

**Response to External Review Report  
Master of Science in Electrical Engineering (MSEE)  
AY 2020-21**

by

Thomas Ketseoglou  
Professor of ECE and MSEE program coordinator

We thank the reviewers for their review of our MSEE program in Fall 2020 and their overall comments and suggestions. In the following, we respond to each of the points made, with emphasis on the Recommendations and Suggestions section. We use italics for the reviewers' comments, with our response following directly after each of the points made.

*Introduction*

*The Electrical Engineering Department offers a broad-based MSEE program that provides depth in five areas of electrical engineering. The program has the 4<sup>th</sup> largest enrollment of the university among the 29 Master's programs, 17 full-time tenure/tenure track faculty members and many part-time instructors.*

*Commendations and Program Strengths*

1. *MSEE students include local, transfer, and international students who represent a diverse cultural background. The program provides the students with a broad knowledge of the discipline and prepares them to easily join the workforce.*

We thank the reviewers for bringing up and stressing this strength of the CPP MSEE program, which can help toward future growth of our program.

2. *Program has access to a large body of undergraduate students attending the university.*

We thank the reviewers for bringing up and stressing this strength of the CPP MSEE program, which can help toward future growth of our program.

3. *The electrical engineering faculty is highly qualified to cover all five areas of concentration in the program. Faculty is dedicated to the program and has good record of publications and involvement with industry.*

We thank the reviewers for bringing up and stressing this strength of the CPP MSEE program, which can help toward future growth of our program.

4. *Prerequisite and core courses are related and well-defined for each of the five areas of concentration.*

We thank the reviewers for bringing up and stressing this strength of the CPP MSEE program, which can help toward future growth of our program.

5. *Although not included in the self-study, students indicated that there is a well-established process in place for their advising and monitoring. Graduate*

*coordinator plays an important role in initial advising of the students as well as guiding and monitoring them through the degree requirements.*

We thank the reviewers for bringing up and stressing this strength of the CPP MSEE program, which can help toward future growth of our program.

6. *There are 4 laboratories available for the students to take.*
7. *MSEE program has selected the high level standards of ABET for assessing its Program Learning Outcomes (PLO) as well as Student Learning Outcomes (SLOs). PLOs and SLOs are well defined and the assessment process is well established and contributes to the modifications and improvements of the curriculum.*

We thank the reviewers for bringing up and stressing this strength of the CPP MSEE program, which can help toward future growth of our program.

8. *For their culminating experience about 90% of the students choose the graduate project option and 10% select thesis. This is a pleasant but unusual trend compared to other sister universities where the majority of the students select the comprehensive exam. The projects and theses generate a heavy load for the supervising faculty and dedication of the faculty to the program is commendable.*

We thank the reviewers for bringing up and stressing this strength of the CPP MSEE program, which can help toward future growth of our program.

9. *Except for library, details of available resources were not listed in the self-study report. Interviews with Dean, Chair, faculty, and students indicate that Support from higher university administrators, IT support, equipment support, and state and non-state funds are available.*

We thank the reviewers for bringing up and stressing this strength of the CPP MSEE program, which can help toward future growth of our program.

### Recommendations and Suggestions

1. *Interviews with faculty and students indicate that some graduate courses are cancelled because of the lack of enough students, i.e., when the number of registered students is less than 12. This reduces the number of available courses to students. As a result, students may not be able to concentrate on one specialization. Also, it may contribute to the slow graduation rate and the slowdown in enrollment. We recommend reducing the minimum number of 12 students to 8.*

We thank the reviewers for this important comment that could significantly assist toward future CPP MSEE program improvement and strengthening. In our Action plan, we have made proposals toward tackling this issue and introducing methods, based on which the MSEE program could be able to offer more classes each semester. A good way to improve this condition, is by offering co-listed courses, with different course number for undergraduate and graduate students, respectively. This has the advantage of attracting more undergraduate students to

the MSEE program, by creating interest among B.S. students who take classes from the MSEE program. This method will also increase the influx of BS students to the MSEE program. In addition, this way, the MSEE program would be able to offer classes with a total number of enrolled MSEE students greater or equal to 8, for example, as per the reviewers' suggestions. This item is addressed in its entirety in the Action Plan, as per agreement in our MSEE graduate committee meeting.

- 2. Practically, the current concentration (specialization) structure is not meaningful because concentrations do not include required courses. Also, because of course cancellation, students do not have the opportunity to take enough courses within all 5 offered concentration. We recommend having a minimum number of courses in each concentration (specialization) for graduation if the department can offer enough courses. This can be achieved for example by focusing on a subset of existing concentrations and offering more courses in that subset (not cancelling them) and hiring new faculty in those concentrations. Otherwise, if offering enough courses is not possible, we recommend removing any discussion of concentration from the program.*

We thank the reviewers for this important comment that could help improve the CPP MSEE program in the future. In our Action Plan, we have made proposals toward tackling this issue.

- 3. The program has access to a large body of undergraduate students in computer engineering. Also, the program has 6 tenure/tenure track professors in computer engineering area. To attract more students, we recommend changing the name of the program to Electrical and Computer Engineering. This should help with the slowdown in enrollment because of the recent increase of interest in computer related topics and industry.*

We thank the reviewers for this important comment that could help improve the CPP MSEE program in the future. In our Action Plan, we have made proposals toward tackling this issue.

- 4. The program should offer the required courses at least every year or more preferably every semester.*

We thank the reviewers for this important comment that could help improve the CPP MSEE program in the future. In our Action Plan, we have made proposals toward tackling this issue. Thus, the issue is fully addressed in our Action Plan.

- 5. Interviews with students indicate that students have difficulty taking the undergraduate lab courses that are mandatory as pre-requisite (because students have not taken them in their undergraduate studies). When a course is identified as pre-requisite and a graduate student is required to take it, then the program should give the student priority during the registration process.*

We thank the reviewers for this important comment that could help improve the CPP MSEE program in the future. In our Action Plan, we have made proposals toward tackling this issue. In more detail, after sharing multiple points of view, the MSEE graduate committee reached a wide agreement on the proposal to reserve a few (2-4) positions in this type of Lab courses for MSEE students. Thus, this item is addressed fully in our Action Plan.

6. *Interviews with students indicate that students have difficulty taking the undergraduate lab courses that are mandatory as pre-requisite (because students have not taken them in their undergraduate studies). When a course is identified as pre-requisite and a graduate student is required to take it, then the program should give the student priority during the registration process.*

We thank the reviewers for this important comment that could help improve the CPP MSEE program in the future. In our Action Plan, we have made proposals toward tackling this issue.

**Department and College  
Post Self-Study Action Plan**

**Name of Department: Electrical and Computer Engineering**

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**Name of College: College of Engineering**

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**Short Term Priorities – Minimum of 5 key items identified that will take 1 to 2 years to implement**

<b>Category</b>	<b>Proposed Action</b>	<b>Responsible Party</b>	<b>Resources</b>	<b>Timeframe – Start and End</b>
<b>Student Success</b>	<b>Give Lab priority to MSEE students (4XXX Level Labs)</b>	ECE	Faculty ad-hoc committee	Start Fall 2021 End Spring 2022
<b>Program/Curriculum</b>	<b>Required courses offered at least once a year</b>	ECE	Graduate coordinator and ECE scheduling	Start Fall 2021 End Fall 2021
<b>Program/Curriculum</b>	<b>Offer courses co-listed with the BS program, to accelerate time to graduation</b>	ECE	Faculty ad-hoc committee	Start Fall 2021 End Spring 2022

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**Long Term Priorities – Minimum of 5 key items identified that will take 3 to 5 years to implement.**

<b>Category</b>	<b>Proposed Action</b>	<b>Responsible Party</b>	<b>Resources</b>	<b>Timeframe – Start and End</b>
<b>Program/Curriculum</b>	<b>Change the program name to Master of Science in Electrical and Computer Engineering</b>	ECE, Office Graduate Studies, Academic Senate, CSU Chancellor's office	ECE Faculty ad-hoc committee, graduate coordinator, graduate committee	Start Fall 2021 End Fall 2022 (includes preparation of documentation and submission of proposal, but not the processing times)
<b>Operating Budget</b>	<b>Improve Plans for Marketing the program to attract more students, improve Website(s) accordingly</b>	Staff	COE, department chair, graduate coordinator, graduate committee	Start Fall 2021 End Fall 2021
<b>Program/Curriculum</b>	<b>If concentrations are needed, select required courses in each concentration</b>	ECE	department chair, graduate coordinator, graduate committee	Start Fall 2021 End Fall 2022 (includes preparation of documentation and submission of proposal, but not the processing times)
<b>Program/Curriculum</b>	<b>Develop more graduate Labs, e.g., CpE, Controls, Power?</b>	ECE	graduate coordinator, graduate committee	Start Fall 2021 End Fall 2021
<b>Student Success</b>	<b>Reduce time to graduation by</b>	ECE	graduate coordinator, graduate committee, department chair	Start Fall 2021 End Fall 2021

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	<b>hiring more faculty, and by creating a student support group</b>			
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Based on the External Review Report, the ECE MSEE graduate committee discussed extensively in Spring 2021 and reached consensus on the above Action Plan items. The ECE MSEE graduate committee also offers the following comments on the proposed plan, as reasoning behind the proposed action plan. We need to stress that many listed items will require ad-hoc committees within ECE, in order to address the relevant implementation issues.

a) Short Term priorities:

- a. Lab priority to MSEE students for 4xxx Labs:** After sharing multiple points of view, the committee reached a wide agreement on the proposal to reserve a few (2-4) positions in this type of Lab courses for MSEE students.
- b. Required courses offered at least once a year:** In general, this is acceptable, however there is an issue regarding ECE 5110, due to unavailability of consistently available instructors. For this case, a proposal was made to offer substitute course from the CpE list of classes.
- c. Offer elected courses co-listed with the undergraduate program, to improve the time needed for graduation:** One of the major issues toward swift graduation in the MSEE program, is the lack of a high number of offered classes each semester. Classes are regularly cancelled, due to a low enrollment, due to budgetary issues. A good way to improve this condition, is by offering co-listed courses, with different course number for undergraduate and graduate students, respectively. This has the advantage of attracting more undergraduate students to the MSEE program, by creating interest among B.S. students who take classes from the MSEE program. This method will also increase the influx of BS students to the MSEE program. In addition, this way, the MSEE program would be able to offer classes with a total number of enrolled MSEE students greater or equal to 8, for example.
- d. Improve Web site design and organization:** A new, appealing design needs more time to be budgeted carefully and will require hiring professionals with the right skills. However, it is essential toward marketing our MSEE program more efficiently and thus increase its growth. In the interim, we need to alleviate the existing inconsistencies of the current MSEE web-posted information, correct existing old class information, reduce redundancies, and organize the information better.

b) Longer Term items:

**a. Change the program name to Master of Science in Electrical and Computer Engineering:**

The committee discussed on this suggestion made by the external reviewers. This is seeing as the correct direction, however it is not easy to get a University approval for this. As per Office of Graduate Studies policies, the name change

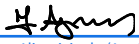



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will entail significant work that will need to prepare and present compelling evidence that makes a good case in favor of this change. This work can start during next academic year. This should include a marketing study and clear evidence that is in favor of the scope of the name change. *More explicitly, the study should include a survey of a) Alumni, and b) BSEE and BSCPE students, c) Current MSEE students, and d) Industrial partners. We should also study marketing surveys of current MS in Electrical and Computer Engineering trends and forecasts nationwide, in order to support corroborating evidence*


- b. A) Improve Plans for Marketing the program to attract more students:** This action can dramatically improve our chances to increase our enrollment. However, no budget is available currently. **B) Improve Web site design and organization:** A new, appealing design needs more time to be budgeted carefully and will require hiring professionals with the right skills. However, it is essential toward marketing our MSEE program more efficiently and thus increase its growth. In the interim, we need to alleviate the existing inconsistencies of the current MSEE web-posted information, correct existing old class information, and reduce the redundancies, and organize the information better.
- c. If concentrations are needed, select required courses in each concentration:** This is seen as an essential element that will ensure future growth and an overall strengthening of the program. *This represents a quite complicated item, with many ramifications for the years to come.*
- d. Develop more graduate Labs, e.g., CpE, Controls, Power?** One possibility exists in a newly developed elective class on Deep Learning which has a companion Lab. The Lab could be offered to graduate students as well.
- e. Reduce time to graduation by hiring more faculty or other means:** Ideas to consider include creating a student support group staffed by professors in the graduate program and also the possibility to plan graduate classes well in advance in order to establish regularity.

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MS Electrical Engineering  
Post Self-Study Program Review Action Plan**

**Signature Page**

<b>Department Faculty Name (Print)</b>	<b>Signature</b>
Thomas Ketseoglou	<b>Signature:</b> <i>Thomas Ketseoglou</i> <b>Email:</b> tketseoglou@cpp.edu
Zekeriya Aliyazicioglu	<b>Signature:</b>  <small>Zekeriya Aliyazicioglu (Apr 5, 2022 12:41 PDT)</small> <b>Email:</b> ZALIYAZICI@CPP.EDU
Mohamed El-Hadedy Aly	<b>Signature:</b>  <small>Mohamed Aly (Apr 6, 2022 16:51 PDT)</small> <b>Email:</b> mealy@cpp.edu
James Kang	<b>Signature:</b> <i>James Kang</i> <b>Email:</b> jskang@cpp.edu
Hyoung Soo Kim	<b>Signature:</b> <i>Hyoung Soo Kim</i> <b>Email:</b> hyoungsookim@cpp.edu
Ha Le	<b>Signature:</b> <i>Ha Le</i> <small>Ha Le (Apr 7, 2022 19:11 PDT)</small> <b>Email:</b> hatle@cpp.edu
Hong Chuan Lin	<b>Signature:</b> <i>Hong Chuan Lin</i> <b>Email:</b> hlin@cpp.edu
Saeed Monemi	<b>Signature:</b>  <small>Saeed Monemi (Apr 22, 2022 16:09 PDT)</small> <b>Email:</b> ssmonemi@cpp.edu
Phyllis Nelson	<b>Signature:</b>  <small>Phyllis Nelson (Apr 30, 2022 09:25 PDT)</small> <b>Email:</b> pnelson@cpp.edu
Salomon Oldak	<b>Signature:</b> <i>Salomon Oldak</i> <b>Email:</b> soldak@cpp.edu

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Department of Electrical and Computer Engineering  
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Brita Olson	<b>Signature:</b> <i>Brita Olson</i> <b>Email:</b> bolson@cpp.edu
Tamer Omar	<b>Signature:</b> <i>Tamer Omar</i> <b>Email:</b> tromar@cpp.edu
Norali Pernalete	<b>Signature:</b> <i>Norali Pernalete</i> <b>Email:</b> npernalete@cpp.edu
Anas Eddin Salah	<b>Signature:</b> <i>Anas Salah Eddin</i> <b>Email:</b> asalaheddin@cpp.edu
Menglai Yin	<b>Signature:</b> <i>Menglai Yin</i> <small>Menglai Yin (May 12, 2022 11:26 PDT)</small> <b>Email:</b> myin@cpp.edu
(Jenny) Zhen Yu	<b>Signature:</b>  <b>Email:</b> zhenyu@cpp.edu

**Signature:** *Halima El-Naga*

**Email:** helnaga@cpp.edu

---

Department Chair, Halima El-Naga

**Signature:** *Alison Baski*  
Alison Baski (May 17, 2022 05:05 PDT)

**Email:** aabaski@cpp.edu

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Interim Dean, Alison Baski

**Signature:** *Jocelyn Chong*

**Email:** jchong@cpp.edu

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Office of Assessment and Program Review, Jocelyn Chong