Courses ..... 20 units**

A minimum of 20 units selected from the following list with advisor approval:

- [EGR 511 - Numerical Modeling \(4\)](#)
- [ECE 518 - Performability Analysis \(4\)](#)
- [ECE 520 - Network Security \(4\)](#)
- [ECE 525 - Embedded Systems \(4\)](#)
- [ECE 541 - Advanced Software Engineering \(4\)](#)
- [ECE 542 - Digital Image Processing \(4\)](#)
- [ECE 543 - Stochastic Processes \(4\)](#)
- [ECE 551 - Digital Signal Processing \(4\)](#)
- [ECE 558 - Computer Arithmetic \(4\)](#)
- [ECE 559 - Computer Networks \(4\)](#)

- [ECE 561 - Advanced Microprocessors \(4\)](#)
- [ECE 567 - Natural Language Processing \(4\)](#)
- [ECE 582 - Digital System Testing \(4\)](#)
- [ECE 584 - Design and Analysis of Algorithms \(4\)](#)

**C. Option Support Electives .....12 units maximum**

A maximum of 12 units selected from the following list with advisor approval:

- [ECE 400/500/600 or CS 400/500/600 \(3-4\)](#)

**3. Control and Robotics Option**

**A. Option Breadth Courses ..... 12 units**

- [ECE 515 - Matrix Methods \(4\) or ECE - 543 Random Processes \(4\)](#)
- [ECE 540 - System Theory \(4\)](#)
- [EGR 596 - Research Methods \(2\)](#)
- [ECE 500 or 400 - Laboratories \(2\)](#)

**B. Option Elective Courses ..... 16 units minimum**

A minimum of 16 units selected from the following list with advisor approval:

- [EGR 509 - Advanced Differential Equations for Engineers \(4\)](#)
- [EGR 511 - Numerical Modeling \(4\)](#)
- [EGR 512 - Vector Analysis and Complex Variables \(4\)](#)
- [ECE 525 - Embedded Systems \(4\)](#)
- [ECE 530 - Nanoelectronics \(4\)](#)
- [ECE 542 - Digital Image Processing \(4\)](#)
- [ECE 545 - Robust Control \(4\)](#)
- [ECE 555 - Microprocessor-based Control Systems \(4\)](#)
- [ECE 599/599A/599L - Special Topics for Graduate Students \(1-4\)](#)
- [ECE 642 - Digital Control Systems \(4\)](#)
- [ECE 643 - Optimal Control Systems \(4\)](#)
- [ECE 652 - Nonlinear Control Systems \(4\)](#)

**C. Option Support Electives .....12 units maximum**

A maximum of 12 units selected from the following list with advisor approval:

- [ECE 400/500/600 or CS 400/500/600 \(3-4\)](#)


**Supporting Documentation:**

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

**Memorandum**

DATE: August 15, 2016

TO: Dr. Julie Shen, Vice-Chair, Academic Senate

FROM: Dr. Daniel Lewis, Interim Associate Vice President for Academic Quality and Assessment 

RE: Reinstatement of Options in the Master of Science in Electrical Engineering Program

The Department of Electrical and Computer Engineering requested the elimination of options within its graduate program in 2015.

Department and College leadership, recognizing the impact that this move has had on student choice and outcomes, has requested that the campus move to rescind this option as soon as possible. Waiting until the conversion to Semester-based operations, the leaders believe, is not in the interest of students currently enrolled in the program.

For a variety of reasons relating to the process involved in the original decision to eliminate the options –a process that did not involve all of the department faculty – the Graduate Studies Office, which IAVP Lewis manages, endorses this request to reinstate the options.


The Office of Academic Programs requests that the Academic Senate authorize this reversal.



CALIFORNIA STATE POLYTECHNIC UNIVER

College of Engineering

**TO:** Dr. Daniel Lewis, Interim Associate Vice President for  
Academic Quality and Assessment

**FROM:** Dr. M. Ronald Yeung, Interim Associate Dean for Academic  
Programs and Student Services, College of Engineering  


**SUBJECT:** Curriculum Proposal to Reinstate Options in the Master of  
Science in Electrical Engineering (MSEE) Program

**DATE:** August 1, 2016

**CC:** Dr. Cordelia Ontiveros, Dr. Phyllis Nelson

**ATT:** Reinstatement of Options in Master of Science in Electrical  
Engineering

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The Electrical and Computer Engineering Department submitted the attached proposal during the 2015-16 academic year to reinstate the original options in the Master of Science in Electrical Engineering program that were removed recently.

The proposal was reviewed and approved by the College of Engineering Graduate Committee. We request your help to move the proposal forward to the next levels of review and approval. Please feel free to contact me if you have any questions.