

# California State Polytechnic University

---

Program Review Self-Study  
College of Engineering  
M.S. Electrical Engineering

AY 2019-2020

# Table of Contents

---

1.	Introduction .....	1
1.1	Program Description.....	1
1.2	Mission and Goals .....	3
1.3	Reflection of Previous Self-Study .....	4
2	Program Description .....	5
2.1	Units to Degree.....	5
2.2	Curriculum.....	5
	MSEE Program at California State University, Fullerton (CSUF).....	8
	UCI Department of Electrical Engineering and Computer Science M.S. degree with a concentration in electrical engineering (EE) or computer engineering (CpE). .....	10
3	Program Assessment .....	18
3.1	Accreditation Status or Other External Assessments .....	18
3.2	Assessment Results and Conclusions .....	18
3.3	Update Assessment Plan from the next 5 to 7 years.....	21
4	Program Quality .....	25
4.1	Faculty .....	25
4.3	Service.....	28
4.4	Faculty Workload .....	28
4.5	Student Success .....	44
5	Resources .....	56
5.1	Enrollment .....	56
5.2	Faculty .....	57
5.3	Library Resources.....	57
5.4	Additional Resources.....	59
6	Suggested Action Plan .....	60
7	External Review .....	61
8	Department and Dean’s Post Review .....	62
	Appendix A – Curriculum .....	63
	Appendix B – Past Recommendation .....	66
	Appendix C – Curriculum for other Institutions .....	67
	Appendix D – Student Evaluation Forms .....	68
	Appendix E – Faculty Resumes .....	69

# 1. Introduction

## 1.1 Program Description<sup>1</sup>

The Department of Electrical and Computer Engineering (ECE) offers a Bachelor of Science in Electrical Engineering (BSEE), a Bachelor of Science in Computer Engineering (BSCpE), and a Master of Science in Electrical Engineering (MSEE). The MSEE represents a graduate program that is based on the foundations of the corresponding Cal Poly Pomona (CPP) B.S. in Electrical Engineering (BSEE) and the BS in Computer Engineering (BSCpE) programs which are designed to produce well-educated engineering professionals. After completing a limited number of required courses, graduate students in the MSEE program have the opportunity to choose from an extensive list of approved courses to tailor their program of study to their professional goals. In addition, during the culminating experience requirements, MSEE students can select the area of their specialization among multiple ones, including: Communications and Signal Processing, Computer Engineering, Electronics, Controls and Robotics, and Power.

Graduates from the ECE department are in demand by a broad cross-section of industry, government, public utilities and educational institutions as a result of the effective integration of theory and practical experience within the curriculum. The students are prepared for employment in design and development, test and evaluation, and applied research.

Electrical Engineering (EE) and Computer Engineering (CpE) students as well as graduate students are encouraged to become active in the student chapter of the Institute of Electrical and Electronics Engineers as well as many other College of Engineering and University student organizations.

Over the course of the last few years, the ECE MSEE faculty have engaged in significant research and creative activities as well as funding activities, including submission of proposals to federal organizations such as the National Science Foundation (NSF) and participation in NSF research review panels. In addition, many new classes addressing currently prevailing areas in ECE have been developed or are currently being developed in order to anticipate trends in the industry and future employment needs. Furthermore, in the last few years new Labs have been created and existing Labs have been revamped with new equipment. Examples include the Communications Lab, the Controls Lab, and others.

The MSEE offers specialization in the Communications, Signal Processing, Controls and Robotics, Computer Engineering, and Power fields through its culminating experience degree requirements which include a Master's project or a Master's Thesis track. Furthermore, many of the Labs have been recently revamped in order to accommodate the latest technologies. Examples include the new Wireless Communications Lab based on software defined radios and the new Controls and Robotics Lab. The MSEE program offers the following areas of research and specialization to MSEE students:

1. Communications and Signal Processing
2. Computer Engineering
3. Control and Robotics
4. Electronics and RF
5. Power Engineering

Below we discuss each of these areas briefly to give an idea of relevant area activities and their relationships to the MSEE program.

### 1.1.1 Communications and Signal Processing

The Communications and Signal Processing area represents one of the most established areas in the MSEE. Currently there are 3 tenure/tenure-track professors teaching in the

---

<sup>1</sup> Source: [https://catalog.cpp.edu/preview\\_entity.php?catoid=36&ent\\_oid=3659&returnto=2906](https://catalog.cpp.edu/preview_entity.php?catoid=36&ent_oid=3659&returnto=2906)

area. There is one Lab (9-523), the Communications Lab used in the MSEE program. The Lab was recently revamped and it is now equipped with 24 National Instruments (NI) software radios (USRP) that are used in multiple Communications laboratory courses as well as in MSEE projects and Thesis tasks. There are multiple areas of expertise of the faculty involved, including: Digital Communications, Signal Processing, Wireless Communications, and Kalman Filtering. The faculty members involved have been very active in attracting students for relevant MSEE projects. In addition, they are also engaged in research proposal funding to federal agencies, e.g., NSF, ARO, NASA, and local industry. Finally, there are multiple research activities by the faculty in this area including several IEEE conference organization activities, participation, and paper presentation as well as journal papers, including IEEE Transactions ones, and a book authored by a professor in the area.

#### 1.1.2 Computer Engineering

The Computer Engineering area represents one of the fastest growing in the MSEE. There are 6 tenure/tenure track professors involved in the MSEE from the Computer Engineering area. There are multiple areas of expertise, including: Computer Networking, Machine Learning, VLSI, and Security. The faculty members involved have been very active in attracting students for relevant MSEE projects. In addition, they are also engaged in research proposal funding to multiple federal agencies, e.g., NSF, ARO, and local industry. Finally, there are multiple research activities by the faculty in this area including multiple IEEE conference organization activities, participation, and paper presentation as well as multiple journal papers published.

#### 1.1.3 Control and Robotics

There are two tenure/tenure track faculty members in the Control and Robotics area. Faculty supervise student projects in Robust Control Systems, Robotics, Haptics, UAVs and UGVs (Unmanned Aerial/Ground Vehicle) control (in cooperation with faculty from other departments in the College of Engineering and the College of Science.) In addition, they are also engaged in research proposal funding to multiple federal agencies, e.g., NSF, ARO, and local industry. Finally, there are multiple research activities by the faculty in this area including multiple IEEE conference organization activities, participation, and paper presentation as well as multiple journal papers published.

#### 1.1.4 Electronics and RF

There are four professors in the Electronics and RF area related to the MSEE program. In addition, they are also engaged in research proposal funding to multiple federal agencies, e.g., NSF, ARO, and local industry. Finally, there are multiple research activities by the faculty in this area including multiple IEEE conference organization activities, participation, and paper presentation as well as multiple journal papers published. The latest class developed for the MSEE program is ECE 5300, Nanoelectronics.

#### 1.1.5 Power Engineering

Two tenure/tenure track professors in Power Engineering involved in the MSEE program. There are multiple research activities by the faculty in this area including multiple IEEE conference organization activities, participation, and paper presentation as well as multiple journal papers published.

## 1.2 Mission and Goals

<b>UNIVERSITY<sup>2</sup></b>	<p><b>Mission</b> - We cultivate success through a diverse culture of experiential learning, discovery, and innovation.</p> <p><b>Vision</b> - Cal Poly Pomona will be the model for an inclusive polytechnic university that inspires creativity and innovation, embraces local and global challenges, and transforms lives.</p> <p><b>Values</b></p> <ul style="list-style-type: none"> <li>• <u>Academic Excellence</u> – We demonstrate academic quality, relevance, and excellence through our teaching, learning, scholarship, and creative activities with student centered faculty in an evidence-based culture.</li> <li>• <u>Experiential Learning</u> – Our polytechnic identity fosters an integrative approach to education through collaboration, discovery, learn-by-doing, and innovation. Our approach encourages reflection, informed risk-taking, and continuous learning.</li> <li>• <u>Student Learning and Success</u> – We are deeply committed to educational experiences and supportive services that engage our students, enhance personal well-being and growth, provide career opportunities, and foster ethical citizenship.</li> <li>• <u>Inclusive</u> – Our diversity across multiple dimensions reflects and enhances our community. We are welcoming and respectful, and we value diversity.</li> <li>• <u>Community Engagement</u> – We nurture mutually beneficial and meaningful relationships with community partners and stakeholders.</li> <li>• <u>Social and Environmental Responsibility</u> – As global citizens, our individual and collective actions reflect our commitment to one another, society, and the environment.</li> </ul>
<b>COLLEGE OF ENGINEERING<sup>3</sup></b>	<p><b>Mission</b> – The mission of the Cal Poly Pomona College of Engineering is to produce well-qualified engineering graduates who are ready for immediate and productive entry into the workforce or for graduate studies. The college does so by providing practice-oriented education based on sound engineering principles and applications, while also emphasizing the teamwork, communication and creative skills needed to be leaders in a global society.</p> <p>The Cal Poly Pomona College of Engineering strives to be a leader in providing relevant and rigorous engineering education in a learning-centered environment. As such, the college endeavors to offer programs and curricula that are up-to-date, globally competitive, and supported by strong ties to educational and industrial partners, while maintaining a community of students, staff, and faculty who are talented, successful, and reflect the diversity of California.</p> <p>Engineering is a dynamic profession that provides the expertise to meet the technical challenges facing the nation. Cal Poly Pomona's College of Engineering has a well-earned reputation of helping to meet these challenges by preparing engineers and engineering technologists who, upon graduation, are prepared to contribute to industry and are also ready for graduate studies. The emphasis on a strong theoretical background coordinated with early</p>

<sup>2</sup> Source: <https://www.cpp.edu/~aboutcpp/calpolypomona-overview/mission-and-values.shtml>

<sup>3</sup> Source: <https://catalog.cpp.edu/content.php?catoid=36&navoid=2906>

	<p>and significant laboratory experiences continues to make the college a leader in engineering education. In consultation with its many constituencies, the College of Engineering has adopted the following as its principal educational objectives:</p> <ul style="list-style-type: none"> <li>• Preparation of graduates for immediate entry into the engineering profession, technically well-prepared in analysis and design, and with an understanding of their professional responsibilities for contemporary and future human welfare</li> <li>• Preparation of graduates as practicing engineers who communicate effectively, work collaboratively, learn independently and act ethically</li> <li>• Adoption by graduates of lifelong learning, including formal advanced studies, as necessary for continued effectiveness in the profession.</li> </ul>
<b>Department of Electrical and Computer Engineering<sup>4</sup></b>	<p><b>Mission</b> – The Master of Science in Electrical Engineering (MSEE) program offers state of the art instruction for BSEE, BSCpE or closely related graduates who intend to supplement their initial degree. The program is intended mainly for the practicing engineers. It can be used by those students interested in performing applied research or those willing to broaden their knowledge before pursuing higher studies.</p> <p>Pursuant our BSEE and BSCpE, the emphasis of the program is on advanced studies with applied training and includes laboratory instruction. Most courses however, are dedicated to provide a rigorous theoretical background.</p>

### 1.3 Reflection of Previous Self-Study

The current study is the first self-study available for the MSEE program at CPP. In other words, because there have been no external reviews for the MSEE program, the ECE has not created a self-study report until now. Thus, there is no reflection from previous study available.

---

<sup>4</sup> Source: [https://catalog.cpp.edu/preview\\_program.php?catoid=36&pooid=9475](https://catalog.cpp.edu/preview_program.php?catoid=36&pooid=9475)

## 2 Program Description

### 2.1 Units to Degree

The curriculum for the Master of Science in Electrical Engineering degree requires a minimum of 30 semester units of coursework, of which at least 21 units must be in 5000 and 6000 level courses.<sup>5</sup> The program of study consists of 9 units of required breadth courses, a minimum of 15 units of electives, and either a Thesis (4-6 units) or a Master's Degree Project consisting of 1 unit of Directed Research followed by 2 units of Master's Degree Project class. Breadth courses are intended to ensure that the student acquires a fundamental knowledge in advanced mathematical tools that are relevant to many currently prevailing technologies. The electives may be chosen from an extensive list of courses in electrical engineering and related areas of mathematics, science, and engineering.

Each student must, in consultation with their academic advisor, prepare a program of study that outlines the coursework required to complete the program. This program of study must be prepared when the student has achieved 9-12 units of graduate coursework, but not later than the end of the sixth week of the second semester of attendance.

To attain Advancement to Candidacy for the degree, the student must satisfy all of the following criteria:

1. Completion of all conditions of admission, including any preparatory courses that may have been specified.
2. Have an approved program of study on file.
3. Completion of 22 semester units with a grade point average of at least 3.0.
4. Passed the graduation writing test or received a waiver.

Please check the Electrical and Computer Engineering Department website([https://catalog.cpp.edu/preview\\_program.php?catoid=36&poid=9475](https://catalog.cpp.edu/preview_program.php?catoid=36&poid=9475)) for additional information.

### 2.2 Curriculum

#### 2.2.1 Program Curriculum<sup>6,7</sup>

Appendix A – Curriculum for a list of the curriculum (core, directed electives, emphasis areas, minors, etc.).

In the last 5 years, a few new classes have been added as follows:

1. AY 2015-16: ECE 5300, Nanoelectronics  
This graduate course introduces engineering and applied science students to the science of miniaturized nanoelectronics; including fabrication of small machines (micro and nano size), characterization of materials, scaling laws, nanowire, carbon nanotube, graphene, and nanosensor application.
2. ECE 5670 was proposed in 2015, and first instructed in around 2016.

---

<sup>5</sup> The corresponding number of units in the quarter system was 47 quarter units. Most of the courses used to be 4 units quarter courses in the quarter system and the semester course numbers have been derived from the quarter ones by adding a zero suffix.

<sup>6</sup> CPP Catalog: [https://catalog.cpp.edu/preview\\_program.php?catoid=36&poid=9475&returnto=2906](https://catalog.cpp.edu/preview_program.php?catoid=36&poid=9475&returnto=2906)

<sup>7</sup> CPP Catalog: [https://catalog.cpp.edu/preview\\_program.php?catoid=30&poid=7690&returnto=2465](https://catalog.cpp.edu/preview_program.php?catoid=30&poid=7690&returnto=2465)

3. ECE 5840 was proposed in 2015, but never instructed.
4. ECE5990 (pending change to ECE5680— Introduction to Robotics, Haptics, Control and Applications.)
5. ECE 599 Special Topics for Graduate Students (Wireless Integrated Circuit Designs) was taught in 2018

## 2.2.2 Curriculum Comparison with other programs

The purpose of this report is to compare the MSEE (Master of Science in Electrical Engineering) program’s curriculum at Cal Poly Pomona with (1) the MSEE and MSCpE programs’ curricula at UC-Irvine, and (2) the MSEE<sup>8</sup> program’s curriculum at Cal State Fullerton (CSUF), which are geographically the closest comparable programs to our campus and represent programs with which our faculty is familiar with. Note that CSU Full Table 1 depicts a brief comparison of the main features of each program used for this study. In addition, CSUF offers a MSCpE degree with Option in System’s Engineering, however this program was not included in the comparison.

Table 1. Brief Comparison of the Master of Science in Electrical and Computer Engineering Programs

	<b>Cal Poly MSEE</b>	<b>Cal State Fullerton MSEE</b>	<b>UCI MSEE</b>	<b>UCI MSCpE</b>
Semester or Quarter System	Semester	Semester	Quarter	Quarter
Units (approximate number of courses)	30 unit (≈10 courses)	30 unit (≈10 courses)	48-49 units (≈12 courses)	48-49 units (≈12 courses)
Concentration	N/A	<ul style="list-style-type: none"> <li>• Systems Engineering Option</li> </ul>	<ul style="list-style-type: none"> <li>• Circuits</li> <li>• Systems</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
Thesis/Project/Comprehensive Exam Option	Thesis/Project	Thesis/Project/Comprehensive Exam	Thesis/Comprehensive Exam	Thesis/Comprehensive Exam
Core Courses	<ul style="list-style-type: none"> <li>• Numerical Modeling</li> <li>• Random Processes</li> <li>• Research Methods</li> </ul>	<ul style="list-style-type: none"> <li>• Computer Methods in Numerical Analysis</li> <li>• Analysis of Random Signals</li> <li>• Digital Signal Processing (extra)</li> </ul>	<p><u>For Circuits &amp; Devices plan of study (choose 4)</u></p> <ul style="list-style-type: none"> <li>• Advanced Analog Integrated Circuit Design I &amp; II</li> <li>• Advanced Semiconductor Devices I &amp; II</li> <li>• Advanced Engineering Electromagnetics I</li> <li>• Optical Communications</li> </ul> <p><u>For Systems plan of study (choose 4)</u></p> <ul style="list-style-type: none"> <li>• Random Processes</li> <li>• Digital Communications I</li> <li>• Digital Signal Processing I</li> <li>• Detection, Estimation, and Demodulation Theory</li> <li>• Linear Systems I</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced System Software</li> <li>• Computer Architecture</li> <li>• Design and Analysis of Algorithms</li> </ul>

<sup>8</sup> CSUF also offers an MS degree in Systems Engineering, however we only consider its MSEE degree program here, due to its similarity to our MSEE.

	Cal Poly MSEE	Cal State Fullerton MSEE	UCI MSEE	UCI MSCpE
			<ul style="list-style-type: none"> <li>Industrial and Power Electronics</li> </ul>	

Details of each program are described in the next few sections.

### MSEE Program at Cal Poly Pomona Department of Electrical and Computer Engineering

Reference: [https://catalog.cpp.edu/preview\\_program.php?catoid=36&poid=9475&returnto=2906](https://catalog.cpp.edu/preview_program.php?catoid=36&poid=9475&returnto=2906)

Requirements: 30 units total

- Major Required Core
- Major Electives
- Culminating Experience
  - Project (1 unit ECE6910 Directed Research, 2 units ECE6950 Master's Project)
  - Thesis (3 units Master's Degree Thesis)

Major Required Core classes: (9 units)

- ECE 5110 Numerical Modeling (3)
- ECE 5430 - Random Processes (3)
- ECE 5960 - Research Methods (2)
- ECE Lab (any 4000 or 5000-level Laboratory) (1)

Major Electives (15 – 18 units)

- ECE 5180 - Performance and Reliability Analysis (3)
- ECE 5200 - Network Security (3)
- ECE 5250 - Embedded Systems (3)
- ECE 5300 - Nanoelectronics (3)
- ECE 5400 - Systems Theory (3)
- ECE 5440 - Communication Theory (3)
- ECE 5450 - Robust Control (3)
- ECE 5460 - Advanced Software Engineering (3)
- ECE 5470 - Digital Image Processing (3)
- ECE 5480 - Solid State Devices (3)
- ECE 5510 - Digital Signal Processing (3)
- ECE 5540 - Wavelet Theory and Applications (3)
- ECE 5580 - Computer Arithmetic (3)
- ECE 5590 - Computer Network (3)
- ECE 5600 - Information Theory and Coding (3)
- ECE 5610 - Advanced Microprocessors (3)
- ECE 5650 - Radar Signal Processing (3)
- ECE 5660 - OFDM and CDMA Systems (3)
- ECE 5670 - Natural Language Processing (3)
- ECE 5700 - Smart Grid in Power System (3)
- ECE 5720 - Image Sensors (3)
- ECE 5750 - Distribution System and Power Quality (3)
- ECE 5820 - Digital System Testing (3)

- ECE 5840 - Design and Analysis of Computer Algorithms (3)
- ECE 5850 - Computer Organization (3)
- ECE 5921L - Microcontroller Applications Laboratory (1)
- ECE 5930L - Digital Signal Processing (DSP) Applications Laboratory (1)
- ECE 5940L - Field Programmable Gate Array (FPGA) Design Laboratory (1)
- ECE 5970L - Wireless Communication Systems Laboratory (1)
- ECE 6440 - Advanced Communication Systems (3)
- ECE 6510 - Advanced Signal Processing (3)
- ECE 6850 - Advanced Computer Organization (3)

The MSEE includes the following areas of specialization:

1. Communications and Signal Processing
2. Computer Engineering
3. Control and Robotics
4. Electronics and RF
5. Power Engineering

### **MSEE Program at California State University, Fullerton (CSUF)**

References:

<http://www.fullerton.edu/ecs/ee/degrees/graduate.php>  
<http://www.fullerton.edu/ecs/ee/degrees/courses.php>

Research areas:

- Communications Systems/Signal Processing
- Computer Engineering
- Control Systems
- Electronics and Circuit Theory

The study plan consists of a minimum of 30 units of adviser-approved upper-division and graduate-level course work, which must be completed with an overall grade-point average of at least 3.0. At least half the units required for the degree must be in approved graduate (500-level) courses.

#### Required Math Courses (6 units)

- EGGN 403 Computer Methods in Numerical Analysis (3)
- EGEE 580 Analysis of Random Signals (3)

Note: If one of the above courses has been completed, EGEE 518 (Digital Signal Processing) will satisfy the requirement

#### Concentration Courses (15 units)

A student is required to select a minimum of 15 units of concentration courses in Electrical Engineering. These units may be 400-level and 500-level courses and are selected according to the student's area of interest. Courses list can be found in <http://www.fullerton.edu/ecs/ee/degrees/courses.php>.

Graduate Project, EGEE 597 (1-3), and Thesis, EGEE 598 (6), are considered concentration courses.

Course work may focus on the following areas:

- Communications Systems/Signal Processing
- Computer Engineering
- Control Systems
- Electronics and Circuit Theory

- Option in Systems Engineering

#### Other Courses (9 units)

Elective units should be taken in Electrical Engineering or a related engineering field and are subject to adviser approval.

#### Exam/Thesis/Project Option

Subject to approval by the faculty adviser, students may select one of the following options for final review by the department graduate committee:

- Satisfactory completion of a final written comprehensive examination on coursework; OR
- Satisfactory completion of a formal project EGEE 597 (3 units) and a final oral comprehensive examination on coursework; OR
- Satisfactory completion and oral defense of a thesis EGEE 598 (3-6 units).

#### A list of 400-level and 500-level courses are given below:

EGEE 401- Engineering Economy and Professionalism  
EGEE 404 Introduction to Microprocessors and microcomputers  
EGEE 404L Microprocessor Lab  
EGEE 406 Design Applications with Microcontroller and FPGA  
EGEE 407 Digital Computer Architecture and Design I  
EGEE 407L Digital Computer Design Lab  
EGEE 409 Introduction to Linear Systems  
EGEE 410 Electro-Optical Systems  
EGEE 412 Digital Computer Architecture and Design II  
EGEE 416 Feedback Control Systems  
EGEE 420 Introduction to Digital Filtering  
EGEE 424 Computer Simulation of Continuous Systems  
EGEE 425 Introduction to Systems Engineering  
EGEE 430 Fuzzy Logic and Control  
EGEE 435 Microwave Engineering  
EGEE 442 Electronic Circuits  
EGEE 443 Electronic Communication Systems  
EGEE 445 Digital Electronics  
EGEE 448 Digital Systems Design and VHDL  
EGEE 455 Microelectronics and NANO Devices  
EGEE 460 Introduction to Cellular Mobile Communications Systems  
EGEE 465 Introduction to VLSI Design  
EGEE 469 Antennas for Wireless Communications  
EGEE 480 Optical Engineering and Communications  
EGEE 483 Introduction to Global Positioning Systems (GPS)  
EGEE 483L Global Positioning System LAB  
EGEE 503 Information Theory and Coding  
EGEE 504A Linear Network Synthesis  
EGEE 507 Detection Theory  
EGEE 510 Optics & Electromagnetics in Communications  
EGEE 518 Digital Signal Processing  
EGEE 519A Parallel and Multiprocessing  
EGEE 519B Computer Networks and the Internet  
EGEE 522 Spread Spectrum Communications  
EGEE 523A VLSI and NANO Technology Devices  
EGEE 523B CMOS VLSI Design

EGEE 526 Digital Control Systems  
EGEE 527 Fault Diagnosis and Fault-Tolerant Design  
EGEE 529 Principles of Neural Systems  
EGEE 531 Phase-Locked and Frequency Feedback Systems  
EGEE 537 Satellite Communications  
EGEE 557 Microprogramming and Embedded Microprocessors  
EGEE 558A Microprocessors and Systems Applications I  
EGEE 558B Microprocessors and Systems Applications II  
EGEE 559 Introduction to Robotics  
EGEE 580 Analysis of Random Signals  
EGEE 581 Theory of Linear Systems  
EGEE 582 Linear Estimation Theory  
EGEE 585 Optimization Techniques in Systems Engineering  
EGEE 587 Operational Analysis Techniques in Systems Engineering

Comparing the curricula of the CPP MSEE and the CSUF MSEE, one can see that there is a similar number of classes at the 500 level and above offered at CSUF. In addition, CSUF classes are similar to the ones offered at CPP MSEE.

### **UCI Department of Electrical Engineering and Computer Science M.S. degree with a concentration in electrical engineering (EE) or computer engineering (CpE).**

#### References:

1. <http://engineering.uci.edu/dept/eecs/graduate>
2. <http://catalogue.uci.edu/thehenrysamuelischoolofengineering/departmentofelectricalengineeringandcomputerscience/#graduatetext>

Electrical engineering research areas include:

- optics and electronic devices and circuits
- communications
- signal processing
- machine vision
- power electronics
- systems engineering

Computer engineering research areas include:

- computer architecture
- software
- embedded systems

Two plans are offered for the M.S. degree: a *thesis option* and a *comprehensive examination option*. This is true for both the MSEE and MSCpE degrees.

#### a) UCI MSEE Curriculum

For MSEE, the thesis option requires completion of 48 units of study. The comprehensive examination option requires the completion of 49 course units. Note that UCI has a quarter system and each class is 4 units.

For the thesis option, up to 16 units of elective courses may be taken from EECS296 (M.S. Thesis Research), and at least seven *concentration* courses in the EE concentration must be completed. There is no core courses defined for these option.

For the comprehensive examination option, students are required to take a minimum of 12 courses. At least *four* courses must be taken from a list of *six* courses according to the students' plans; there are two plans, e.g., the "Circuits & Devices" plan and the "Systems" plan).

#### Circuits & Devices Plan of Study:

At least 4 courses from the following list must be completed with a B (3.0) grade or better:

- EECS 270A - Advanced Analog Integrated Circuit Design I
- EECS 270B - Advanced Analog Integrated Circuit Design II
- EECS 277A - Advanced Semiconductor Devices I
- EECS 277B - Advanced Semiconductor Devices II
- EECS 280A - Advanced Engineering Electromagnetics I
- EECS 285A - Optical Communications

#### Systems Plan of Study

At least 4 courses from the following list must be completed with a B (3.0) grade or better:

- EECS 240 - Random Processes
- EECS 241A - Digital Communications I
- EECS 250 - Digital Signal Processing I
- EECS 251A - Detection, Estimation, and Demodulation Theory
- EECS 260A - Linear Systems I
- EECS 267A - Industrial and Power Electronics

On top of the above core courses, at least 5 additional courses from the list of EE concentration courses must be completed with a B (3.0) grade or better.

The Electrical Engineering Concentration courses are listed below:

EECS 202A- 202B: Principles of Imaging and Techniques in Medical Imaging I: X-ray, Nuclear, and NMR Imaging

EECS 202C: Techniques in Medical Imaging II: Ultrasound, Electrophysiological, Optical

EECS 203A: Digital Image Processing

EECS 213: Computer Architecture

EECS 215: Design and Analysis of Algorithms

EECS 217: VLSI System Design

EECS 229: Low Power SoC Design

EECS 240: Random Processes

EECS 241A- 241B: Digital Communications I and Digital Communications II

EECS 242: Information Theory

EECS 243: Error Correcting Codes

EECS 244: Wireless Communications

EECS 245: Space-Time Coding

EECS 247: Information Storage

EECS 248A: Computer and Communication Networks

EECS 250: Digital Signal Processing I

EECS 251A- 251B: Detection, Estimation, and Demodulation Theory

EECS 260A: Linear Systems I  
EECS 261A: Linear Optimization Methods  
EECS 267A- 267B: Industrial and Power Electronics and Topics in Industrial and Power Electronics  
EECS 270A- 270B: Advanced Analog Integrated Circuit Design I & II  
EECS 270C: Design of Integrated Circuits for Broadband Applications  
EECS 270D: Radio-Frequency Integrated Circuit Design  
EECS 272: Topics in Electrical Engineering  
EECS 275A- 275B: Very Large Scale Integration (VLSI) Project and Testing  
EECS 277A: Advanced Semiconductor Devices I  
EECS 277B: Advanced Semiconductor Devices II  
EECS 277C: Nanotechnology  
EECS 278: Micro-System Design  
EECS 279: Micro-Sensors and Actuators  
EECS 280A: Advanced Engineering Electromagnetics I  
EECS 280B: Advanced Engineering Electromagnetics II  
EECS 282: Monolithic Microwave Integrated Circuit (MMIC) Analysis and Design II  
EECS 285A: Optical Communications  
EECS 285B: Lasers and Photonics  
EECS 285C: Nano Imaging  
EECS 298: Topics in Electrical Engineering and Computer Science

Comparing the curricula of the CPP MSEE and the UCI MSEE, one can see that there are significantly more classes offered in the UCI MSEE, although there are only two major concentrations possible. In addition, the UCI MSEE coursework is focusing more on offering a more classical foundation of course at the MSEE level, leaving the more advanced topics to further studies at the Ph.D. level. This is a quite important observation that needs to be recalled later in this Section where we present our conclusions.

#### b) UCI MSCpE Curriculum

For MSCpE, the thesis option requires completion of 12 course of study. Three core courses in the Computer Engineering concentration (CPE) must be completed with a grade of B (3.0) or better. At least 4 additional concentration or approved courses must also be completed with a B (3.0) or better. Up to four (16 units) of the required 12 courses may be from EECS296 (M.S. Thesis Research) with the approval of the student's thesis advisor.

The comprehensive examination option also requires 12 course of study. Three core courses and at least five additional concentration or approved courses must be completed.

The three Computer Engineering Concentration core courses are:

EECS 211- Advanced System Software  
EECS 213- Computer Architecture  
EECS 215- Design and Analysis of Algorithms

The other Computer Engineering Concentration courses are:

EECS 217 - VLSI System Design  
EECS 219 - Distributed Software Architecture and Design  
EECS 220 - Advanced Digital Signal Processing Architecture  
EECS 221- Topics in Computer Engineering  
EECS 222 - Embedded System Modeling

EECS 223 - Real-Time Computer Systems  
 EECS 224 - High-Performance Computing  
 EECS 225 - Embedded Systems Design  
 EECS 226 - Embedded System Software  
 EECS 227 - Cyber-Physical System Design  
 EECS 228 - Program Analysis  
 EECS 229 - Low Power SoC Design  
 EECS 230 - Energy Efficiency  
 EECS 248A - Computer and Communication Networks  
 EECS 298 - Topics in Electrical Engineering and Computer Science  
 COMPSCI 233 - Networking Laboratory  
 COMPSCI 234 - Advanced Networks  
 COMPSCI 236 - Wireless and Mobile Networking

A comparison of the programs reveals some interesting similarities, but it also identifies some significant differences among the 3 programs. In more detail, the similarities between CPP MSEE program and the other 2 comparative ones are as follows:

1. CPP MSEE program follows the same, no-option approach, in the selection of classes, with the CSUF MSEE.
2. The required classes in the CPP MSEE program are very similar with the ones in the CSUF MSEE and with the UCI MSEE Systems plan one.
3. The culminating experience requirements and options are similar for both CSU programs.
4. Both CSU programs include a Controls specialization, something that is not included in the UCI MSEE program (at UCI Controls is part of the Mechanical Engineering department).
5. The number of offered classes is similar for CPP MSEE and UCI MSEE programs. There are 34 classes offered in CPP MSEE and 49 classes in UCI MSEE, however notice that the UCI MSEE program does not include Computer Engineering as there is a separate MSCPE program available at UCI.
6. CPP and CSUF MSEE have about the same number of faculty members per research area (2.5/area).
7. Comparing the curricula of the CPP MSEE and the CSUF MSEE, one can see that there are more classes at the 500 level and above offered at CPP. In more detail, there are 24 classes offered at CSUF, while there are 33 classes at CPP.
8. Comparing the curricula of the CPP MSEE and the UCI MSEE, one can see that there are significantly more classes offered in the UCI MSEE, although there are only two major concentrations possible. In addition, the UCI MSEE coursework is focusing more on offering a more classical foundation of course at the MSEE level, leaving the more advanced topics to further studies at the Ph.D. level.
9. While all three programs offer a Thesis option for culminating experience, only the CSUF and the CPP MSEE offer a project option. This is an important difference as we move toward more research-oriented education in the CSU.

Regarding differences among the programs, the following list includes some of the prevailing ones:

1. At level 5000 and above, the CSUF MSEE program includes 24 classes offered, while the CPP MSEE program offers 33 classes.

2. The UCI MSEE program offers two different plans (options): a) Circuits and Devices, and b) Systems.
3. The UCI MSEE and MSCpE together offers 58 classes total, more than the other 2 programs, although without serving Controls students (Controls are part of the Mechanical Engineering department at UCI).
4. The CPP MSEE aims at covering the areas of Communications and Signal Processing, Electronics and Nanoelectronics, Power, Controls, and Computer Engineering with significantly fewer faculty members per covered area than UCI: UCI EECS has about 42 tenure and tenure-track faculty members for 8 research areas, this results in average faculty per area of 5.2. Using the actual number of faculty members who teach in the MSEE program, this number goes further down to around 2 per research area.

### 2.2.3 Course Offerings

Table 1 – Course Offerings indicating number of sections and students in required and elective courses over the past five years.

Table 1 – Course Offerings<sup>9</sup>

Quarter (Q) Courses	Semester (S) Courses	# of Sections/Students	F15 (Q)	W16 (Q)	Sp16 (Q)	F16 (Q)	W17 (Q)	Sp17 (Q)	F17 (Q)	W18 (Q)	Sp18 (Q)	F18 (S)	Sp19 (S)	
	ECE 5110	# of Sections	0	0	0	0	0	0	0	0	0	0	1	
		# of Students	0	0	0	0	0	0	0	0	0	0	0	25
ECE 520		# of Sections	0	0	0	1	0	0	0	0	0	1	0	0
		# of Students	0	0	0	23	0	0	0	0	0	30	0	0
ECE 525	ECE 5250	# of Sections	0	0	0	0	1	0	0	0	0	0	1	0
		# of Students	0	0	0	0	28	0	0	0	0	0	22	0
ECE 530	ECE 5300	# of Sections	0	0	0	0	1	0	0	1	0	1	0	
		# of Students	0	0	0	0	26	0	0	0	15	0	19	0
ECE 540	ECE 5400	# of Sections	1	0	0	0	1	0	1	0	0	1	0	
		# of Students	23	0	0	0	14	0	17	0	0	0	21	0
ECE 542	ECE 5470	# of Sections	0	0	0	0	0	0	0	0	0	0	0	
		# of Students	0	0	0	0	0	0	0	0	0	0	0	0
ECE 543	ECE 5430	# of Sections	0	1	0	0	1	0	0	1	0	0	0	1
		# of Students	0	29	0	0	16	0	0	0	22	0	0	32
ECE 544	ECE 5440	# of Sections	0	0	0	1	0	0	0	0	0	1	0	
		# of Students	0	0	0	34	0	0	0	0	0	0	27	0
ECE 545	ECE 5450	# of Sections	0	0	1	0	0	1	0	0	1	0	1	
		# of Students	0	0	20	0	0	0	34	0	0	25	0	10
Quarter (Q) Courses	Semester (S) Courses	# of Sections/Students	F15 (Q)	W16 (Q)	Sp16 (Q)	F16 (Q)	W17 (Q)	Sp17 (Q)	F17 (Q)	W18 (Q)	Sp18 (Q)	F18 (S)	Sp19 (S)	

<sup>9</sup> ARAR “Course Listing” Report

ECE 547	ECE 5470	# of Sections	0	0	0	0	0	0	0	0	0	0	1
		# of Students	0	0	0	0	0	0	0	0	0	0	0
ECE 551		# of Sections	0	0	0	0	0	0	1	0	0	0	0
		# of Students	0	0	0	0	0	0	36	0	0	0	0
ECE 558		# of Sections	1	0	0	0	0	0	0	0	0	0	0
		# of Students	28	0	0	0	0	0	0	0	0	0	0
ECE 560		# of Sections	1	0	0	0	0	0	0	0	0	0	0
		# of Students	29	0	0	0	0	0	0	0	0	0	0
ECE 566		# of Sections	0	0	1	0	0	1	0	0	1	0	0
		# of Students	0	0	23	0	0	26	0	0	8	0	0
ECE 567		# of Sections	0	0	0	0	0	0	0	1	0	0	0
		# of Students	0	0	0	0	0	0	0	23	0	0	0
ECE 570		# of Sections	0	0	0	0	0	0	0	0	1	0	0
		# of Students	0	0	0	0	0	0	0	0	11	0	0
ECE 572		# of Sections	0	0	0	1	0	0	0	0	0	0	0
		# of Students	0	0	0	25	0	0	0	0	0	0	0
ECE 582		# of Sections	1	0	0	0	0	0	0	0	0	0	0
		# of Students	22	0	0	0	0	0	0	0	0	0	0
ECE 585	ECE 5850	# of Sections	0	1	0	0	0	0	0	0	0	0	1
		# of Students	0	21	0	0	0	0	0	0	0	0	15
	ECE 5960	# of Sections	0	0	0	0	0	0	0	0	0	0	1
		# of Students	0	0	0	0	0	0	0	0	0	0	26
ECE 597L		# of Sections	0	0	1	1	0	0	1	0	0	0	0
		# of Students	0	0	36	10	0	0	8	0	0	0	0
ECE 599		# of Sections	0	3	1	0	0	0	0	1	0	0	0
		# of Students	0	45	34	0	0	0	0	14	0	0	0
ECE 599L		# of Sections	0	0	0	0	0	1	0	0	0	0	0
		# of Students	0	0	0	0	0	5	0	0	0	0	0

The CPP MSEE program has been around for more than 30 years and has established a good reputation, due to its capability to graduate hands-on engineers ready to successfully work in the local industry, merely because of employing many Labs in teaching graduate courses. More recently, CPP transitioned from a quarter to a semester calendar starting the 2018/19 AY. For that reason, course offerings have been reduced, and the number of offered graduate level labs has been decreased to one. On the upside, the Communications Systems Lab (located at 9-523) has been re-vamped recently with Software radios based on National Instruments (NI) Universal Software Radio Ports (USRP). In more detail, 24 USRPs were bought in Spring 2019 and 12 of them have been installed in the lab already, with the remaining scheduled to be installed in Summer 2020, after a full renovation of the Lab. The installed USRPs are being used in the current Spring 2020 semester in offering 2 new labs, one at the undergraduate level (ECE 4705 L: Introduction to Communications) and more importantly for this review, another one at the graduate level (ECE 5970 L: Wireless Communications Lab). In the latter class, that was designed and tested in Fall 2019, students learn how to design many modern communication systems, including 4G OFDM and MIMO (in the near future) as well as work with NI Labview software that is used by many employers in FPGA system design. Further, the capabilities of the new Lab can help in future funding activities and also in offering new lab experiments in the future based on the research work of the Communications faculty.

However, although more Labs have also been renovated, there is a lack of more graduate Labs offerings in the program currently. Also, due to a lack of instructor availability to teach classes in the MSEE program the time to graduation has been prolonged in the last five years. This situation has become worse due to the smaller number of students enrolled in the program that results in low enrollment to classes with the resulting class cancellation of classes in advance of each semester. Finally, development of new, currently prevailing topic classes has been slow. We keep this issue together with other issues that affect the program negatively for later reference in Section 6, when we present suggestions for improvement. We use the name Issue of Concern (IoC) and we use IoC1 to refer to this particular issue.

### 3 Program Assessment

#### 3.1 Accreditation Status or Other External Assessments

There have been no external assessments or reviews of the MSEE program prior to the current one.

#### 3.2 Assessment Results and Conclusions

The ECE department adopted an assessment plan for the MSEE program in AY 2018-19 for the first time. The first internal assessments have been carried out in Spring 2019 and Fall 2019, based on the methodology presented below in Section 3.2. They are part of the newly established assessment plan that has a 5 year execution cycle, as described in the Section 3.2. below.

Our first assessment cycles, as per the plan adopted in AY 2018-19, were undertaken during Spring 2019 and Fall 2019, by focusing on Student Learning Outcomes (SLO) d, and a, respectively (please see Section 3.2 below for information on the plan and relevant SLOs). Also, it is important to mention that SLO f) “Demonstrate oral and written communication skills relevant to the field of study,” will be assessed in AY 2023-24 and will provide direct evidence on graduating MSEE students’ capability to efficiently communicate both orally and in writing.

##### 3.2.1 Results of Assessment in Spring 2019

During the Spring 2019 semester, SLO d: “Demonstrate mastery of the methodology and techniques specific to the field of study” was assessed in two classes: ECE 5450 (Robust Control) and ECE 5470 (Digital Image Processing.) The results for these classes are shown in the following two Tables, where the scale ranges from 1-Not at all to 5-Excellent. This first assessment was based on student perception data without direct evidence supplied from the students. Future assessments, starting in AY 2020-21 will rely on more direct results provided by students using specific rubrics, as described in Section 3.2 below.

Assessment results for ECE 5450	1	2	3	4	5
I understood the statement of the problem			2	3	4
It was easy for to begin working on the problem	1	2	3	3	
Material covered in class helped me solve this problem		2	1	1	5
I was able to complete a preliminary design for the problem	1		3	3	2
I was able to simulate effectively the problem in time domain	1	1	2	3	2
I am confident that if I encounter a similar problem in practice I will be able to solve it	1	2	1	3	2

Assessment results for ECE 5470

<b>1 (not at all) ---- 5 (extremely)</b>	<b>Mean</b>	<b>Std</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>
<b>It was easy to find a practical project idea</b>	3.88	0.85	4	3	5
<b>The material covered in class helped me with the project</b>	3.96	0.81	4	3	5
<b>Starting the project was straightforward</b>	4.13	0.95	4	2	5
<b>I was able to implement the project within the allotted time</b>	4.08	0.83	4	2	5
<b>I am confident that I will be able to solve other image processing problems, which I might encounter later</b>	4.25	0.74	4	3	5

3.2.2 Results of Assessment in Fall 2019

In Fall 2019 semester, SLO a: ``Have the ability to apply principles in Electrical and/or Computer Engineering towards solving complex problems relevant to area of specialization'' was assessed in two classes: ECE 5300 (Nanoelectronics) and ECE 5180 (Performance and Reliability Analysis.) The results are presented in the following two Tables. This assessment was also based on student perception data without direct evidence supplied from the students. Future assessments, starting in AY 2020-21 will rely on more direct results provided by students using specific rubrics, as described in Section 3.2 below.

#	Assessment results for ECE 5300	Yes		No	
		No. of students	% of students	No. of students	% of students
1	I understood the statement of the problem	12	80%	3	20%
2	It was easy for to begin working on the problem	7	47%	8	53%
3	Material covered in class helped me solve this problem	13	87%	2	13%
4	I was able to complete a preliminary design for the problem	11	73%	4	27%
5	I was able to simulate effectively the problem in time domain	8	57%	6	43%
6	I am confident that if I encounter a similar problem in practice I will be able to solve it	11	73%	4	27%

Assessment results for ECE 5180

<b>Assessment question / Score</b>	<b>5(best)</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1(worst)</b>
<b>Have the capability to identify a complex problem for the final project</b>	10	4	1	1	1
<b>Have the knowledge and capability to propose an appropriate modeling method(s)</b>	10	4	0	2	1
<b>Have the capability to solve the problem correctly and completely</b>	3	7	4	0	3

Based on the limited results gathered so far over SLOs a and d, we can conclude that the MSEE program is on the way to meet its scope and goals set. However, we have only 2 semesters of data acquired so far on 2 of the 6 SLOs as described in the Table below in Section 3.2.

### 3.3 Update Assessment Plan from the next 5 to 7 years

The following tables provide a detailed assessment plan for the program. This plan was established in AY 2018-19. The Program Learning Outcome (PLO) to Student Learning Outcome (SLO) alignment is described in the following Table.

Table 2 – Alignment Matrix (2019 Assessment Plan)

Program Learning Outcomes (PLOs)	PLO/SLO Alignment	Student Learning Outcomes (SLOs)
1. Provide graduate students with up-to-date knowledge in selected fields of Electrical and Computer Engineering	1 maps to a, b, c, e	a. Have the ability to apply principles in Electrical and/or Computer Engineering towards solving complex problems relevant to area of specialization
2. Provide knowledge to graduate students to design and develop solutions to Electrical and Computer Engineering problems;	2 maps to d, e	b. Identify and critically analyze engineering issues relevant to the current literature
3. Provide graduate students with technical and communication skills in the electrical and computer engineering areas.	3 maps to e, f	c. Demonstrate knowledge of research methods relevant to the field of study
		d. Demonstrate mastery of the methodology and techniques specific to the field of study
		e. Have the ability to apply advanced engineering tools for simulation, analysis, and design specific to the field of study
		f. Demonstrate oral and written communication skills relevant to the field of study

In the next Table, the assessment plan for the current 5-year assessment cycle is depicted with all SLOs shown and the methods used toward the assessment are defined.

Table 3 – Assessment Plan

<i>SLOs</i>	<i>Courses where each SLO is addressed.</i>	<i>Assessment activity (signature assignment) used to measure each SLO.</i>	<i>Assessment tool used to measure outcome success</i>	<i>How assessment data will be reported as evidence SLO performance criteria have been met</i>	<i>Designated personnel to collect, analyze, and interpret student learning outcome data for the program</i>	<i>Student learning outcome data dissemination schedule</i>	<i>Closing the loop strategies</i>
a. Have the ability to apply principles in Electrical and/or Computer Engineering towards solving complex problems relevant to area of specialization	ECE 5110	Embedded questions in final exam	Rubric	Report on percentage of students meeting or exceeding requirement	Course instructor will collect data, the graduate committee will analyze and interpret the data using rubric.	Assessment data will be reported to Academic Programs office annually. The university Academic Assessment Council will review the reports to provide feedback, Feedback will be used to improve assessment plans for the following years.	The graduate committee will review the data and identify where improvements are needed.
b. Identify and critically analyze engineering issues relevant to the current literature	ECE 5180						
c. Demonstrate knowledge of research methods relevant to the field of study	ECE 5200						
d. Demonstrate mastery of the methodology and techniques specific to the field of study	ECE 5300						
e. Have the ability to apply advanced engineering tools for simulation, analysis, and design specific to the field of study	ECE 5440						
f. Demonstrate oral and written communication skills relevant to the field of study	ECE 6910, ECE 6950, ECE 6960	Thesis or project report			Thesis/project committee will design and grade assessment using rubric.		

The Table below shows the SLOs assessed during each AY for the current 5-year assessment cycle.

Table 4 – Data Collection/Dissemination Plan

Student Learning Outcome	Academic Year							
	AY 18-19	AY 19-20	AY 20-21	AY 21-22	AY 22-23	AY 23-24	AY 24-25	AY 25-26
a. Have the ability to apply principles in Electrical and/or Computer Engineering towards solving complex problems relevant to area of specialization		X						
b. Identify and critically analyze engineering issues relevant to the current literature			X					
c. Demonstrate knowledge of research methods relevant to the field of study				X				
d. Demonstrate mastery of the methodology and techniques specific to the field of study	X							
e. Have the ability to apply advanced engineering tools for simulation, analysis, and design specific to the field of study					X			
f. Demonstrate oral and written communication skills relevant to the field of study						X		

\*Note: Please provide the information needed for the columns that are highlighted.

Finally, in Table 5 we show the Curriculum matrix mapping the MSEE courses to the six SLOs.

Table 5 – Curriculum Matrix

Student Learning Outcome	Course Number																						
	ECE 5110	ECE 5180	ECE 5200	ECE 5250	ECE 5300	ECE 5400	ECE 5410	ECE 5430	ECE 5440	ECE 5450	ECE 5470	ECE 5510	ECE 5540	ECE 5600	ECE 5660	ECE 5670	ECE 5700	ECE 5720	ECE 5750	ECE 5920L	ECE 5970L	ECE 5990	ECE 6440
<b>SLO a:</b> Have the ability to apply principles in Electrical and/or Computer Engineering towards solving complex problems relevant to area of specialization.	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>SLO b:</b> Identify and critically analyze engineering issues relevant to the current literature.		x	x	x	x	x	x		x		x		x		x	x	x	x	x	x	x	x	x
<b>SLO c:</b> [Demonstrate knowledge of research methods relevant to the field of study.	x	x	x		x		x		x		x						x			x			x
<b>SLO d:</b> [Demonstrate mastery of the methodology and techniques specific to the field of study.		x	x		x	x	x		x	x	x		x	x	x		x		x	x	x	x	x
<b>SLO e:</b> [Have the ability to apply advanced engineering tools for simulation, analysis, and design specific to the field of study.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>SLO f:</b> [Demonstrate oral and written communication skills relevant to the field of study.	x	x	x	x	x		x				x					x	x	x		x			

## 4 Program Quality

The section of the self-study includes both evaluation of faculty and student success indicators

### 4.1 Faculty

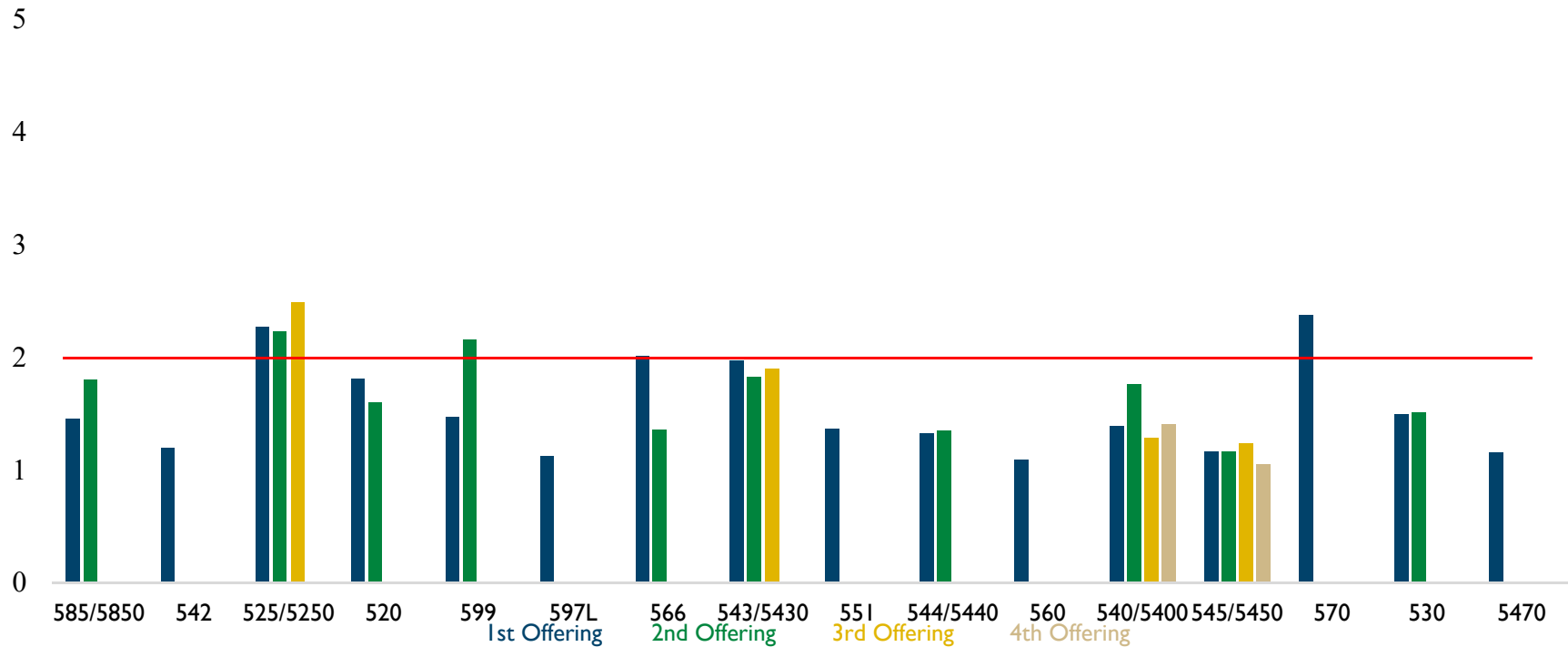
#### 4.1.1 Quality of Teaching

Furthermore, the Student Teaching Evaluation Process (STEP) average scores have been gathered for the last five years and shown in the Table below. These STEP scores aim at measuring instructors' efficiency and student satisfaction with teaching. The contain multiple questions that students have to answer to pertaining to teaching issues the students experience. The possible range of each STEP score is between 1 and 5. These scores represent student satisfaction in descending order, i.e., 1 is the highest satisfaction and 5 is the lowest satisfaction. In more detail, the results are as follows

Course Number	Quarter												Semester			Course number
	Year 1			Year 2			Year 3			Year 4			Year 5			
	Fall 2014	Winter 2015	Spring 2015	Fall 2015	Winter 2016	Spring 2016	Fall 2016	Winter 2017	Spring 2017	Fall 2017	Winter 2018	Spring 2018	Fall 2018	Winter 2019	Spring 2019	
585					1.46										1.8	5850
542			1.2													
525			2.27					2.23					2.49			5250
520		1.81					1.6									
599					1.47	2.16										
597L										1.13						
566						2.01				1.36						
543					1.97			1.83							1.9	5430
551										1.37						
544								1.33					1.35			5440
560				1.09												
540				1.39				1.76		1.29			1.41			5400
545			1.17			1.17				1.24					1.05	5450
570			2.38													
530								1.5					1.51			5300
															1.16	5470

Furthermore, the same data are shown in the following histogram that makes drawing easier.

Histogram of STEP scores in the last 5 years for MSEE.

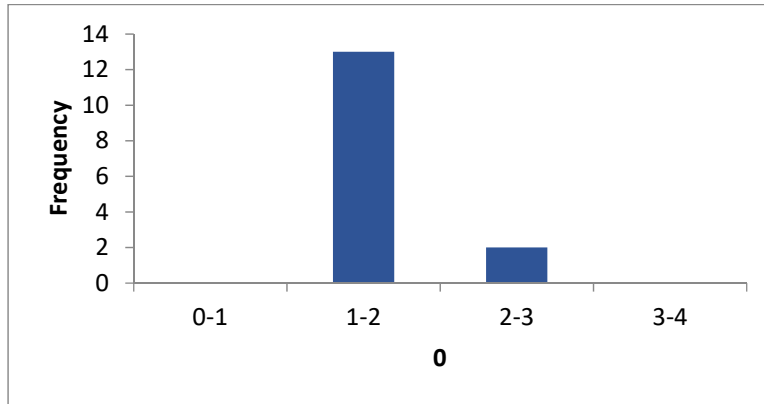


NOTES: The scale for the items is as follows

Very good	Good	Satisfactory	Poor	Very poor
1	2	3	4	5

A low score means a greater level of satisfaction with the course/instructor

We see that in most classes, with an exception of ECE 570/5700 (Smart Grid in Power Systems) and ECE 525/5250 (Embedded Systems), all classes receive at least a good STEP evaluation or better on average. This is an indication that the faculty do a quite good job in satisfying the teaching needs as perceived by the students in the MSEE program. Further, the average STEP score for each class averaged over all offerings is shown in the Chart below.



We see that on average 13 classes fit in the “good” to “very good” range over all the 16 classes considered. This indicates student’s confidence on a high quality of teaching for the entire 5 year period considered. However, the issue of a few improvements in order to guarantee almost equal teaching quality in all classes, although minor, is still important and an issue of concern. We abbreviate this as IoC2 and some suggestions are made for improvements in Section 6.

#### 4.1.2 Research and Scholarly Activities

The ECE faculty at CPP are active in numerous research and creative activities that enhance their knowledge and helps them become more competitive in new and contemporary technological advances. These include:

1. Publishing in peer-review journals and conferences, including IEEE Transactions papers such as IEEE Transactions on Wireless Communications, IEEE Transactions on Communications, IEEE Photonics Letters, IEEE Journal on Selected Areas in Communications, IEEE Microwave and Wireless Components Letters, IEEE Transactions on Microwave Theory and Techniques. These activities have been accelerated in the last few years facilitated by the initiation of the Teacher-Scholar Provost-funded award that gives release time to faculty who have established a successful research track record.
2. Performing consulting for high-tech companies.
3. Submitting proposals for acquisition of external funding, e.g., NSF, NIH, etc.
4. Participating in broader professional activities such as NSF panel reviews, engineering journal and conference reviews, and IEEE journal editorial responsibilities.

### **4.3 Service**

N/A

### **4.4 Faculty Workload**

Results of faculty workload are shown below for the entire ECE faculty and for the AY 2016/17 and 2017/18. This includes both faculty teaching in the BSEE as well as the MSEE program. Out of the entire ECE faculty 12 tenure/tenure track faculty members are involved in the MSEE program, all of them part time, i.e., teaching on average 1.5 3 semester unit classes per AY. This results in about 25% of their total teaching load (without advising units considered) for the AY. The total teaching load is 24 semester units per AY.

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
Aliyazicioglu, Zekiriya	FT	F 2016	ECE	109	3	87%		13% Associate Chair	100%
		F 2016	ECE	114L	1				
		F 2016	ECE	207	3				
		F 2016	EGR	481	2				
		F 2016	EGR	691	2				
		F 2016	EGR	692	2				
		F 2016	EGR	696	4				
		F 2016	EGR	696	2				
		W 2017	ECE	306	4				
		W 2017	EGR	482	2				
		W 2017	EGR	691	2				
		W 2017	EGR	692	2				
		W 2017	EGR	696	2				
		W 2017	EGR	699	0				
		SP 2017	ECE	257	4				
		SP 2017	ECE	307	3				
		SP 2017	ECE	400	1				
		SP 2017	ECE	467	1				
		SP 2017	EGR	692	2				
		SP 2017	EGR	696	2				
SP 2017	EGR	699	0						
Argin, Mehmet	PT	F 2016	ECE	231	3	60%			60%
		F 2016	ECE	231	3				
		F 2016	ECE	231	3				
		F 2016	ECE	231L	1				
		W 2017	ECE	207	3				
		W 2017	ECE	207	3				
		W 2017	ECE	220L	1				
		SP 2017	ECE	207L	1				
		SP 2017	ECE	209	3				
		SP 2017	ECE	231	3				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
Chandra, Rajan	FT	F 2016	ECE	114	3	100%			100%
		F 2016	ECE	304	4				
		F 2016	ECE	341	3				
		F 2016	ECE	467	1				
		F 2016	EGR	481	2				
		F 2016	EGR	696	2				
		F 2016	EGR	696	3				
		F 2016	EGR	699	0				
		W 2017	ECE	205	3				
		W 2017	ECE	304	4				
		W 2017	ECE	400H	2				
		W 2017	EGR	481	2				
		W 2017	EGR	482	2				
		W 2017	EGR	696	2				
		SP 2017	ECE	205	3				
		SP 2017	ECE	207	3				
		SP 2017	ECE	400	1				
		SP 2017	ECE	467	1				
		SP 2017	EGR	482	2				
		SP 2017	EGR	696	2				
Cheng, Yi	PT	W 2017	ECE	309	4	39%		FERP	39%
		W 2017	ECE	341	3				
		W 2017	ECE	341L	1				
		W 2017	ECE	426	3				
		W 2017	ECE	426L	1				
Cockrum, Richard	PT	F 2016	ECE	220	4	50%		FERP	50%
		F 2016	ECE	320	3				
		F 2016	ECE	405L	1				
		W 2017	ECE	220	4				
		W 2017	ECE	320	3				
		W 2017	ECE	405L	1				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
El Naga, Halima	FT	F 2016	ECE	204	4	85%		15% Grad Coordinator	100%
		F 2016	ECE	205	3				
		F 2016	ECE	425	4				
		F 2016	ECE	467	1				
		W 2017	ECE	204	4				
		W 2017	ECE	425	4				
		SP 2017	ECE	204	4				
		SP 2017	ECE	204L	1				
		SP 2017	ECE	425	4				
		SP 2017	EGR	691	2				
Elsharhawy, Tarek	PT	F 2016	ECE	309L	1	40%			40%
		F 2016	ECE	309L	1				
		F 2016	ECE	309L	1				
		W 2017	ECE	309L	1				
		W 2017	ECE	309L	1				
		W 2017	ECE	309L	1				
		SP 2017	ECE	309L	1				
		SP 2017	ECE	309L	1				
		SP 2017	ECE	309L	1				
Ferguson, Lloyd	PT	F 2016	ECE	302	4	50%		FERP	50%
		F 2016	ECE	302	4				
		F 2016	ECE	464	1				
		W 2017	ECE	302	4				
		W 2017	ECE	302	4				
		W 2017	ECE	464	1				
Fitzgerald, Dennis	FT	F 2016	ECE	310	4	100%			100%
		F 2016	ECE	310	4				
		F 2016	ECE	310L	1				
		F 2016	ECE	310L	1				
		F 2016	ECE	481	2				
		W 2017	ECE	310	4				
		W 2017	ECE	310L	1				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
		W 2017	ECE	468	3				
		W 2017	ECE	468L	1				
		W 2017	EGR	482	2				
		SP 2017	ECE	310	4				
		SP 2017	ECE	310L	1				
		SP 2017	ECE	310L	1				
		SP 2017	ECE	467	1				
		SP 2017	ECE	469	3				
		SP 2017	ECE	469L	1				
Ghaneh, Ali	PT	F 2016	ECE	207L	1	27%			27%
		F 2016	ECE	207L	1				
		W 2017	ECE	207L	1				
		W 2017	ECE	207L	1				
		SP 2017	ECE	207L	1				
		SP 2017	ECE	207L	1				
Gharakhanian, Aspet	PT	F 2016	ECE	231L	1	40%			40%
		F 2016	ECE	231L	1				
		F 2016	ECE	231L	1				
		W 2017	ECE	231L	1				
		W 2017	ECE	231L	1				
		W 2017	ECE	231L	1				
		SP 2017	ECE	231L	1				
		SP 2017	ECE	231L	1				
SP 2017	ECE	231L	1						
Gonzalez, Adrian Valentin (TA)	PT	F 2016	ECE	109L	1				
		F 2016	ECE	109L	1				
Kang, James	FT	F 2016	ECE	109	3	100%			100%
		F 2016	ECE	306	4				
		F 2016	ECE	400	1				
		F 2016	ECE	467	1				
		F 2016	ECE	544	4				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
		F 2016	EGR	481	2				
		F 2016	EGR	691	2				
		F 2016	EGR	692	2				
		F 2016	EGR	696	2				
		F 2016	EGR	699	0				
		W 2017	ECE	209	3				
		W 2017	ECE	306	4				
		W 2017	ECE	408	3				
		W 2017	ECE	408L	1				
		W 2017	ECE	467	1				
		W 2017	EGR	482	2				
		W 2017	EGR	691	2				
		W 2017	EGR	696	2				
		W 2017	EGR	699	0				
		SP 2017	ECE	302	4				
		SP 2017	ECE	400	2				
		SP 2017	ECE	405	4				
		SP 2017	ECE	467	1				
		SP 2017	EGR	691	2				
		SP 2017	EGR	692	2				
		SP 2017	EGR	696	2				
SP 2017	EGR	699	0						
Ketseoglou, Thomas	FT	F 2016	ECE	315	4	80%	10% Teacher Scholar	10% University RTP Comm.	100%
		F 2016	ECE	405	4				
		F 2016	ECE	597L	2				
		F 2016	EGR	481	2				
		F 2016	EGR	691	2				
		F 2016	EGR	692	2				
		F 2016	EGR	696	2				
		W 2017	ECE	109L	1				
W 2017	ECE	543	4						

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
		W 2017	EGR	482	2				
		W 2017	EGR	692	2				
		W 2017	EGR	696	2				
		W 2017	EGR	699	0				
		SP 2017	ECE	405L	1				
		SP 2017	ECE	467	1				
		SP 2017	ECE	566	4				
		SP 2017	EGR	696	2				
		SP 2017	EGR	699	0				
Khosravi Kermani, Armita (TA)	PT	F 2016	ECE	109L	1	2			
Kim, Hyoung Soo	FT	F 2016	ECE	307	3	80%	20% (New faculty)		100%
		F 2016	ECE	325	3				
		F 2016	ECE	325L	1				
		F 2016	ECE	400	1				
		F 2016	EGR	481	2				
		F 2016	EGR	482	2				
		W 2017	ECE	325	3				
		W 2017	ECE	325L	1				
		W 2017	ECE	418	4				
		W 2017	ECE	467	1				
		W 2017	EGR	482	2				
		SP 2017	ECE	325	3				
		SP 2017	ECE	325L	1				
		SP 2017	ECE	400	1				
		SP 2017	ECE	412	4				
SP 2017	ECE	467	1						
Klein, Mei	PT	F 2016	ECE	256	4	62%			62%
		F 2016	ECE	257	4				
		W 2017	ECE	256	4				
		W 2017	ECE	256	4				
		W 2017	ECE	257	4				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
				SP 2017	ECE	256	4		
		SP 2017	ECE	257	4				
Kulkarni, Sushant (TA)	PT	F 2016	ECE	204L	1				
		F 2016	ECE	231L	1				
		W 2017	ECE	306L	1				
Kuri, Gabriel	PT	W 2017	ECE	431	3			7% Curriculum Development	
		SP 2017	ECE	431	3	13%			20%
Le, Ha	FT	F 2016	ECE	109	3				
		F 2016	ECE	209	3				
		F 2016	ECE	209L	1				
		F 2016	ECE	467	1				
		F 2016	ECE	475	4				
		F 2016	EGR	481	2				
		W 2017	ECE	207L	1				
		W 2017	ECE	309	4				
		W 2017	ECE	310L	1				
		W 2017	ECE	400H	2				
		SP 2017	ECE	209L	1				
		SP 2017	ECE	309	4				
		SP 2017	ECE	310	4				
		SP 2017	ECE	467	1				
Lin, Tim H.C.	FT	F 2016	ECE	256	4				
		F 2016	ECE	467	1				
		F 2016	ECE	520	4				
		F 2016	EGR	481	2				
		F 2016	EGR	691	2				
		F 2016	EGR	692	2				
		F 2016	EGR	699	0				
		W 2017	ECE	341	3				
		W 2017	ECE	400H	2				
W 2017	ECE	525	4						

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
		W 2017	EGR	482	2				
		W 2017	EGR	691	2				
		W 2017	EGR	692	2				
		W 2017	EGR	699	0				
		SP 2017	ECE	400	1				
		SP 2017	ECE	426	3				
		SP 2017	ECE	426L	1				
		SP 2017	ECE	433	3				
		SP 2017	ECE	433L	1				
		SP 2017	ECE	467	1				
		SP 2017	EGR	691	2				
		SP 2017	EGR	692	2				
		Massoudi, Mohammad	PT	W 2017	ECE				
W 2017	ECE			109	3				
W 2017	ECE			320	3				
SP 2017	ECE			109	3				
SP 2017	ECE			109	3				
SP 2017	ECE			320	3				
McNinch, Steven	PT	F 2016	ECE	204L	1	27%			27%
		F 2016	ECE	205L	1				
		W 2017	ECE	204L	1				
		W 2017	ECE	204L	1				
		SP 2017	ECE	204L	1				
		SP 2017	ECE	205L	1				
Mittskus, Anthony	PT	F 2016	ECE	220L	1	13%			13%
		W 2017	ECE	220L	1				
		SP 2017	ECE	320L	1				
Monemi, Saeed	FT	F 2016	ECE	231	3	100%			100%
		F 2016	ECE	421	3				
		F 2016	ECE	421L	1				
		F 2016	ECE	464	1				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
		F 2016	EGR	481	2				
		F 2016	EGR	696	2				
		F 2016	EGR	699	0				
		W 2017	ECE	231	3				
		W 2017	ECE	422	3				
		W 2017	ECE	422L	1				
		W 2017	ECE	464	1				
		W 2017	EGR	481	2				
		W 2017	EGR	482	2				
		W 2017	EGR	699	0				
		SP 2017	ECE	231	3				
		SP 2017	ECE	464	1				
		SP 2017	ECE	467	1				
		SP 2017	EGR	482	2				
		SP 2017	EGR	699	0				
Montalvo-Castro, Michael (TA)	PT	F 2016	ECE	306L	1				
		W 2017	ECE	306L	1				
Mysoor, Narayan	FT	F 2016	ECE	402	4				
		F 2016	ECE	405L	1				
		F 2016	ECE	406	4	50%		FERP	50%
		W 2017	ECE	436	4				
		W 2017	ECE	448	4				
Nandikanti, Sumanth	PT	F 2016	ECE	306L	1	2			
Nazari, Jamshid	PT	F 2016	ECE	130	4				
		F 2016	ECE	205	3				
		F 2016	ECE	205L	1				
		W 2017	ECE	130	4	58%			58%
		W 2017	ECE	205	3				
		W 2017	ECE	205L	1				
		SP 2017	ECE	130	4				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
Nelson, Bill	PT	SP 2017	ECE	205	3	27%			27%
		SP 2017	ECE	205L	1				
		F 2016	ECE	204	4				
Nelson, Phyllis	FT	W 2017	ECE	204	4	27%	73% Department Chair	100%	
		SP 2017	ECE	204	4				
		F 2016	ECE	220	4				
		F 2016	EGR	696	2				
		W 2017	ECE	400H	2				
		W 2017	EGR	596	2				
		W 2017	EGR	699	0				
		SP 2017	ECE	467	1				
Nguyen, David	PT	SP 2017	ECE	499L	1	13%			13%
		SP 2017	EGR	699	0				
		F 2016	ECE	209L	1				
Oldak, Salomon	FT	W 2017	ECE	209L	1	67%	33% Sabbatical	100%	
		W 2017	ECE	209L	1				
		W 2017	ECE	309	4				
		W 2017	ECE	419	3				
		W 2017	ECE	419L	1				
		W 2017	ECE	540	4				
		W 2017	EGR	481	2				
		W 2017	EGR	691	2				
		W 2017	EGR	692	2				
W 2017	EGR	696	2						
SP 2017	ECE	209	3						

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
		<i>SP 2017</i>	<i>ECE</i>	<i>309</i>	<i>4</i>				
		<i>SP 2017</i>	<i>ECE</i>	<i>545</i>	<i>4</i>				
		<i>SP 2017</i>	<i>EGR</i>	<i>482</i>	<i>2</i>				
		<i>SP 2017</i>	<i>EGR</i>	<i>691</i>	<i>2</i>				
		<i>SP 2017</i>	<i>EGR</i>	<i>692</i>	<i>2</i>				
Olson, Brita	FT	F 2016	ECE	330	3	100%			100%
		F 2016	ECE	423	4				
		F 2016	ECE	467	1				
		F 2016	ECE	572	4				
		F 2016	EGR	482	2				
		W 2017	ECE	307	3				
		W 2017	ECE	330	3				
		W 2017	ECE	407	4				
		W 2017	ECE	467	1				
		W 2017	EGR	481	2				
		W 2017	EGR	696	2				
		SP 2017	ECE	220	4				
		SP 2017	ECE	320	3				
		SP 2017	EGR	696	4				
Pagnon, Andrew	PT	SP 2017	ECE	220	4	22%			22%
		SP 2017	ECE	306L	1				
		SP 2017	ECE	306L	1				
		SP 2017	ECE	306L	1				
Pinai, Felix	PT	F 2016	ECE	341L	1	27%			27%
		F 2016	ECE	341L	1				
		W 2017	ECE	341L	1				
		W 2017	ECE	341L	1				
		SP 2017	ECE	205L	1				
		SP 2017	ECE	341L	1				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
Rafiquzzaman, Mohamed	FT	F 2016	ECE	204	4	100%			100%
		F 2016	ECE	204L	1				
		F 2016	ECE	432	3				
		F 2016	ECE	432L	1				
		F 2016	EGR	481	2				
		W 2017	ECE	204	4				
		W 2017	ECE	204L	1				
		W 2017	ECE	343	4				
		W 2017	ECE	343L	1				
		W 2017	ECE	467	1				
		W 2017	EGR	482	2				
		SP 2017	ECE	341	3				
		SP 2017	ECE	341L	1				
		SP 2017	ECE	467	1				
Rogstad, Tim	PT	F 2016	ECE	114	3	56%			56%
		F 2016	ECE	114L	1				
		F 2016	ECE	209L	1				
		W 2017	ECE	114	3				
		W 2017	ECE	114L	1				
		W 2017	ECE	209L	1				
		W 2017	ECE	400H	2				
		W 2017	ECE	405L	1				
		SP 2017	ECE	114	3				
		SP 2017	ECE	114L	1				
		SP 2017	ECE	209L	1				
		SP 2017	ECE	405L	1				
Sacco, Toma	PT	W 2017	ECE	205	3	50%		FERP	50%
		W 2017	ECE	205L	1				
		W 2017	ECE	424	3				
		W 2017	ECE	424L	1				
		SP 2017	ECE	205	3				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
		SP 2017	ECE	400	1				
		SP 2017	ECE	414	3				
		SP 2017	ECE	414L	1				
Salah Eddin, Anas	FT	F 2016	ECE	109	3	67%	33% (New Faculty)		100%
		F 2016	ECE	114	3				
		F 2016	ECE	114L	1				
		W 2017	ECE	109L	1				
		W 2017	ECE	207	3				
		W 2017	ECE	209	3				
		SP 2017	ECE	220	4				
		SP 2017	ECE	306	1				
Shu, Jody	PT	F 2016	ECE	109	3	53%			53%
		F 2016	ECE	315	4				
		W 2017	ECE	114	3				
		W 2017	ECE	114L	1				
		W 2017	ECE	257	4				
		SP 2017	ECE	130	4				
		SP 2017	ECE	315	4				
Smith, R., Frank	PT	F 2016	ECE	109L	1	49%			49%
		F 2016	ECE	231L	1				
		F 2016	ECE	323	3				
		F 2016	ECE	323L	1				
		W 2017	ECE	231	3				
		W 2017	ECE	490	4				
		W 2017	ECE	490L	1				
		SP 2017	ECE	109L	1				
		SP 2017	ECE	231L	1				
		SP 2017	ECE	323	3				
SP 2017	ECE	323L	1						
Sturdivant,Rick	PT	SP 2017	ECE	599L	2	4%			4%
Taghipour,Javaneh (TA)	PT	F 2016	ECE	109L	1				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
		W 2017	ECE	205L	1				
		W 2017	ECE	431L	1				
		SP 2017	ECE	109L	1				
		SP 2017	ECE	431L	1				
Tran, Joseph	PT	F 2016	ECE	205L	1	13%			13%
		W 2017	ECE	205L	1				
		SP 2017	ECE	205L	1				
Wanderman, Wendy	PT	F 2016	ECE	207	3	50%		FERP	50%
		F 2016	ECE	209	3				
		F 2016	ECE	231	3				
		SP 2017	ECE	207	3				
		SP 2017	ECE	209	3				
		SP 2017	ECE	231	3				
Whealon, Phyllis A	PT	F 2016	ECE	114	3	47%			47%
		F 2016	ECE	114L	1				
		W 2017	ECE	114	3				
		W 2017	ECE	114L	1				
		W 2017	ECE	315	4				
		SP 2017	ECE	114	3				
		SP 2017	ECE	114L	1				
		SP 2017	ECE	405L	1				
Yazdy, Mostafa	PT	F 2016	ECE	109L	1	47%			47%
		F 2016	ECE	204L	1				
		F 2016	ECE	320L	1				
		W 2017	ECE	204L	1				
		W 2017	ECE	220L	1				
		W 2017	ECE	320L	1				
		SP 2017	ECE	207L	1				
		SP 2017	ECE	220L	1				
		SP 2017	ECE	220L	1				
		SP 2017	ECE	320L	1				

Faculty Name	PT or FT <sup>1</sup>	Classes Taught (Course No./Credit Hrs.) Term and Year <sup>2</sup>				Program Activity Distribution <sup>3</sup>			% of Time Devoted to the Program <sup>5</sup>
						Teaching	Research/Scholarship	Other <sup>4</sup>	
		SP 2017	ECE	464	1				
Yin, Meng-Lai	FT	F 2016	ECE	114	3	83%		17% Medical Leave	100%
		F 2016	ECE	114L	1				
		F 2016	ECE	415	3				
		F 2016	ECE	415L	1				
		F 2016	ECE	467	1				
		F 2016	ECE	480	4				
		F 2016	EGR	481	2				
		W 2017	ECE	426L	1				
		SP 2017	ECE	256	4				
		SP 2017	ECE	467	1				
		SP 2017	ECE	480	4				
		SP 2017	EGR	482	2				
		Yu, Jenny	FT	F 2016	ECE				
F 2016	ECE			220L	1				
F 2016	ECE			309	4				
F 2016	ECE			315	4				
F 2016	EGR			481	2				
W 2017	ECE			220	4				
W 2017	ECE			405	4				
W 2017	ECE			530	4				
W 2017	EGR			482	2				
SP 2017	ECE			109L	1				
SP 2017	ECE			330	3				
SP 2017	ECE			467	1				
SP 2017	EGR			691	2				

1. Faculty or PT = Part Time Faculty, at the institution.
2. For the academic year for which the Self-Study Report is being prepared.
3. Program activity distribution should be in percent of effort in the program and should total 100%.
4. Indicate sabbatical leave, etc., under "Other."
5. Out of the total time employed at the institution.

Based on the data of the previous Table, we can see that 50% of the ECE faculty have a 100% teaching workload, while the average teaching workload for ECE is 87%, all these figures derived without using the FERP faculty members' workload data.

## **4.5 Student Success**

### **4.5.1 Advising and Evidence of Quality**

MSEE graduate students are mainly advised by the Graduate Coordinator. Since AY 2018-19, Thomas Ketseoglou has been elected by the ECE in this role. He keeps in contact through e-mail and also by face-to-face meetings with students regarding admission, enrollment, and other studying-related issues. He also assists the students with developing a study plan, as required by ECE and also directs students toward faculty members in students' interest areas for final project/Thesis. Once a student selects an academic advisor for his final project or Thesis, then the academic advisor also provides advice to the student on their selected plan of study. ECE has no assessment plan for the advising program.

### **4.5.2 Evidence of Quality associated with Persistence and Graduation Rates**

The following Tables present information on graduation and continuation rates for AY 2005-16. A typical scenario is shown in cohort 5 from the top of Fig. 7. Out of a headcount of 29, we have 16 students graduating within 3 years with 5 more continuing. In 4 years, we observe 18 students have graduated with 2 continuing. Based on the results of this cohort, we see that a low persistence rate is observed by the students in the MSEE program. About 1/3 of the students have abandoned the program within 3 years. Furthermore, the graduation rate is 38% for 2 years, 55.1% for 3 years, and 62% for 4 years.

We see that there is a quite slow pace to graduation, due to the low 38% graduation rate in 2 years and 55.1% graduation rate in 3 years. One interpretation for this is due to a lack of instructor availability to teach classes in the MSEE program the time to graduation has been prolonged in the last five years. This situation has become worse due to the smaller number of students enrolled in the program that results in class cancellation of classes in advance of each semester. This is an issue of concern (IoC) called IoC3 and some suggestions are made regarding this in Section 6.

Table 7 – Cumulative Graduation & Continuation Rates by Headcount<sup>10</sup>

Year	Cohort Headcount	Cumulative Graduation & Continuation Rates															
		Within 1 Year		Within 2 Years		Within 3 Years		Within 4 Years		Within 5 Years		Within 6 Years		Within 7 Years		Within 8 Years	
		Grad.	Cont.	Grad.	Cont.	Grad.	Cont.	Grad.	Cont.	Grad.	Cont.	Grad.	Cont.	Grad.	Cont.	Grad.	Cont.
Fall 2005	24	1	19	10	9	13	4	16	1	16	1	17	0	18	0	18	0
Fall 2006	21	0	17	2	16	14	2	15	1	15	1	15	0	15	0	15	0
Fall 2007	19	0	16	5	10	11	3	13	2	14	0	14	0	14	0	14	0
Fall 2008	14	0	13	5	8	10	2	12	1	12	0	12	0	12	0	12	0
Fall 2009	29	1	24	11	8	16	5	18	2	18	1	18	0	18	0	18	0
Fall 2010	33	2	24	8	16	18	5	20	5	21	2	21	1	21	1		
Fall 2011	24	0	19	7	11	12	4	14	3	15	1	16	1				
Fall 2012	17	0	12	4	8	9	3	9	1	9	1						
Fall 2013	18	0	14	7	6	12	1	13	1								
Fall 2014	29	0	25	10	13	20	5										
Fall 2015	16	0	12	4	9												
Fall 2016	16	1	13														

<sup>10</sup> ARAR “Continuation and Graduation Rates” Report. [www.cpp.edu/~arar/campus-data/ContinuationAndGraduation.shtml](http://www.cpp.edu/~arar/campus-data/ContinuationAndGraduation.shtml)

Table 8 - Cumulative Graduation & Continuation Rate by percentages<sup>11</sup>

Year	Cohort Headcount	Cumulative Graduation & Continuation Rates															
		Within 1 Year		Within 2 Years		Within 3 Years		Within 4 Years		Within 5 Years		Within 6 Years		Within 7 Years		Within 8 Years	
		Grad.	Cont.	Grad.	Cont.	Grad.	Cont.	Grad.	Cont.	Grad.	Cont.	Grad.	Cont.	Grad.	Cont.	Grad.	Cont.
Fall 2005	24	4.1 7%	79.1 7%	41.6 7%	37.5 0%	54.1 7%	16.6 7%	66.6 7%	4.17 %	66.6 7%	4.1 7%	70.8 3%	0.0 0%	75.0 0%	0.0 0%	75.0 0%	0.0 0%
Fall 2006	21	0.0 0%	80.9 5%	9.52 %	76.1 9%	66.6 7%	9.52 %	71.4 3%	4.76 %	71.4 3%	4.7 6%	71.4 3%	0.0 0%	71.4 3%	0.0 0%	71.4 3%	0.0 0%
Fall 2007	19	0.0 0%	84.2 1%	26.3 2%	52.6 3%	57.8 9%	15.7 9%	68.4 2%	10.5 3%	73.6 8%	0.0 0%	73.6 8%	0.0 0%	73.6 8%	0.0 0%	73.6 8%	0.0 0%
Fall 2008	14	0.0 0%	92.8 6%	35.7 1%	57.1 4%	71.4 3%	14.2 9%	85.7 1%	7.14 %	85.7 1%	0.0 0%	85.7 1%	0.0 0%	85.7 1%	0.0 0%	85.7 1%	0.0 0%
Fall 2009	29	3.4 5%	82.7 6%	37.9 3%	27.5 9%	55.1 7%	17.2 4%	62.0 7%	6.90 %	62.0 7%	3.4 5%	62.0 7%	0.0 0%	62.0 7%	0.0 0%	62.0 7%	0.0 0%
Fall 2010	33	6.0 6%	72.7 3%	24.2 4%	48.4 8%	54.5 5%	15.1 5%	60.6 1%	15.1 5%	63.6 4%	6.0 6%	63.6 4%	3.0 3%	63.6 4%	3.0 3%		
Fall 2011	24	0.0 0%	79.1 7%	29.1 7%	45.8 3%	50.0 0%	16.6 7%	58.3 3%	12.5 0%	62.5 0%	4.1 7%	66.6 7%	4.1 7%				
Fall 2012	17	0.0 0%	70.5 9%	23.5 3%	47.0 6%	52.9 4%	17.6 5%	52.9 4%	5.88 %	52.9 4%	5.8 8%						
Fall 2013	18	0.0 0%	77.7 8%	38.8 9%	33.3 3%	66.6 7%	5.56 %	72.2 2%	5.56 %								
Fall 2014	29	0.0 0%	86.2 1%	34.4 8%	44.8 3%	68.9 7%	17.2 4%										
Fall 2015	16	0.0 0%	75.0 0%	25.0 0%	56.2 5%												
Fall 2016	16	6.2 5%	81.2 5%														

<sup>11</sup> ARAR “Continuation and Graduation Rates” Report. [www.cpp.edu/~arar/campus-data/ContinuationAndGraduation.shtml](http://www.cpp.edu/~arar/campus-data/ContinuationAndGraduation.shtml)

#### 4.5.3 Learning Environment

N/A

#### 4.5.4 Student Commitment, Motivation and Satisfaction

N/A

#### 4.5.5 Co-Curricular Learning Experiences

N/A

#### 4.5.6 Other Indicators of Student Success

In the following Table, we have gathered available recorded data from the Office of Alumni Affairs at CPP, which obtains data on all students graduating CPP. The data pertain to MSEE graduates of our program.

Constituent ID	State	County	Class Of	Title DO NO	Org Name DO NOT INCLUDE IN MAILING
227775					
257896			'18		
189655			'09		
83136	BC		'98		
201061	ON		'10		
153	WA	Pierce	'02		
283	CA	Los Angeles	'99	Engineering Specialist	Northrop Corporation
841	CA	Orange	'97	Application Developer	County of Los Angeles
964	MD	Montgomery	'96		
1294	CA	Orange	'98		Northrop Grumman Headquarters
2607	CA	Los Angeles	'98		
3734	CA	San Bernardino	'94	Communications Engr.	TRW
4044	CA	San Bernardino	'99	Product Mgr.	Auditek Corp.
6318	CA	Los Angeles	'97		
6358	MO	Webster	'96		Northrop Grumman Headquarters
7277	CA	Los Angeles	'04	Teacher	Hacienda La Puente Adult Education
7404	CA	San Bernardino	'93	Lecturer 12 Mo	Cal Poly Pomona University
9675	CA	San Bernardino	'93		Jet Propulsion Laboratory
9682	CA	Orange	'87		
9867	CA	San Diego	'93	Project Engineer	Viasat, Inc.
11507	CA	Riverside	'93	Elec. Engr.	QUALCOMM

Constituent ID	State	County	Class Of	Title DO NO	Org Name DO NOT INCLUDE IN MAILING
11891	CA	Santa Clara	'94		IBM Corporation
11904	CA	Los Angeles	'96		Western Digital Corporation
11914	CA	Los Angeles	'95		IBM Corporation
17392	ID	Kootenai	'97	Principal Engr.	The Boeing Corporation
20605	NJ	Mercer	'95		
23456			'93		
25730	CA	Orange	'99		Jet Propulsion Laboratory
25873	CO	El Paso	'93		
29962	CA	Orange	'96	Software Engr.	Symmetry Communication
30004	CA	Orange	'96		
44770	CA	Riverside	'98		
46206	CA	Orange	'98	Senior Principal Nuclear IV&V Engineer	Schneider Electric
52187	AZ	Pima	'02	Engineer	Racal Instruments, Inc.
55311	CA	Los Angeles	'97		
78009	CA	Riverside	'97		
78481	CA	Los Angeles	'96	Mission Engineer	Northrop Grumman Corporation
80171	CA	Orange	'95	Member, Technical Staff	ViaSat
80967	CA	Los Angeles	'97		Jet Propulsion Laboratory
81527	CA	Los Angeles	'98		
83022	CA	Orange	'98		
83323	CA	Orange	'98	DFT Engr.	Conexant Systems Charitable Fund
83396	AZ	Pima	'97		
83800	CO	Adams	'97	Unknown	Northrop Grumman Headquarters
83995			'97		
84002	CA	Los Angeles	'97		
84158	CA	Placer	'00	Software Engineer	Hewlett Packard Enterprise
84205	CA	Los Angeles	'98		
84776	CA	Orange	'99		California Department of Transportation
86182			'98		
86249	CA	Los Angeles	'05		
86574	CA	Orange	'98		
102182	WA	King	'97	Deputy Director	Human Interface Technology Laboratory, Australia
102522			'97		
102543	MD	Montgomery	'98		ITT Industries, Inc.
103384	CA	Orange	'99	Technical Solutions Manager	Panasonic Avionics Corporation
103782	TX	Travis	'00	Senior Software Engineer	National Instruments
103894	CA	Orange	'99	Software Test Engr.	The Xerox Foundation

Constituent ID	State	County	Class Of	Title DO NO	Org Name DO NOT INCLUDE IN MAILING
104694	CA	Santa Clara	'99	Technical Marketing Engineer	Cisco Systems
104760	CA	Orange	'02		
105091	CA	Ventura	'98		
105578	CA	Los Angeles	'03		
106085	CA	Los Angeles	'99		
106224	CA	Riverside	'03		
106453	CA	Orange	'98		
106761	GA	Fulton	'01		
106958	CA	Orange	'99		
107278	CA	Los Angeles	'99		
108468	CA	Los Angeles	'99		
108502	CA	Alameda	'98	Consultant	Keysight Technologies
108919	CA	Orange	'99	Software Engr.	MSC.Software
109103	CA	Orange	'07	Sr. Software Engineer	Meggitt Sensing Systems
109185			'98		
109524	CA	Orange	'99		
109950	CA	Santa Clara	'02		
112220	CA	San Diego	'99		
112276	CA	Orange	'99	Elec. Engrg.	Globespanvirata Inc.
112568	CA	Los Angeles	'00		
112776	CA	Orange	'02		
112843	CA	Los Angeles	'01		
113011	CA	Santa Clara	'98	Principal Product Specialist	Magma Design Automation, India
113064	CA	Orange	'01		
113320	MI	Oakland	'01		
114233	FL	Brevard	'99	System Engineer	Harris Corporation
115205	TX	Tarrant	'00	Control Systems Engineer	Siemens
115248	CA	Santa Clara	'00		
115260	CA	Los Angeles	'07	Electronics Engineer	Southwestern Industries
116095	CA	Los Angeles	'00		
117073	CA	Santa Barbara	'01		
117882	CA	Los Angeles	'01	Aerospace Engineer- Controls and Dynamics Branch	National Aeronautics and Space Administration
117958			'00	Senior Manager- (QA-QC)	Gujarate Fluorochemicals Ltd.
118296	TX	Tarrant	'00	Princ. Engr.	ARINC Inc.
118358	CA	Santa Clara	'00		Cisco Systems, Inc.
118375	CA	Los Angeles	'00		
118725			'03		
119258	GA	Gwinnett	'00		

Constituent ID	State	County	Class Of	Title DO NO	Org Name DO NOT INCLUDE IN MAILING
119360	CA	Los Angeles	'99		The Boeing Corporation
119742	CA	Santa Clara	'00		
120446	CA	San Bernardino	'01	Software Engineer	QTC Management, Inc.
120479	CA	Santa Clara	'01	Sr. Product Development Engineer	Intel Corporation
120772	CA	Santa Clara	'06	Slab Division Team Member	United Marble & Granite Inc.
120961	CA	Los Angeles	'02		
122150	CA	Los Angeles	'01		
123458	CA	Orange	'02		
124939	CA	Los Angeles	'02		
124975	CA	Santa Clara	'01		
125217	CA	San Mateo	'01		
125486	TX	Hays	'05	Director Engineering and Quality Systems	Novati Technologies Inc.
125618			'02		
126249	CA	Los Angeles	'03	Business Systems Advisor	SoCalGas
126257	CA	Los Angeles	'01		
126692	CA	Los Angeles	'04	Senior Device Engineer	Amgen Inc.
126737	CA	Orange	'02		
127276	OH	Montgomery	'01		
127625	CA	Los Angeles	'14		
127780	CA	Los Angeles	'01		
127788	CA	Los Angeles	'02	Engr.	Intel Foundation
128254	CA	San Diego	'01		
129081	CA	Riverside	'07		
129441	CA	San Diego	'01		
129725	CA	Los Angeles	'10		
130175	CA	Los Angeles	'11	Hardware Development Engineer	Askey
131909	CA	Los Angeles	'02		
131915	CA	Los Angeles	'05		
132000	CA	San Bernardino	'05		
132895			'03		
132933	CA	San Bernardino	'02		
133908	CA	Contra Costa	'06		
134802			'04	Manager	Vagabond Inn Hayward
134949	CA	San Bernardino	'04		
135419	CA	Orange	'06	Adjunct Professor	USC, Sol Price School of Public Policy
136926			'03		

Constituent ID	State	County	Class Of	Title DO NO	Org Name DO NOT INCLUDE IN MAILING
137189	CA	Los Angeles	'11		
137372			'04		
138289	CA	Santa Clara	'07		
138833	CA	San Mateo	'03	Project Manager	San Francisco Municipal Transportation Agency (SFMTA)
138864	CA	Orange	'07	Naval Officer	US Navy Reserve
138877			'03		
139810	CA	San Diego	'05		
139821			'05		
141540	CA	Los Angeles	'07	Senior Project Manager	tk1sc
142880	GA	Cobb	'05		
143220	CA	San Bernardino	'06	Lecturer AY	Cal Poly Pomona University
143719	CA	Orange	'04		
144182	CA	San Bernardino	'04		
145011			'05		
145305	CA	Los Angeles	'04		The Boeing Corporation
145411	CA	Los Angeles	'04		
145645	CA	Los Angeles	'04	Head Poultry Breeder	Charoen Pokphand Indonesia
145715			'06		
145716	CA	Ventura	'06	Sr Firmware Engineer	Source Photonics
145734	HI	Honolulu	'07		
145772	CA	Orange	'07		
145848	CA	Los Angeles	'08		
145980	CA	Riverside	'07		
146648	CA	Los Angeles	'05		
148050	CA	Los Angeles	'05	R&D Engineer	Northrop Grumman Corporation
148362	CA	Orange	'04	R&D Engineer	Northrop Grumman Corporation
149997	CA	Alameda	'05		
150420	CA	Los Angeles	'09	Design Verification Engineer	Honeywell Safety Products
150483	CA	Los Angeles	'08	Engineer	Boeing Company
150569	CA	Orange	'04		
150594	CA	San Diego	'05		QUALCOMM
150710	CA	Los Angeles	'05		
150714	CA	Orange	'10	Senior Principal Systems Engineer	Raytheon Company
150751	CA	Riverside	'13		
153357	CA	Los Angeles	'07		
153486	CA	Riverside	'07		
153876	CA	Los Angeles	'07		
155186	CA	Orange	'12	Engineer	United States Department of Defense

Constituent ID	State	County	Class Of	Title DO NO	Org Name DO NOT INCLUDE IN MAILING
173683	CA	Orange	'06	Consultant	Sama One Global Inc.
174403	CA	Los Angeles	'07		
174646	CA	Los Angeles	'07		
178123	CA	San Diego	'16	Lecturer AY	Cal Poly Pomona University
178133	CA	Santa Clara	'09	Software Engineer	Google
179221	CA	Los Angeles	'07	Engineer	Northrop Grumman Corporation
180338	UT	Morgan	'11		
180863	CA	Orange	'07	RF Engineer II	Sprint Nextel Corporation
182236	CA	Los Angeles	'08	Software Engineer	Ricoh Innovations Corporation
182415	CA	Contra Costa	'10		
186295	CA	San Bernardino	'09		
186776	TX	Dallas	'09		Raytheon Company
186876	MD	Montgomery	'09	Test Design Engineer	Northrop Grumman Headquarters
187340	CA	Orange	'09	Lecturer AY	Cal Poly Pomona University
190118	CA	Los Angeles	'09	Sr. Electrical/System Engineer	Halyard Health
191299	CA	Santa Clara	'08		
192518	CA	Los Angeles	'10		
193027	CA	Los Angeles	'09	Director	Majestic Car Care
195262			'10		
200031	CA	Orange	'11		
200674	CA	Alameda	'10	Senior SoC Design Verification Engineer	Oracle Corporation
201717	CA	Los Angeles	'10		
201732	CA	Los Angeles	'11	Sr. Test Engineer	Optical communication, ASIC,MMIC and RF design Company
202051	CA	Orange	'15		
205039	CA	Los Angeles	'11		
205394	CA	San Bernardino	'13	Industry Solutions & Services Manager	Accenture
208414	CA	Los Angeles	'15		Northrop Grumman Headquarters
209012	CA	Los Angeles	'16		
209436	CA	San Bernardino	'14		JPL
210190	CA	Ventura	'12		
210347			'11	Project Lead/Sr. System Analyst	Innovative Engineering Systems
210643	CA	Los Angeles	'11		
212335	CA	San Bernardino	'15		
212342	CA	Los Angeles	'13		
213427	CA	Orange	'12		
214861	CA	Los Angeles	'12	Product Developer	Creative Baby Inc.

Constituent ID	State	County	Class Of	Title DO NO	Org Name DO NOT INCLUDE IN MAILING
215046	CA	San Bernardino	'13	Engineer II	Boeing Company
215063	CA	San Bernardino	'12	Seismic Imager	CGGVeritas
215785	CA	Los Angeles	'15		
216054			'14		
217049	TX	Denton	'13		
217319	CA	Riverside	'15		
217529	CA	Orange	'14		
218300	CA	Los Angeles	'17		
218809	CA	Los Angeles	'15	Hardware Engineer	Panasonic Avionics Corporation
219053	CA	Riverside	'13	Technical Program Manager (Media)	Panasonic Avionics Corporation
220381	CA	Los Angeles	'13	Recruiting Team Leader	Chevron Corporation
220564	CA	Los Angeles	'14		
220652	CA	San Diego	'14		
221511	CA	San Bernardino	'19		
221580	CA	San Diego	'13		
222015	CA	Orange	'14	DSP Satellite Subsystems Engineer II	Boeing-McDonnell Foundation
222561	CA	San Bernardino	'13		
222835	CA	Los Angeles	'14	Engineering Communication	Unknown Org Name
223118	CA	Los Angeles	'17		
223151	CA	Orange	'14	Lecturer AY	Cal Poly Pomona University
223598	CA	Los Angeles	'15	Sr. RF Engineer	Lockheed Martin
225355	CA	Kern	'15		
225642	CA	San Bernardino	'15		
227802	CA	Santa Clara			
229097	CA	San Bernardino	'14	Software Test Engineer	Grandstream Networks
229113	CA	Ventura	'14		
231006	CA	Los Angeles	'15		AT&T
231028	CA	Los Angeles	'16	Software Engineer	CGI
231381	CA	Los Angeles	'15		
233180	CA	Los Angeles	'15		
234879	CA	Orange	'16		
235659	CA	Riverside	'16	Software Test Engineer	OMEGA Engineering
238257	CA	Los Angeles	'16		
238553			'17		
238892	CA	Los Angeles	'15		
239286	CA	Orange	'16	Electrical and System Design Engineer II	Jabil Chad Green Point

Constituent ID	State	County	Class Of	Title DO NO	Org Name DO NOT INCLUDE IN MAILING
239287			'15	Systems Engineer	Northrop Grumman Corporation
239477	CA	Los Angeles	'16	Airline System Test Engineer	Panasonic Avionics Corporation
239516	CA	San Francisco	'16		
239664	CA	San Bernardino	'18		
240680	CA	San Bernardino			
240907	CA	Orange	'17		
240909	CA	Orange	'16	Airline System Test Engineer	Panasonic Avionics Corporation
241091	CA	Los Angeles	'16	Technical Aide for Electrical Engineer	B/E Aerospace
242648	CA	Los Angeles	'16	QA Engineer Intern	FMC Technologies
244381	CA	Orange	'17		
244897	CA	Los Angeles	'17		
245031	CA	Los Angeles	'17		
245617	CA	Los Angeles	'17		
245864	CA	Orange	'16	Realtor	Century 21 West Coast Brokers
246001	CA	Orange	'17		
248423	CA	San Diego	'17	Electrical Engineer	San Diego Gas & Electric
248447	CA	Los Angeles	'17		
248635	CA	San Diego	'16	Software Engineer	QUALCOMM
248697	CA	Los Angeles	'17		
248797	CA	Los Angeles	'16	Instrumentation Engineer	JT3
248801			'17		
248903	CA	San Luis Obispo	'16		
248912	CA	Los Angeles	'17		
248931	CA	Los Angeles	'17		
249289	CA	Los Angeles			
249293	CA	Los Angeles	'17		
250043	CA	Sacramento	'17		
250399	CA	Los Angeles	'17		
251117	CA	Los Angeles	'18		
251385	CA	Orange	'18		
254403	CA	Los Angeles	'17	Associate Consultant	NEXUS BI, LLC
255328	CA	Orange	'19		
255337	CA	Orange			
255338	CA	Los Angeles	'19		
262619	CA	Los Angeles	'19		
263108	CA	Los Angeles	'19		
263526	CA	Los Angeles	'18		
266918	CA	Los Angeles	'19		

Constituent ID	State	County	Class Of	Title DO NO	Org Name DO NOT INCLUDE IN MAILING
273781	CA	San Bernardino	'19		

From the Table we see that a strong majority of our MSEE alumni still reside in California. Out of 282 records, 228 graduates of MSEE still reside here. Also, out of these 228 MSEE graduates 111 have a verified employment status, a ratio of 49.12 %. For the rest of our graduates who reside in CA, there is no record available. CPP MSEE graduates with employment status are engaged in multiple industries, including Aerospace, Communications and DSP, Academic, R&D, Systems Engineering, Software Engineering, etc. Employers include JPL, Qualcomm, Northrop Grumman, Boeing Corporation, Raytheon, Google, Oracle Corporation, United States Department of Defense, Sprint, Amgen, Intel, etc. Furthermore, there are 52 MSEE graduates employed in Orange Co, 100 reside in Los Angeles Co, 11 in San Diego Co, and 23 in San Bernardino Co. As the records show, many of the MSEE graduates have transitioned to a managerial type of career. Thus, based on career success, the MSEE program has an established good track record with past graduate successful employment in many major employers in the local area. One of the areas that is not represented in the Table is the one regarding MSEE graduates who continue to a Ph.D. study plan. There are no available data regarding Ph>d. continuation, although we know of some MSEE graduates who moved on to complete successfully a Ph.D. degree in local universities such as USC and UCR.

## 5 Resources

### 5.1 Enrollment

The following figure includes data over the period 2013-2020. It shows the number of enrolled MSEE program students for Fall or Spring.

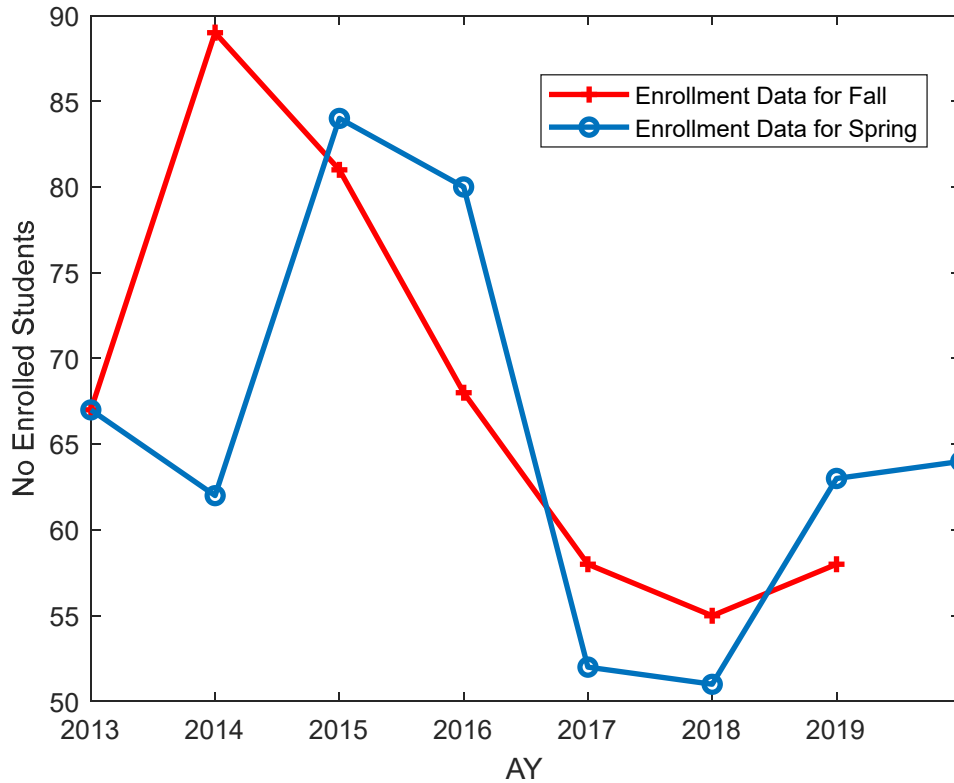


Figure 1 – Student Enrollment<sup>12</sup>

Our MSEE program attained a growth of about 40% between Fall 2013 and Fall 2014, after a long persistent growth before 2014, but since Fall 2014, the program has been in a decline at a rate of about 11% per AY until Fall 2017. Enrollment has been fluctuating around the 58 enrolled students mark since then. This is a big concern for the program. The reviewers' input contribution could be instrumental toward helping jump-start future growth of the program and put it back on track for a steady, persistent long-term success. One of the issues that is problematic for the CPP MSEE program is also the large fluctuation in enrollment observed between consecutive years, but also between consecutive semesters. This fluctuation leads to class planning issues and to faculty research planning issues. The program needs a roadmap for a persistent, stable future growth. Therefore, this is an Issue of Concern (IoC) and we use IoC4 to refer to this particular IoC in Section 6 where suggestions toward improvement are made.

<sup>12</sup> IRPA "Enrollment by Academic Plan" Report  
<https://www.cpp.edu/~data/documents/enrollments/numberofprimarymajorsfalls2005-2017.pdf>

## 5.2 Faculty

The ECE department currently has tenured and tenure track faculty, lecturers and graduate teaching assistants. The numbers as a function of time, presented in Section G of the Background Information is repeated here for clarity and shown below. To summarize, in the 2016-17 academic year there were 17 tenured and tenure-track faculty members, the number of part-time lecturers has increased from 18 to 20 during the year, and the number of graduate TAs has decreased from six to one.

- 1. Tenured and tenure-track faculty:** The following table summarizes the numbers of tenured, tenure-track and Faculty Early Retirement Program (FERP) faculty and gives the effective number of full-time equivalent faculty (FTEF) by year including a projection for 2018-19. This projection assumes no further retirements and that all FERP faculty choose to continue. Since the department had 1,056 undergraduate students in the fall of 2016, the major to faculty ratio based on the effective full time effective faculty (FTEF) in the table below is 51.5. This measure is significant, as it reflects the size of the advising workload. (Advising is not part of the lecturer contract.)

Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Continuing T/TT	21	18	17	18	19	16	16	16
FERP	3	6	7	7	7	7	4	3
Additional T/TT	0	0	1	1	1	1	2	2
FTEF	22.5	21	21.5	22.5	23.5	20.5	20	19.5

## 5.3 Library Resources.

The University Library supports student learning through a wide variety of services. The Reference and Instruction Department of the Library provides assistance to students in accessing the Library's rich information resources and help students develop information skills that not only serve their immediate research needs but also prepare them for graduate studies, careers, and lifelong learning. Librarians use a variety of methods, including course-integrated library instruction, special workshops, personal assistance in-person or via email, chat, phone, or by appointment, instructional guides, tutorials, and a FAQ.

The Circulation Desk is located on the 2nd floor of the Library and is open all hours that the Library is open. Library staff offer assistance in tracking down missing materials, placing holds on materials checked out to another borrower, renewing your materials, paying fees, and updating patron records. Other services include checking out Course Reserve materials, Document Delivery, and Hold requests items.

The Electrical Engineering Subject Librarian, who is a tenure-track senior assistant librarian, works with the faculty and students of the MS in Electrical Engineering program. Below are some of the resources used by the librarian to support this program.

### Select Journal titles

The Library provides program-supporting subscription access to the following key journals:

- ACS Photonics
- Automatica
- IEEE Communications Surveys and Tutorials
- IEEE Transactions on Automatic Control
- IEEE Transactions on Cybernetics
- IEEE Transactions on Power Systems
- IEEE Transactions on Power Electronics
- International Journal of Robotics Research
- Journal of Power Sources
- Progress in Quantum Electronics

### Databases

Here are some key databases used for MS in Electrical Engineering:

- IEEE Xplore
- Compendex/Engineering Village
- Science Direct
- ACM Digital Library
- Web of Science Core Collection

Other useful databases can be viewed here:

- SPIE Digital Library
- Knovel

### Reference and Instruction Statistics

Librarians and library staff assisted students and faculty with research questions related to Engineering during the following years, which include period under review.

- 2014 – 128
- 2015 – 109
- 2016 – 127
- 2017 – 104
- 2018 – 163
- 2019 – 50

The librarian provided instruction to the MS in Electrical Engineering program in the following ways:

- 2014 – 0 instruction
- 2015 – 0 instruction
- 2016 – 0 instruction
- 2017 – 0 instruction
- 2018 – 1 instruction
- 2019 – 1 instruction

Library Research Tutorials Usage by graduate programs in the College of Engineering:

- 2016-17 – 110 users
- 2017-18 – 197 users
- 2018-19 – 4 users

Library Research Guides Usage by MS in Electrical Engineering:

- 2014 – 459 users
- 2015 – 378 users
- 2016 – 527 users
- 2017 – 673 users
- 2018 – 687 users
- 2019 – 732 users

#### **5.4 Additional Resources**

N/A

## 6 Suggested Action Plan

There are 4 Issues of Concern (IoC) identified in this study by the CPP ECE during the self-study part of this report. These are summarized below together with some suggestions for improvement.

**1. IoC1: A reduced number of Labs are being offered in the MSEE program.**

One way the MSEE can resolve this issue, would be to develop a few graduate labs in key areas in the future. This could entail some additional work by the ECE faculty, but it can result in a very efficient solution.

**2. IoC2: There is some significant variation in the STEP scores attained in the MSEE.**

The ECE department should take some care in re-designing classes for which there is a problem. Furthermore, the ECE could solicit additional input from students in order to resolve this.

**3. IoC3: A slow graduation rate, partially due to few professors being available to teach MSEE classes.**

ECE needs to guarantee that enough classes are given each semester, sometimes even if the number of enrolled students is low. In addition, the ECE should hire a few, selected instructors from outside, when the availability of an ECE professor to teach a class becomes hard, due to other faculty responsibilities.

**4. IoC4: MSEE has experienced a slowdown in enrollment for many years.**

The ECE needs to advertise more about its program to attract more, better students. In addition, by correcting some of the other IoC, e.g., IoC3, the reputation of the program will improve and thus more students will be attracted to apply to the MSEE.

## 7 External Review

Report to be added

---

## **8 Department and Dean's Post Review**

Report to be added

---

## Appendix A – Curriculum

2017 – 2018 Curriculum		
Course #	Course Name	Units
<b>Required Breadth: 14 - 18 units</b>		
EGR 511	Numerical Modeling	4
OR		
EGR 515	Matrix Methods in Engineering	4
EGR 543	Stochastic Processes	4
EGR 596	Research Methods	2
EGR 691	Directed Study	2
AND		
EGR 692	Master's Degree Project	2
OR		
EGR 696	Master's Degree Thesis	2
<b>Electives 16 units</b>		
Minimum of 16 units selected from the following list with advisor approval.		
ECE 518	Performability Analysis	4
ECE 520	Network Security	4
ECE 525	Embedded Systems	4
ECE 530	Microelectromechanical Devices and Systems	4
ECE 541	Advanced Software Engineering	4
ECE 542	Digital Image Processing	4
ECE 544	Communication Theory	4
ECE 545	Robust Control	4
ECE 551	Digital Signal Processing	4
ECE 554	Wavelet Theory and Applications	4
ECE 555	Microprocessor-based Control Systems	4
ECE 558	Computer Arithmetic	4
ECE 559	Computer Networks	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 567	Natural Language Processing	4
ECE 570	Smart Grid in Power System	4
ECE 572	Image Sensors	4
ECE 575	Distribution System and Power Quality	4

ECE 582	Digital System Testing	4
ECE 584	Design and Analysis of Computer Algorithms	4
ECE 585	Computer Organization	4
ECE 586	Satellite Communication	4
ECE 592L	Microcontroller Applications Laboratory	2
ECE 593L	DSP Applications Laboratory	2
ECE 594L	FPGA Design Laboratory	2
ECE 597L	Wireless and Digital Communication Laboratory	2
ECE 642	Digital Control Systems	4
ECE 644	Advanced Communication Systems	4
ECE 651	Advanced Signal Processing	4
ECE 685	Advanced Computer Organization	4
ECE 540	Systems Theory	4
<b>Approved Technical Electives (ECE 4XX, ECE 5XX, ECE 6XX)</b>		

<b>2018 – 2019 Curriculum</b>		
<b>Course #</b>	<b>Course Name</b>	<b>Units</b>
<b>Major Required Core (9 units)</b>		
<u>ECE 5110</u>	<u>Numerical Modeling</u>	<u>3</u>
<u>ECE 5430</u>	<u>Random Processes</u>	<u>3</u>
<u>ECE 5960</u>	<u>Research Methods</u>	<u>2</u>
<u>ECE 4XXX/5XXX</u>	<u>Any approved ECE 4000 or 5000-level Laboratory</u>	<u>1</u>
<b>Major Electives (15 - 18 units)</b>		
<u>Minimum of 15 units selected from 4000/5000/6000 level ECE courses selected with Advisor Approval.</u>		
<u>ECE 5180</u>	<u>Performance and Reliability Analysis</u>	<u>3</u>
<u>ECE 5200</u>	<u>Network Security</u>	<u>3</u>
ECE 5250	Embedded Systems	3
ECE 5300	Nanoelectronics	3
ECE 5400	Systems Theory	3
ECE 5440	Communication Theory	3
ECE 5450	Robust Control	3
ECE 5460	Advanced Software Engineering	3
ECE 5470	Digital Image Processing	3
ECE 5480	Solid State Devices	3
ECE 5510	Digital Signal Processing	3
ECE 5540	Wavelet Theory and Applications	3
ECE 5580	Computer Arithmetic	3
ECE 5590	Computer Network	3
ECE 5600	Information Theory and Coding	3

ECE 5610	Advanced Microprocessors	3
ECE 5650	Radar Signal Processing	3
ECE 5660	OFDM and CDMA	3
ECE 5670	Natural Language Processing	3
ECE 5700	Smart Grid in Power System	3
ECE 5720	Image Sensors	3
ECE 5750	Distribution System and Power Quality	3
ECE 5820	Digital System Testing	3
ECE 5840	Design and Analysis of Computer Algorithms	3
ECE 5850	Computer Organization	3
ECE 5921L	Microcontroller Applications Laboratory	1
ECE 5930L	Digital Signal Processing (DSP) Applications Laboratory	1
ECE 5940L	Field Programmable Gate Array (FFGA) Design Laboratory	1
ECE 5970L	Wireless Communication Systems Laboratory	1
ECE 6440	Advanced Communication Systems	3
ECE 6510	Advanced Signal Processing	3
ECE 6850	Advanced Computer Organization	3
<b>Culminating Experience: 3 - 6 units</b>		
ECE 6910	Directed Research	1
ECE 6920	Independent Research	2
OR		
ECE 6960	Master's Degree Thesis	3
<b>Total: 30 units</b>		

## **Appendix B – Past Recommendation**

None, the program is under review for the first time.

## **Appendix C – Curriculum for other Institutions**

<http://www.fullerton.edu/ecs/ee/degrees/graduate.php>

<https://engineering.uci.edu/dept/eecs/graduate/electrical-engineering>

## **Appendix D – Student Evaluation Forms**

# Appendix E – Faculty Resumes

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Zekeriya Aliyazicioglu

2. Education:

Ph. D.	Electrical Engineering	1995	Southern Methodist University, Dallas, TX
M.S.	Electrical Engineering	1991	Southern Methodist University, Dallas, TX
B.S.	Electrical Engineering	1955	Karadeniz Technical University, Turkey

3. Academic Experience

- Full Professor, fall 2007 – present, Department of Electrical and Computer Engineering, California State Polytechnic University, Pomona
- Associate Professor, fall 2001 – summer 2007, Department of Electrical and Computer Engineering, California State Polytechnic University, Pomona
- Assistant Professor. Computer Science Department, Benedict College, Columbia, SC, 1997-2001

4. Non-academic Experience (full time)

Project Manager, Digital Mapping, Inc. Huntington Beach, CA, 1996-1997.

5. Certification or professional registrations.

None

6. Current membership in professional organizations

IEEE, ASEE, Eta Kappa Nu, Tau-Beta-Pi

7. Honors and Awards

Cal Poly Pomona College of engineering outstanding faculty advisor award 2014

8. Service Activities

- Associate Chair, Department of Electrical and Computer Engineering, 2013-2016
- Semester Conversion Advising Committee Member, 2015-present
- ECE Summer Orientation Faculty Advisor 2013-present
- Lab Committee Chair, 2012-2015
- ECE Graduate Program Coordinator, 2010- 2013
- ECE Personal Committee Member 2012-2013
- IEEE Student Club Advisor, 2006- present

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

1. “Detecting Anomalies in Irregular Data using K-means Clustered Signal Dictionary” G. Talavera Reyes, Rajan Chandra, Ha Thu Le, **Zekeriya Aliyazicioglu**, International Conference on Computer and Information Sciences, August 09-11, 2016, Hawaii, USA.
2. “Engaging Students in Multidisciplinary Projects in Unmanned Vehicles Technologies for Enhanced Learning Experience.” Subodh Bhandari, **Zekeriya Aliyazicioglu**, Daisy Tang, Scott Boskovich, ASEE 122th Annual Conference, Seattle, WA, June 14-17, 2015.
3. “Course Supplement Tools for Enhancing Students' Learning in ECE Freshmen Courses” **Zekeriya Aliyazicioglu**, Rajan Chandra, ASEE 2015 PWS Conference, San Diego, CA, April 9-11, 2015.

4. "Angle of Arrival Estimation using Projection Method," **Zekeriya Aliyazicioglu**, H. K. Hwang, Solomon Wu, Hung Lu, Nick Wilkins, Daniel Kerr, FCTE2014 November 16-17, 2014, Shenzhen
5. "Improving Student Learning of Basic Electronic Circuits Concepts using Web-Based Tool," **Zekeriya Aliyazicioglu**, Rajan M. Chandra, Phyllis R. Nelson, Jolly Kuo, and Shailesh Sujanani, 2014 ASEE Annual Conf., Indianapolis, IN, June 15-18, 2014,
2. "Angle of Arrival Estimation using Maximum Likelihood Method," H. K. Hwang, **Zekeriya Aliyazicioglu**, Solomon Wu, Hung Lu, Nick Wilkins, Daniel Kerr, ICSPCN 2014: International Conference on Signal Processing, Communications and Networking, Rio de Janeiro, Brazil, February, 27-28, 2014.
3. "Angle of Arrival Estimation using MIMO Antenna", Andrew Im, Daniel Kerr, Hung Lu, Solomon Wu, **Zekeriya Aliyazicioglu**, H. K. Hwang, OCEANS'13 MTS/IEEE Conference, Bergen, Norway, June 10 -13, 2013
4. "DOA Estimation via Phase Measurement " , Andrew Im, Matthew Gialich, **Zekeriya Aliyazicioglu**, and H. K. Hwang, PIERS 2013 in Taipei, Taiwan, March 25-28, 2013
5. "DOA Estimation using Array Antenna with Large Inter-Element Spacing ," Matthew Gialich, Andrew Im, Tae Lee, **Zekeriya Aliyazicioglu**, H. K. Hwang, International Conference on Signal Processing, Beijing, China on Oct.21-25, 2012.
6. "Performance Analysis of a new CFAR Algorithm under Heterogeneous Environments," F James Jen, Matthew Gialich, Bradley Lambrecht, **Zekeriya Aliyazicioglu**, H. K. Hwang, International Conference on Advances in Signal Processing and Communication in Amsterdam. Netherlands, June 6-7, 2012

10. Briefly list the most recent professional development activities

1. "Intrusion Detection and Real-time data Network", Northrop Grumman, Award Period 2015-2017, PI, Amount \$110,000.
2. "Research Experience for Undergraduates in UAV Technologies" Award period June 1, 2016-2019, Co. PI, Amount \$380,001.
3. "Promoting Active Learning Strategies Through the Flipped Classroom Model in STEM Gateway Courses at SJSU, Cal State LA, and Cal Poly Pomona", Award Period 2016-2019, Co PI, Amount \$663,000.
4. "Course Enhancement " , The Promising Practices Program, CSU Chancellor's Office, Award Period 2013-14 , 2014-15, and 2015-16, PI, Amount ~\$60,000.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Rajan M. Chandra (Aka A. R. Marudarajan)
2. Education:

Southern Illinois University at Carbondale, IL	Engineering Science	Ph.D.	1991	
Unive of Southern California, Los Angeles, CA	Computer Engineering	MS	1980	
University of Wales, UK	Computer Science	M.Sc.	1979	
University of Madras, India	Applied Electronics	M.S.E	1974	
University of Madras, India	Electrical Engineering	B.E.	1973	
3. Academic Experience
  - Professor California State Polytechnic University, Pomona, 1988 - present
  - Associate Professor California State Polytechnic University, Pomona, 1983 - 1988
  - Visiting Professor, Chapman University, Orange, CA, 2003 - 2005, Part-time
  - Adjunct Professor Harvey Mudd College, Claremont, CA, 2003-2004, Part-time
  - Director of Graduate Studies and Research, California State Polytechnic University, Pomona, 2001-2003
4. Non-academic Experience (full time)
  - Research consultant, Peritronics Inc., Monroiva, CA (Summer 85 and 86)
  - Research consultant, Alpha ID, San Dimas, CA (Summer 93)
5. Certification or professional registrations.

None
6. Current membership in professional organizations

Member Tau beta PI and Eta Kappa Nu
7. Honors and Awards

Received a US Patent (With my colleague late Dr. John Palmer and my former student J.D. Tran) for invention on a "RF Transponder Design," June 1996.
8. Service Activities

Member, ECE Department Retention Tenure and Promotion, 2015 to present Member, University Retention Tenure and Promotion Committee 2004-2008

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
  1. G. Talavera Reyes, **Rajan Chandra**, Ha Thu Le, Zekeriya Aliyazicioglu, “Detecting Anomalies in Irregular Data using K-means Clustered Signal Dictionary”, International Conference on Computer and Information Sciences, August 09-11, 2016, Hawaii, USA.
  2. Zekeriya Aliyazicioglu, **R. M. Chandra**, “Course Supplement Tools for Enhancing Students' Learning in ECE Freshmen Courses” ASEE 2015 PS Conference, San Diego, CA, April 9-11, 2015.
  3. Z. Aliyazicioglu, **R. M. Chandra**, P. R. Nelson, J. Kuo, and S. Sujanani, “Improving Student Learning of Basic Electronic Circuits Concepts using Web-Based Tool” , 2014 ASEE Annual Conference, Indianapolis, Indiana, June 15 - 18, 2014
  
10. Briefly list the most recent professional development activities
  1. “Intrusion Detection and Real-time data Network”, Northrop Grumman, Award Period 2015-2017, Co PI, Amount \$110,000.
  2. “Promoting Active Learning Strategies Through the Flipped Classroom Model in STEM Gateway Courses at SJSU, Cal State LA, and Cal Poly Pomona”, Award Period 2016-2019, Co PI, Amount \$663,000.
  3. “Course Enhancement “, The Promising Practices Program, CSU Chancellor’s Office, Award Period 2013-14 , 2014-15, and 2015-16, PI, Amount ~\$60,000.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Yi Cheng
2. Education:  
Sc. D., MIT, 1977  
M.S., MIT, 1972,  
BSEE, National Taiwan University, 1970.
3. Academic Experience: Professor (retired), Cal Poly Pomona, since 1985
4. Non-academic Experience (full time)  
Senior Project Engineer, Conrac Corporation, 1980-1981  
Senior Servo Engineer, Bell and Howell, 1978-1980  
Postdoctoral Fellow, NASA Edwards Flight Research Center, 1977-1978
5. Certification or professional registrations.
6. Current membership in professional organizations: IEEE
7. Honors and Awards
8. Service Activities
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
10. Briefly list the most recent professional development activities  
Attended seminars on operating systems and embedded system designs.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Halima Makady El Naga

2. Education:

Ph.D. Department of Electrical Engineering- Systems. 1999 University of Southern California, Los Angeles, California.

M.S. Department of Electrical and Computer Engineering, 1987, California State University, Northridge, California.

B.S. Department of Electrical Engineering, 1977. Ain Shams University, Cairo, Egypt.

3. Academic Experience

2005 – Present Professor, Electrical and Computer Engineering Department, California State Polytechnic University, Pomona, California.

1999 – 2005 Associate Professor, Electrical and Computer Engineering Department, California State Polytechnic University, Pomona, California.

1983 - 1993 Lecturer, Department of Electrical and Computer Engineering, California State University, Northridge.

4. Non-academic Experience (full time)

1982 - 1985 Senior Design Engineer, Development Engineering, Memorex/Burroughs Corporation, Westlake Village, California.

5. Certification or professional registrations.  
None

6. Current membership in professional organizations

Member of the IEEE Computer Engineering Society.  
Member of American Society for Engineering Education

7. Honors and Awards  
None

8. Service Activities

Department committees

Chair, Department Graduate Coordinator, AY 2004 - 2007 and 2013-present  
Chair, Digital Curriculum Subcommittee, AY 2001, 2002 and 2014 - 2017  
Department Personal Committee Chair AY 2006-2007  
Department Personal Committee Member AY 2012-2013  
Department RTP Committee Chair AY 2012-2013  
Department RTP Committee Member AY 2013- present  
Department Advancement Coordinator, AY 2001

University Committees

Faculty Senator, AY 02-05 and 07-16  
Member, University Budget Committee AY 08-17  
Member, Academic Programs Committee, AY 02- 05  
Member, Academic Affairs Committee, AY 05- 06

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation NONE

10. Briefly list the most recent professional development activities

ASEE Annual Conference 2015

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: James Kang
2. Education:

Ph.D.	Electrical Engineering	1983	University of Southern California
MSEE	Electrical Engineering	1979	Santa Clara University
BS	Electrical Engineering	1973	Seoul National University

3. Academic Experience

1983 - present  
California State Polytechnic University, Pomona  
Currently tenured full professor

4. Non-academic Experience (full time)

None

5. Certification or professional registrations.

None

6. Current membership in professional organizations

Tau Beta Pi, Eta Kappa Nu

7. Honors and Awards

None

8. Service Activities

Scheduling Coordinator, ECE Department

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

James S. Kang, Electric Circuits, Cengage Learning, 2018

10. Briefly list the most recent professional development activities

Sigma Delta ADC Design Project, Jet Propulsion Laboratory.

THz Mixers with Sub-harmonic (x2 and x4) Drivers Project, Northrop Grumman Corp.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Thomas Ketseoglou
2. Education: Ph.D., E.E., University of Southern California, 1990
3. Academic Experience CPP Professor 2003-today, UCI, EECS, Part Time Lecturer 2012-today, UMN, EE, visiting professor 2011-12.
4. Non-academic Experience (full time)
  - a. Senior Engineer, Siemens AG, Munich, Germany, 1991-1994,
  - b. Technical Leader, Systems Engineering, Omnipoint, Colorado, Springs, CO, 1994-1996
  - c. Senior Manager, Rockwell semiconductors, Newport Beach, California, 1996-1998
  - d. Ericsson, Special 3G consultant, 2001-2002
5. Certification or professional registrations.
6. Current membership in professional organizations Senior Member, IEEE
7. Honors and Awards
8. Service Activities Reviewer, IEEE, conference organizer, IEEE, Assoc. editor *IEEE Transactions on Green Communications and networking*
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

T. Ketseoglou and E. Ayanoglu, "**Zero-Forcing Per-Group Precoding (ZF-PGP) for Robust Optimized Downlink Massive MIMO Performance,**" *IEEE Transactions on Communications*, Vol. 67, pp. 6816-6828, October 2019.

M. Le Tran, S. Kim, T. Ketseoglou and E. Ayanoglu, "**LED Selection and MAP Detection for Generalized LED Index Modulation,**" *IEEE Photonics Technology Letters*, Vol. 30, pp. 1695-1698, Oct. 2018.

T. Ketseoglou and E. Ayanoglu, "**Downlink Precoding Gain for Massive MIMO Systems Exploiting Virtual Channel Model Sparsity,**" *IEEE Transactions on Communications*, Vol. 66, pp. 1925-1939, May 2018.

T. Ketseoglou and E. Ayanoglu, "**Downlink Precoding Gain for Massive MIMO Systems Exploiting Virtual Channel Model Sparsity,**" *ICC 2018*, May 2018, Kansas City, MO

T. Ketseoglou and E. Ayanoglu, "**Linear Precoding Gain for Large MIMO with QAM and Reduced Complexity,**" *IEEE Transactions on Communications*, Vol. 64, pp. 4196-4208, Oct. 2016.

T. Ketseoglou and E. Ayanoglu, "**Linear Precoding for MIMO with LDPC Coding and Reduced Complexity,**" *IEEE Transactions on Wireless Communications*, Vol. 14, pp. 2192-2204, April 2015.

T. Ketseoglou and E. Ayanoglu, "**Reduced Complexity Linear Precoders for MIMO,**" *Proc. IEEE Wireless Telecommunications Symposium*, April 2015.

T. Keteoglou and E. Ayanoglu, "**Linear Precoding for MIMO with LDPC Coding and Reduced Receiver Complexity**," *Proc. 2013 Asilomar Conference on Signals, Systems, and Computers*.

10. Briefly list the most recent professional development activities

- a. Collaboration with University of California, Irvine (UCI) on 5G and 6G research
- b. Part-time lecturer UCI
- c. Visiting professor, AY 2011-12, University of Minnesota, EE Department
- d. Assoc. Editor, *IEEE Transactions on Green Communications and Networking*
- e. Development of Software Radio Universal Software Radio Port (USRP) laboratories based on National Instruments (NI) Labview software for experiments at the undergraduate and graduate levels (2 laboratory classes)
- f. Hosted post-doc researcher for collaboration on Visual Light Communications (VLC) Multiple-Input Multiple-Output (MIMO) systems

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Hyoung Soo Kim

2. Education:

Ph.D. in Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia, 2010

M.S. in Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia, 2003

B.S. in Electrical Engineering, Yonsei University, Seoul, South Korea, 2000

3. Academic experience

California State Polytechnic University, Electrical and Computer Engineering Department,  
Assistant Professor, 09/2015 – Present

University of North Texas, Electrical Engineering Department, Assistant Professor: 09/2010 –  
08/2015

4. Non-academic experience

Consultant (part time): 01/2010 – 05/2010

Lyric Semiconductor (now Analog Devices), Cambridge, MA  
-Design of CMOS error correction circuit.

Electrical Engineer (full time co-op position): 05/2008 – 08/2008 and 05/2009 – 08/2009

Lyric Semiconductor (now Analog Devices), Cambridge, MA  
-Design of Demappers, Equalizers in CMOS technology.

5. Certifications or professional registrations: N/A

6. Current membership in professional organizations:

International Electrical and Electronics Engineers (IEEE)

7. Honors and awards

Research presentation won the second place at IEEE Texas Symposium on Wireless and Microwave Circuits and Systems, April, 2014.

Research presentation won the second place at IEEE Mini-Symposium on Wireless and Microwave Circuits and Systems, 2012.

8. Service activities (within and outside of the institution)

Faculty senate (Election and Procedure committee)

Electronics Subcommittee

Scholarship Committee

IEEE International Microwave Symposium (IMS) as a member of the Technical Paper Review Committee (TPRC) 2015-2017

Reviewed the publications below

- IEEE International Symposium of Circuits and Systems

- IEEE International Symposium of Circuits and Systems Review Committee Member (RCM)
- IEEE Transactions of Microwave Theory and Technology
- IEEE Wireless and Microwave Technology Conference
- IEEE Transactions on Instrumentation and Measurement
- IEEE Microwave and Wireless Components Letters
- IEEE Texas Symposium on Wireless and Microwave Circuits and Systems
- IEEE Design and Test
- IEEE Transactions on Components, Packaging and Manufacturing Technology
- Elsevier International Journal of Electronics and Communications

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

1. J. Hur, H.S. Kim, O. Lee, K.W. Kim, F. Bien, K. Lim, C.-H. Lee and J. Laskar, “A multi-level Class D CMOS power amplifier for an out-phasing transmitter with a non-isolated power combiner,” IEEE Transactions on Circuits and Systems II: Express Briefs, Volume 63, Number 7, pages 618–622, July 2016.
2. V. Shenoy, S. Jung, Y. Yoon, Y. Park, H.S. Kim and H.J. Chung, “A CMOS Analog Correlator based Painless Non-Enzymatic Glucose Sensor Readout Circuit,” IEEE Sensors Journal, Vol. 14, No. 5, pp. 1591-1599, May 2014.
3. Y. Yoon, H.S. Kim, K.S. Lee, C.H. Lee and S. Kenny, “A 2.4 GHz CMOS Power Amplifier with an Integrated Antenna Impedance Mismatch Correction System,” IEEE Journal of Solid State Circuits, Vol. 49, No.3, pp. 608-621, March 2014.
4. B. Arigong, J. Ding, H. Ren, R. Zhou, H.S. Kim, Y. Lin and H. Zhang, “Design of Wide-Angle Broadband Luneburg Lens Based Optical Couplers for Plasmonic Slot Nano-Waveguides,” Journal of Applied Physics, 114, 114301-1~5, Oct. 2013.
5. H.S. Kim. S. Woo, S. Jung and K. Lee, “A CMOS Transmitter Leakage Canceller for WCDMA Applications,” IEEE Transactions on Microwave Theory and Techniques Vol. 61, Issue: 9, pp. 3373-3380, September 2013.

10. Briefly list the most recent professional development activities

Teaching Workshop, College of Engineering, Cal Poly Pomona (Nov. 10, 2016)  
 RF Power Amplifier Workshop, Keysight technologies (Sep. 21, 2016)  
 Mentoring Undergraduate Researchers Workshop, College of Engineering, Cal Poly Pomona (May 13, 2016)  
 American Society for Engineering Education, Pacific Southwest Conference (April 21-23, 2016)  
 IEEE Radio and Wireless Week (January 23-26, 2016)  
 Grant Writing Workshop, College of Engineering, Cal Poly Pomona (Nov. 20, 2015)

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Gabriel Kuri

2. Education:

BS, Electrical Engineering, Cal Poly Pomona  
MS, Electrical Engineering, Cal Poly Pomona

3. Academic Experience

Guest Speaker, ET & ECE Dept, Cal Poly Pomona (2004 – 2015)  
Lecturer, Electrical & Computer Engineering Dept, Cal Poly Pomona (2017)

4. Non-academic Experience (full time)

UNIX & Windows Systems Admin, Cal Poly Pomona, (2000 – 2004)  
Sr Network Engineer, Cal Poly Pomona, (2004 – 2012)  
Director, Networking & Telecommunications, Cal Poly Pomona (2012 – 2017)

5. Certification or professional registrations.

N/A

6. Current membership in professional organizations: IEEE

7. Honors and Awards

N/A

8. Service Activities

N/A

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation: N/A

10. Briefly list the most recent professional development activities

ITIL Foundation Training

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Ha Tua Le

2. Education:

Ph.D. (Electrical and Computer Engineering), 2010, University of Texas at Austin, USA.

M.S. (Electrical and Computer Engineering), 2008, University of Texas at Austin, USA.

M.E. (Electrical Engineering), 2003, University of Queensland, Australia.

B.S. (Electrical Engineering), 1994, Odessa College, Ukraine.

3. Academic experience

**Assistant Professor**, *California State Polytechnic University at Pomona*, Sept 2013 – Present, full-time.

**Postdoctoral Associate**, *Virginia Polytechnic Institute and State University*, 8 months (July 2010–Feb 2011, full-time).

4. Non-academic Experience (full time)

**Engineering Manager**, *Nata JSC*, 2 years 2 months (Apr 2011 – Jun 2013, full-time).

5. Certification or professional registrations.

Not applicable

6. Current membership in professional organizations:

- Senior Member, Institute of Electrical and Electronics Engineers, Inc. (IEEE), and IEEE Power & Energy Society, 2003 – present.

7. Honors and Awards

Recipient, CPP President Research, Scholarship & Creative Activity (RSCA) Mini-Grant, 2016.

Recipient, Cal Poly Pomona Provost Teacher-Scholar Scholarship, 2014-2015.

8. Service Activities

1. Senior Project Coordinator (2016-2017)

2. Chair, ECE Scholarship Committee (2014-2016)

3. Member, Senate Standing Committee (Faculty Affairs, 2015-2017)

4. Member, Senate Standing Committee (Elections & Procedures, 2014-2015)

5. Member, Senate Standing Committee (Academic Programs, 2014)

6. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

1. Ha Thu Le and S. Santoso, "Operating compressed-air energy storage as dynamic reactive compensator for stabilizing wind farms under grid fault conditions," *IET Renewable Power Generation* journal, vol. 7, issue 6, pp. 717-726, doi 10.1049/iet-rgp.2011.0247, 2013.
  2. **Ha Thu Le**, S. Santoso and Thang Quang Nguyen, "Augmenting wind power penetration and grid voltage stability limits using ESS: Application design, sizing, and a case study," *IEEE Transactions on Power Systems*, vol. 27, Issue 1, 2012.
  3. **Ha Thu Le**, "Demand response: World experience and Vietnam application," *UOD Journal of Science and Technology*, vol. 57, issue 8, pp. 92-99, 2012.
  4. Anh-Huy Le, A. Giourdjian, A. Frankyan, V. Mandany and **Ha Thu Le**, "Design, Sizing and Operation of a Hybrid Renewable Energy System for Farming," in *Proc. IEEE PES Innovative Smart Grid Technologies Conference*, 2016, pp. 1-5.
  5. D. S. Melvin, J. Le, O. Vazquez, R. Martinez and **Ha Thu Le**, "Smart Lighting Solutions: Energy Saving Designs for an Animal Protection Shelter," in *Proc. IEEE PES Innovative Smart Grid Technologies Conference*, 2016, pp. 1-5.
  6. G. T. Reyes, R. M. Chandra, **Ha Thu Le**, and Z. Aliazicioglu, "Detecting Anomalies in Irregular Data using K-means Clustered Signal Dictionary", in *Proc. International Conference on Computer and Information Sciences (ICCIS)*, 2016.
  7. Jason Glueck and **Ha Thu Le**, "Impacts of Plug-in Electric Vehicles on local distribution feeders," in *Proc. IEEE Power & Energy Society General Meeting*, 2015, pp. 1-5.
  8. **Ha Thu Le**, "Guidance-based hybrid lab training method for enhancing core skills of EE students," in *Proc. IEEE Power & Energy Society General Meeting*, 2015, pp. 1-5.
- Briefly list the most recent professional development activities
    - *Chair*, Paper Section "Microgrids and New Trends III", IEEE Power and Energy Society Innovative Smart Grid Technologies (ISGT) Conference, Sept 2016.
    - *Judge*, Student Poster Contest, IEEE Power and Energy Society General Meeting 2015.
    - *Reviewer*, IEEE transactions and international peer-review journals, 2013 – Present.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Tim Lin

2. Education:

Ph. D.	Mathematics	1981	California Institute of Technology
M.S.	Mathematics	1974	National Taiwan University
B.S.	Electrical Engineering	1970	National Taiwan University

3. Academic Experience

Full Professor, fall 2007 – present

Department of Electrical and Computer Engineering  
California State Polytechnic University, Pomona

Associate Professor, fall 2001 – summer 2007

Department of Electrical and Computer Engineering  
California State Polytechnic University, Pomona

4. Non-academic Experience (full time)

Advanced Hi-Tech Corp, El Segundo, CA , Principal Scientist, Director of QA, Director of Simulation, Director of PDL language, Developed specification and design of printer design, 1999 – 2001

Advanced Hi-Tech Corp, El Segundo, CA, Director of QA, Director of Simulation, Director of PDL Language, Developed and managed software and product in HP PDL language printing, 1992 – 1998.

Concurrently:

Wincomm Corporation, Hsin-Chu, Taiwan, Vice President of R&D, Oversaw R&D and also operations of a PBX company, 1998 – 1999.

Logicon (now part of Northrop), San Pedro, CA, Member of Technical Staff. Got involved in several aerospace projects on simulations and also on IV & V to simulate or verify the quality of software controlling airplanes or missiles, 1985 – 1991.

Burroughs Corporation (now Unisys), Principal Programmer, Burroughs Corporation. Involved in developing and testing network software in the routing and session layers, 1983 – 1985.

Telos Corporation, Lead Programmer. Developed and tested assembly code for JPL's (Jet Propulsion Lab) DSN (Deep Space Network) subsystem in real time operating system, 1981 – 1983.

5. Certification or professional registrations.

PE in Taiwan, 1975.

6. Current membership in professional organizations

ASEE, IEEE Computer Society, ACM, TBP, HKN

7. Honors and Awards

None.

8. Service Activities

ECE Department EXCOM Chair, 2015-2016

ECE Department Personnel Committee

ECE Department RTP Committee

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

None.

10. Briefly list the most recent professional development activities

None.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Massoudi, Mohammad, A.

2. Education:

M.E. Electrical Engineering 1975 California State Polytechnic University, Pomona

B.S. Electrical & Electronics Engineering 1973 California State Polytechnic University, Pomona

3. Academic Experience

Professor Emeritus, 2016 - present

Professor, September 2013-2016, Full-time

Interim Chair & Professor, ECE Department, January – June 2013

Associate Chair & Professor, ECE Department, 1992 - 2012

Assistant Chair & Associate Professor, ECE Department, September 1987-June 1992, Full-time

Lecturer, September 1981-June 1987, ECE Department, Full-time

Lecturer, June 1975-June 1981, ECE Department, Part-time

Graduate Assistant, January 1975-June 1975, Part-time, California State Polytechnic University, Pomona

4. Non-academic Experience (full time)

- Powerlab Inc. Pomona, CA, Consultant, Design of Power Transformers, 1992-1998, Part-time
- EG&G Almond Instruments, Covina, CA, Consultant, Stability Analysis / Design of Military Switching-Mode Power Supplies, 1987-1998, Part-time
- Signet Scientific, El Monte, CA, Consultant, Design of Switching-mode Power supplies, 1986-1988, Part-time.
- EG&G Almond Instruments, Covina, CA, Senior Electronic Engineer, Military Low Harmonics Power Transformer Design, 1981-1987, Part-time.
- Almond Instruments, Covina, CA, Senior Electronic Engineer, Stability Analysis/Design of Military Switching-Mode Power Supplies, 1979-1981.
- Jet Propulsion Laboratory, CA, Electronic Engineer, Error Analysis of Deep Space Antenna, 1977-1979, Part-time/Full-time.

5. Certification or professional registrations: P.E., Electrical Engineering, CA, 1989.

6. Current membership in professional organizations: Tau Beta Pi, Eta Kappa Nu

7. Honors and Awards

- Mace Bearer, College of Engineering Commencement Ceremony, Sunday, June 12, 2016.
- Outstanding Academic Advisor, College of Engineering, 1996-1997
- Outstanding Academic Advisor, Eta Kappa Nu, 1996-1997
- Meritorious Performance and Professional Promise Award, 1989-1990
- Outstanding Professor Award, Zeta theta Chapter of Eta Kappa Nu, 1986, 1994, and 1996.
- Patent #4778181, US Patent Office, Low harmonics for Military Applications of Multi-Phase Power Transformers, October 1988.

8. Service Activities
  - Donated funds towards ECE Department Scholarships.
  - Donated electronics parts in support of Electronics Laboratories.
  - Campus Disciplinary Representative to the California State University's Lower Division.
  - Patterns (LDTP) PROJECT. October 2004-August 2010.
  - College RTP Committee, Member 2005-2007.
  - Science Olympic Judge, Saturday, March 2005
  - Undergraduate Advising Coordinator
  - Presenter, ECE Dept. Open House, Saturday, February 24, 2007.
  - Act (CCRAA), April 2009-2010.
  - Presenter, Show Case of Excellence, ECE Dept., Saturday, January 29, 2011.
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation: None.
10. Briefly list the most recent professional development activities
  - Completed the Workspace Violence Prevention Course online, October 23, 2007.
  - Attended the Advising Essentials workshop: Mastering the Basics Part 2, at Cal Poly Pomona, October 31, 2008.
  - Attended the First Year Experience Workshop at Cal Poly Pomona, December 17-18, 2008.
  - Attended the Integrating the University Writing Center into Student Projects in STEM Workshop at Cal Poly Pomona, April 24, 2009.
  - Attended the Strategies to Engage STEM students in Writing Workshop at Cal Poly Pomona, May 8, 2009.
  - Attended the Advising Essentials Workshop: Supporting Students' Transition to Cal Poly Pomona, at Cal Poly Pomona, May 8, 2009.
  - Attended the Advisor Orientation Workshop at Cal Poly Pomona, October 27, 2009.
  - Completed the Sexual Harassment Prevention for higher Education Staff Course online, January 2, 2010
  - Attended the ABET preparation Workshop for College of Engineering at Cal Poly Pomona, May 6, 2010.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Steven McNinch
2. Education:
  - Master of Science in Electrical Engineering  
California Polytechnic University Pomona
  - Bachelor of Science in Biotechnology  
California Polytechnic University Pomona
3. Academic Experience
  - Instructor:
    - Digital Logic Design Laboratory: 2015 – Present
    - Digital Circuit Design w/ Verilog Laboratory: 2014 – Present
4. Non-academic Experience (full time)
  - R&D Test Engineer, Broadcom Ltd: 2015 - Present
  - Hardware Engineer, Irvine Sensors Corp: 2015-2015
5. Certification or professional registrations.
  - None
6. Current membership in professional organizations
  - None
7. Honors and Awards
  - None
8. Service Activities
  - None
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
  - None
10. Briefly list the most recent professional development activities
  - Teradyne UltraFLEX Mixed Signal Programming
  - Teradyne IG-XL Fundamentals

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Anthony P. Mittskus, P.E.
2. Education: BSECE – California State University, Pomona, Ca. 3/1981  
MS-Eng – California State University, Pomona, Ca. 3/1982
3. Academic Experience: 35 years part-time lecturer, Cal Poly, Pomona 3/82 – Pres  
Generally sophomore/junior level electrical engineering labs
4. Non-academic Experience (full time)  
22 years Engineering and Engineering Management  
Jet Propulsion Laboratory, Pasadena, Ca. 1995 – Pres  
Current Position: Assistant Division Manager for Flight Projects  
Mission Assurance Division  
  
11 years Design Engineering  
GM/Hughes Aircraft, Fullerton Ca. 1984 – 1995  
Last position: Project Engineer, classified system(s)
5. Certification or professional registrations.  
Licensed Professional Engineer, State of Ca. E14516, 1993 - Pres
6. Current membership in professional organizations  
IEEE/MTTS Member
7. Honors and Awards  
NASA Voyager Award (2016) for spearheading the change in JPL’s Risk Management process  
  
NASA Exceptional Achievement Medal (2012) for technical excellence on the Juno Spacecraft  
Gravity Science/Telecommunications Subsystem
8. Service Activities  
“Mentoring in Action” (2014 – 2017) lead for new engineering professionals as they start their  
engineering career

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

No publications in the past 5 years

Multiple presentations (monthly - yearly) to NASA management on Risk Management as a participating member in the NASA Agency Risk Management Board

Multiple presentations (monthly - yearly) to JPL management on Risk Management as the lead on the JPL Center Risk Management Board

10. Briefly list the most recent professional development activities

4-D Systems workshop, Charlie Pellerin, <http://www.4-dsystems.com/>

An advanced management system workshop on team building and development

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering  
**FACULTY VITAE**

1. Name: Saeed Sean Monemi
2. Education:
  - Ph.D. Electrical Engineering, Vanderbilt University, Nashville, TN, 1999
  - M.S. Electrical Engineering, Vanderbilt University, Nashville, TN, 1985
  - B.S. Electrical Engineering, Alabama A&M Univ., Huntsville, AL, 1980
3. Academic Experience
  - Full Professor, Fall 2007–present, Electrical and Computer Engineering, California State Polytechnic University, Pomona
  - Associate Professor, Fall 2001 – Summer 2007, Electrical and Computer Engineering, California State Polytechnic University, Pomona
  - Faculty/Sr. Research Associate Professor/Research Scientist, Electrical Engineering and Computer Science, Vanderbilt University, 1998-2001
  - Instructor/Director, Draughons Jr. College, Nashville, TN, 1986-1987
  - Instructor/Director, United Technical College, Nashville, TN, 1985-1986
  - Instructor, Nashville State Technical College, 1985-1986
4. Non-academic Experience (full time)
  - Supervisor –NES/TVA, Nashville, TN, 1987-1998
  - *Project Manager, GIS-MAGIC, Nashville, TN, 1987- 1989*
  - Software Specialist, Victor Technologies, Nashville, TN, 1983
  - Electrical Engineer/ Project Coordinator/Technical Account Specialist, Litton Industries, Atlanta, GA, 1981-1982
5. Certification or professional registrations
  - Certification on DOT Hazardous Materials Regulation HM126F
6. Current membership in professional organizations
  - IEEE, PES, ASEE, Eta Kappa Nu, Tau-Beta-Pi
7. Honors and Awards
  - Received “2016 Provost Teacher-Scholar Award”
  - Received “2015 Outstanding Chapter Award for IEEE/PES Region 6 Area” for continued excellence in providing technical programs and quality services to the membership of both students and practicing engineers
  - Received “2014” ETAP Partner Network Award”
  - The best paper award titles “Integrated Diagnostics for Electric Utilities”, from IEEE 4th World Multi-conference on Systemics, Cybernetics and Informatics (SCI) 2000, in Orlando, FL
  - Microsoft Corporation teacher scholar awardees’ for work in software engineering and contribution in book publication on operating systems for graduate program by Microsoft
  - Teacher-Scholar Summer Institute, Cal Poly San Luis Obispo: Collaborative Learning: Teaching & Assessing, What is Hard to “See”, The Effective Use of Academic Technology, Information, Technology, and Teaching
  - “Big Body” Award for 12 years of dedication & service to the United Way
8. Service Activities
  - CSU Statewide Academic Senator & Statewide Commissioner for Ext. Education
  - Chair of College RTP Committee
  - Co-Chair of IT & Communication for Semester Conversion Steering Committee
  - Member of: faculty cluster hiring Committee & University Council of Advisors
  - Student Club Advisor for Power and Energy Society (PES)

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
  - Monemi, Kamand, Thaiy, Luong, Venrick, “Smart Grid Cyber Test Bed Development”, IEEE SUSTECH 2016, Phoenix, AZ, October 2016
  - Monemi, Kifle, “Toward Building a Model of Wind and Solar Energy Source”, ASME 2015 9th International Conference on Energy Sustainability, San Diego, CA, July 2015
  - Monemi, Easton, Freire, “Solar Updraft Tower”, ASME 2015 9th International Conference on Energy Sustainability, San Diego, CA, July 2015
  - Kevin R. Anderson<sup>1</sup>, Maryam Shafahi, Reza Baghaei Lakeh, Sean Monemi, Chris McNamara “CFD Analysis of Hybrid Solar Tower Using Compost Waste Heat and Photovoltaics”, *proceedings of the IEEE SUSTECH 2015 Conference on Technologies and Sustainability*, Ogden, Utah, July 20 to August 1, 2015
  - Monemi, “Smart Grid – From Generation to Distribution”, 2012 HUIC Hawaii University International Conference on Mathematics and Engineering Technology, Honolulu, HI, July 2012
10. Briefly list the most recent professional development activities
  - SPICE Grant – PI (Pending Review, \$14,860) “Improving laboratory design tools to aid in modeling, simulation and development of a smart power grid system and to protect the power grid against any cyber-attacks”, 2017-18
  - SPICE Grant – Co-PI (Pending Review, \$25,000), “Increasing the safety and quality of lab experiments in power and energy area”, 2017-18
  - NSF – PI, (Pending review award of \$500,000), “Collaborative Research: Cybersecurity Education Framework for Current and Future Electric Utility Workforce”, 2016/17
  - SPICE Grant – PI, Awarded \$10,300, “To upgrade the College of Engineering’s Power and Energy laboratory infrastructure, located in building 9, room 119, 2015-16
  - ETAP – PI, Received a grant for \$552K toward energy laboratory software purchase, 2015
  - SPICE Grant – Co-PI, Awarded \$24,680, “To modernize some critical equipment for the Power and Energy lab which is located in the College of Engineering (CoE) Building 9, Room 119”, 2014-15.
  - DOE/SCE– PI, Awarded \$350K, Tehachapi Battery Storage Grant, Smart Grid and Energy Lab – Established a Center for Smart Grid and Renewable Energy laboratory in Engineering/Cal Poly Pomona, 2014
  - SPICE Grant – PI, Awarded \$17,500, “To upgrade the College of Engineering’s Power and Energy laboratory infrastructure”, 2013-14
  - Air Force – Awarded \$100K, Establishment of a Smart Classroom for teaching hybrid/online MSEE degree thru extension program, Cal Poly Pomona, 2012

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name  
Narayan R. Mysoor
2. Education  
Ph.D. Electrical Engineering, University of Delaware, 1978  
M.E.E. Electrical Engineering, University of Delaware, 1974  
B.E. Electrical Engineering, Bangalore University, India, 1969
3. Academic experience  
Years of Service on College of Engineering Faculty: 39 years (Sept.1978-present)  
Assistant Professor      September 1978  
Associate Professor      September 1980  
Professor                      September 1985  
Professor Emeritus        September 2012  
  
University of Delaware, Post Doctoral Research Fellow (1977-1978)  
University of Delaware, Research/Teaching Assistant (1971-1977)
4. Non-academic experience (full time)
5. Certifications or professional registrations  
P.E., Electrical Engineering, California 1980.
6. Current membership in professional organizations  
The Institute of Electrical & Electronic Engineers, Life Senior Member.  
Eta Kappa Nu, Electrical & Computer Engineering Honors Society, Member.  
Tau Beta Pi, Engineering Honors Society, Member
7. Honors and awards
  - Patent on microwave and optical resonant sensor systems, 1980.
  - Recipient of 14 NASA Technical Innovation Awards, and ten NASA Group Technical Achievement Awards.
8. Service activities (within and outside of the institution)  
Member of ECE Department Electronics Curriculum committee
9. Briefly list the most important publications and presentations from the past five years  
None
10. Briefly list the most recent professional development activities  
Attended IEEE MTT and Wireless conferences (2015).  
Attended few seminars at JPL.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

College of Engineering

Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Phyllis R. Nelson
2. Education:
  - 1990 PhD in Electrical Engineering, University of California, Los Angeles
  - 1980 MS in Electrical Engineering, California Institute of technology
  - 1977 BS in Electrical Engineering, California State Polytechnic University, Pomona
3. Academic Experience
  - 1999-present: Professor, Electrical and Computer Engineering, California State Polytechnic University, Pomona. Associate Professor: 1999 -- 2006. Tenure: 2005. Chair: September 2013 -- present
  - 1999: Lecturer, Electrical and Computer Engineering, California State Polytechnic University, Pomona.
  - 1992-2008: Lecturer, Electrical Engineering, University of California, Los Angeles. (Occasional)
4. Non-academic Experience (full time)
  - 1995-1999: Senior Development Engineer, Electrical Engineering Department, University of California, Los Angeles.
  - 1993-1995: Visiting Assistant Research Engineer, Electrical Engineering Department, University of California, Los Angeles
  - 1992: Associate Development Engineer, Plasma Physics Laboratory, University of California, Los Angeles.
  - 1991: Visiting CNRS Scientist, Laboratoire de Physico-Chimie des Matériaux Luminescents, Université Claude Bernard - Lyon 1, Lyon, France.
  - 1988-1990: Member of the Technical Staff, Superconductive Electronics Department, Advanced Technology Group Research Staff, TRW, Inc.
  - 1985-1988: Member of the Technical Staff, Electro-Optical Research Department, Advanced Technology Group Research Staff, TRW, Inc.
  - 1977-1985: Project Engineer, Hughes Aircraft Company Space and Communications Group.
5. Certification or professional registrations. None
6. Current membership in professional organizations
  - American Association for the Advancement of Science, American Physical Society, Eta Kappa Nu, ECE Department Head Association, IEEE (Life Senior Member), International Council on Systems Engineering, Optical Society of America, Tau beta Pi (California Nu Advisor)
7. Honors and Awards
  - 2004: Senior Member of IEEE (Life Senior Member 2014)
  - 2004: Sigma Xi
  - 2002: Tau Beta Pi Eminent Engineer, California Nu Chapter Cal Poly Pomona).
  - 1990-1991: Bourse Chateaubriand, Université Claude Bernard - Lyon 1.
  - 1988: Fulbright Cooperative Research Project Award, Université Pierre et Marie Curie - Paris VI.
  - 1984: Eta Kappa Nu, Iota Gamma Chapter (UCLA)
8. Service Activities
  - 2016-present: Student Success Steering Committee, member.
  - 2014-2016: Semester Conversion Steering Committee, Communications Subcommittee Co-Chair
    - 2014-15, Student Administrative Services Subcommittee Co-Chair 2015-16.
  - 2014-present: Senator, (term expires 2018). Executive committee member 2016-17.
  - 2014-present: Veteran Success Committee, Member.

2013: USENIX Workshop on Embedded Self-Organizing Systems (ESOS 2013). Program committee member.

2012: Sixth IEEE Conference on Self-Adaptive and Self-Organizing Systems (SaSo 2012) and Third IEEE Workshop on Self-Organizing Systems (SOER 2012). Program committee member

2011-present: Photoptics Conference: Program committee member.

2011: Second IEEE Workshop on Self-Organizing Systems (SORT 2011). Program committee member.

2007-present: Tau Beta Pi California Nu Chapter head advisor

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

Bellman, Landauer, Nelson, Bencomo, Götz, Lewis, Esterle, “Self-modeling and Self-awareness,” Self-Aware Computing Systems, Kounev et. al, eds., Springer, 2017. (book chapter)

Phyllis R. Nelson, Minhdao H. Nguyen, Chien-Cheng J. Yang, "Cautionary Tales: Lessons Learned About Unanticipated Behaviors in Organic Computing Systems," *Informatik-Spektrum*, vol. 35, pp. 87-92, 2012.

Kirstie L. Bellman, Phyllis R. Nelson, and Christopher Landauer, "Active experimentation and computational reflection for design and testing of cyber-physical systems," in *Complex Systems Design & Management (CSD&M 2014)*, Paris - Salons de l'Hotel des Arts et Métiers (France), November 2014.

Christopher Landauer, Kirstie L. Bellman, Phyllis R. Nelson, "Self-Modeling for Adaptive Situation Awareness," tutorial, 6th IEEE Conference on Cognitive Methods in Situation Awareness and Decision (CogSIMA 2013), 25 February 2013, San Diego, California.

Phyllis R. Nelson, "One, few, many: How the number of cooperating agents affects strategies for self-organized behavior," in *Workshop on Embedded Self-Organizing Systems (ESOS)*, in USENIX Federated Conferences Week, San Jose, California, June 2013, (Invited keynote).

10. Briefly list the most recent professional development activities

2007-present: Consultant, Systine Inc., Pasadena, CA. Modeling and process control of atomic-scale surface modification equipment.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: David H. Nguyen
2. Education:
  - M.S.E.E., Cal Poly Pomona, 1997
  - B.S.E.E., Cal Poly Pomona, 1986
3. Academic Experience: Cal Poly Pomona, Part-time Lecturer, Jan. 1999 - Present
4. Non-academic Experience (full time):
  - UTC Aerospace Systems, Project Engineer, Feb. 2016 – Present
  - Hamilton Sundstrand (UTC), Manager, Feb. 2000 – Feb. 2016
  - Various (Teradyne, Loral, Lockheed, Pairgain), Engineer, 1986 - 2000
5. Certification or professional registrations.
6. Current membership in professional organizations
7. Honors and Awards
8. Service Activities
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
10. Briefly list the most recent professional development activities

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Salomón Oldak
2. Education:

Ph.D - Applied Math Dept., Weizmann Institute of Science, Israel, 1991.  
M.Sc - Applied Math Dept, Weizmann Institute of Science, Israel, 1985.  
B.S. - Electronic Systems Engineering, Instituto Tecnológico y de Estudios Superiores de Monterrey, Campus Estado de México, México, 1983.

3. Academic Experience

Taught a large variety of classes in engineering at the undergraduate and graduate levels, mainly control systems, electrical circuits and computer programming. Wrote several lab manuals and introduced new technologies. Served in several Department and University committees; currently department Search Committee Chair. Been M.Sc.E.E. supervisor to more than 10 projects and thesis, Advisor for the Control Systems and Robotics Option of the M.Sc.E.E. program. Problem and laboratory experiment writer for N.S.Nise, "Control Systems Engineering" 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> Editions. Problem checker for Thomas-Rosa, "The Analysis and Design of Linear Circuits" 8<sup>th</sup> Edition. Advisor to the International Society of Automation and Hillel student clubs.

4. Non-academic Experience (full time)

1993 – 1996	Independent Consultant, Roman Sound Int., Burbank, CA PC computer troubleshoot , installation and repair, software selection and maintenance, Rapid File database programming and management, video subtitling equipment operation and training, subtitle transfer to 1" masters.
1992 – 1993	Independent Consultant, 68° Parallel Communications, Santa Monica, CA Video Subtitling system setup and operation. Multimedia system programming for CD ROM touch screen info-system and translation from English to Spanish.
1980 – 1983	Programmer, Resortes y Partes S.A., México City, México Programming of a computer system to keep record and control of the production line for springs and metal stamped parts.

5. Certification or professional registrations.

N/A

6. Current membership in professional organizations

ASEE, Sigma Xi, International Society of Automation

7. Honors and Awards

N/A

8. Service Activities

ECE Department Chair, 2007-2011;  
Professor, 2000-Present (part-time 2000-2001, tenured 2007);  
Graduate Coordinator, 2005-2007;  
ECE RTP Committee, 2011-2015  
ECE Personnel Committee Chair, 2014-2016

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

N/A

10. Briefly list the most recent professional development activities

Fall 2017 Sabbatical leave to write a book: “A First Course in Quantitative Feedback Theory”, in preparation.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

FACULTY VITAE

1. Name: Brita Olson, Ph.D.

2. Education

Ph.D. Electrical Engineering (Applied Physics), University of California, San Diego (1996)

B.S. Electrical Engineering, University of California, San Diego (1989)

3. Academic Experience:

Professor, *California State Polytechnic University, Pomona* 2009-present

Associate Professor, *California State Polytechnic University, Pomona* 2003-2009

4. Non-Academic Experience:

Full Time

Senior Analog Designer, *Micron Technology* 2002 – 2003

Senior Analog Designer, *W. L. Gore and Associates* 2001 –2002

Director of Electro-optic Research, *Charmed Technology (MIT start-up)* 1/01 – 3/01

Jet Propulsion Laboratory, *Member of Technical Staff, Senior Engineer* 1996-2000

Research Assistant, *University of California at San Diego* 1989 – 1996

Part Time (2010-present)

California State University, Northridge, Researcher 2009-2010

Sigenics, Mixed-Signal Circuit Designer 2014-2015

*Harvey Mudd College*, Visiting Professor 2015-2016

5. Certification or professional registrations. None

6. Membership in professional organizations: Eta Kappa Nu, IEEE

7. Honors and Awards (2010-present): Advisor for best Regional IEEE student paper, 2010

8. Service Activities (2010 to present):

2009-2010 College of Engineering representative, Undergraduate Research  
Committee

2009-2010 Department of Electrical and Computer Engineering representative,  
CCRAA curriculum review

2009-2011 Personnel Committee Chair, Electrical and Computer Engineering  
Department

2005-2012 Faculty Advisor Beta Chi Theta, California State Polytechnic University, Pomona  
2012 Member of Associate Dean Search Committee

2012-2013 Member of Professional Leave Committee, California State Polytechnic University,  
Pomona

2005- 2013 Senior Project Coordinator, Electrical and Computer Engineering  
Department

2003-2016 Electronics subcommittee chair, Department of Electrical and Computer Engineering

- 2003- 2016      MOSIS' designated Technical Point of Contact (TPOC) for MEP  
Accounts at Cal Poly Pomona
- 2008 – 2016      Faculty advisor, Eta Kappa Nu (International Honor Society for  
Electrical and Computer Engineers), Zeta Theta Chapter
- 2016              Member of Chair Evaluation Committee, Electrical and Computer Engineering  
Department
- 2015-present      Department RTP committee Member
- 2013-present      Assessment coordinator, Electrical and Computer Engineering  
Department
- 2013-present      Member of assessment committee, College of Engineering  
Department
- 2015-present      Member of RTP committee, College of Engineering  
Department
- 2015-present      Member of personnel committee, Department of Electrical and Computer Engineering

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation: None within the last five years

10. Briefly list the most recent professional development activities: (2010-present)

- 2010              Sabbatical (Fall Quarter)
- 2014, 2016      Attended ABET Symposium
- 2015              Attended IDEAL workshop
- 2016              Attended ISSCC

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Andrew C. Pagnon

2. Education:

- Santa Clara University - MSEE Communications, June 1998, GPA 3.91/4.0
- San Jose State University - MBA, September 1995, GPA 3.6/4.0
- Manchester University (UMIST), UK - B.Sc. Electronic Engineering

3. Academic Experience

Cal Poly Pomona – Part Time lecturer – Spring Quarter 2017

4. Non-academic Experience (full time)

Broadcom Corporation – Program Manager July 2013 to September 2016

- Program managed engineering developments for the TV and gaming sector of the Wireless Networking Division

Broadcom Corporation – Senior Manager WLAN Board development October 2003 to July 2013

- Designed and Developed WLAN Wi-Fi MIMO and SISO client and router 802.11a/b/g/n/ac reference, production and test boards for the PC, tablet, phone and media spaces, including the following activities
  - Component specification and selection including RF Front end Modules, Power supplies, Crystals, External PAs and LNAs, RF Switches and diplexers, Harmonic and Cellular blocking filters working closely with supplier partners
  - Schematic capture (Mentor DxDesigner), PCB layout (Cadence PCB Allegro) of multifunctional RF/analog/digital technology boards with tight form factor, cost, performance and power constraints
  - Bring up, tuning, functional and full characterization of WLAN client and router reference designs across voltage and temperature extremes including parameters such as Transmit Error Vector Magnitude (EVM), Receive Packet Error Rate (PER), Phase Noise, Adjacent Channel Power Ratio (ACPR), Crystal Frequency Offset, both in and out of band emissions for regulatory and performance compliance, coexistence with other wireless technologies such as Bluetooth, host interface compliance (PCIe, USB2/3, HSIC, SDIO, SPI, I2C), Power Supply Ripple
  - Revision controlled design documentation and production release to Contract Manufacturers through concurrent version system (CVS), Apache Subversion (SVN) and Oracle's Product Lifecycle Management (PLM) software Agile
  - Board development process improvement and automation to improve quality and time to market of board level products
- Hired, trained and managed a WLAN board development team of engineers to help address each of Broadcom's WLAN Wi-Fi markets

Broadcom Corporation – Principal engineer, July 1999 to October 2003

- Designed and took to production several home phone alliance, modem and Wi-Fi Client and router reference test and production boards
- Evaluated and helped bring up several generations of Broadcom 11a/b/g Wi-Fi controllers

Wavespan - Senior member of Technical Staff, May 1998 to July 1999

- Developed a PowerPC Microprocessor based board with Ethernet, T1, optical and serial interfaces as part of a wireless Networking product

National Semiconductor - DSP Systems manager, Principal engineer, March 1995 – April 1998

- Developed an automatic gain control and baseline wander correction circuit for a 100M Ethernet transceiver using Cadence SPW and Matlab
- Designed a DSP programmable core test set up with two PC based functional test boards
- Tested functional compatibility of National's DSP programmable core using a Quickturn DSP core emulator on our PC based functional tester boards.

National Semiconductor - Staff engineer Local Area Networks, April 1988 – March 1995

- Designed 802.3 Ethernet LAN reference boards for the Mac and PC Markets
- Pre and post sales customer support, FAE training. Wrote several application notes and evaluated several generations of LAN controllers

5. Certification or professional registrations.
6. Current membership in professional organizations
7. Honors and Awards
8. Service Activities
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
10. Briefly list the most recent professional development activities

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Felix Pinai
2. Education: MSEE, BSEE
3. Academic Experience: Part-time Instructor since 1986
4. Non-academic Experience (full time)  
  
Self-Employed Consultant (now).  
Director of Engineering, Tyan Computers (2000-2002).  
Manager Hardware Engineering, Gateway Computers (1997-2000).  
Staff Engineer, Advanced Logic Research (1988-1997).
5. Certification or professional registrations: None
6. Current membership in professional organizations: IEEE, Tau Beta Pi
7. Honors and Awards: Author of 4 US Patents in the field of Hard Disk and Multi-processors
8. Service Activities: None
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation: None
10. Briefly list the most recent professional development activities: Consultant for various companies developing high-end 4K camera, embedded systems using latest state-of-the-art RISC processors.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Mohamed Rafiqzaman

2. Education:

Ph.D. Electrical Engineering	1974	University of Windsor, Canada
MASc Electrical Engineering	1972	University of Windsor, Canada
B.S Electrical Engineering	1969	Bangladesh University of Engg and Tech

3. Academic Experience

Full Professor, Fall 1985 to present

Associate Professor, Fall 1981 to summer 1985

Asstt Professor, Spring 1978 to Summer 1981

Electrical & Computer Engg, Cal Poly Pomona

Adjunct Professor, EE Systems, University of Southern California, Los Angeles  
Fall 1982 to Fall 1987

4. Non-academic Experience (full time)

Manager, Computer division, ESSO Canada, 1975-1978

Member of Scientific Staff, Bell Northern Research, Toronto, 1974-1975

President, Rafi Systems Inc, 23453 Golden Springs Dr, Diamond Bar, CA 91765, 1989-Present

5. Certification or professional registrations.

PE, Ontario, Canada since 1974

6. Current membership in professional organizations

Senior member, IEEE

Member, Eta Kappa Nu

7. Honors and Awards

None

8. Service Activities

None

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

Published 16 books (including all editions) on digital logic, Microcontrollers, and Microprocessors with Wiley, Prentice-Hall, Harper & Row, and West since 1982. My first book on microprocessors was published by Wiley in 1982.

I am currently working on the second edition of my book entitled “Microcontroller Theory and Applications with the PIC18F” published in 2011 by Wiley.

10. Briefly list the most recent professional development activities

Because of several years of teaching and industrial experience along with reputation as an established author in the computer field, I was invited by IUCEE (Indo-US Collaboration for Engineering Education) to conduct a workshop on microprocessors at the Infosys, India facility. The purpose of this workshop was to train several professors from various Indian universities with the state-of-the art in microprocessors. The goal of this workshop was to train professors to enhance their teaching capabilities.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Toma H. Sacco, Ph.D.
2. Education:
  - ❖ Ph.D. (Electrical and Electronic Engineering) University of Birmingham, England, 1979
3. Academic Experience
  - ❖ 1991 to 1992 Adjunct Professor, Engineering Dept., Harvey Mudd College, Claremont, California, I taught mainly electronic courses.
  - ❖ 1984 to 1985 Visiting Assistant Professor, Department of Electrical Engineering, University of North Carolina-Charlotte, Charlotte, North Carolina, I taught all the electronic courses offered by the EE department.
  - ❖ 1985 to present Professor, ECE Department, California State Polytechnic University, Pomona. During this period I taught mainly digital courses (such as: Digital Control, Fuzzy Logic Controllers, Computer Networks, Computer Architecture, Microprocessor-based systems and VHDL). I wrote four laboratory manuals and introduced RISC architecture, Fuzzy Logic Controllers, VHDL, PIC and Local Area Networks into the program. I supervised an Engineering Interdisciplinary Clinic project. This project was executed on behalf of Los Angeles Department of Water and Power by a team of eight students. I participated as an investigator in a project funded by the National Science Foundation to upgrade the Instrumentation and Control Laboratory.
4. Non-academic Experience
  - Only part time
    - 1989 and 1990 summer fellowship, JPL, Pasadena, CA
    - 1990 to 1994 FPT, JPL, Pasadena, California, during this period I wrote four papers regarding the reliability of GaAs devices
5. Certification or professional registrations:  
None
6. Current membership in professional organizations:  
IEEE
7. Honors and Awards:  
None
8. Service Activities:  
Retired
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation  
Retired
10. Briefly list the most recent professional development activities

Retired

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name:  
Anas Salah Eddin
  
2. Education:

Damascus University	Biomedical Engineering	B.S.	2000
Florida International University	Biomedical Engineering	M.S.	2009
Florida International University	Electrical Engineering	Ph.D.	2013
  
3. Academic Experience
  - 2016-current Assistant Professor, Electrical and Computer Engineering Department,  
California State Polytechnic University, Pomona
  - 2014-2016 Assistant Professor, Electrical Engineering,  
Florida Polytechnic University
  - 2011 Graduate Research Trainee, Montreal Neurological Institute
  - 2009-2013 Research Assistant, Florida International University
  
4. Non-academic Experience (full time)
  - 2005-2006 Sales Support Engineer, SINANCO Medical Systems
  
5. Certification or professional registrations.  
None
  
6. Current membership in professional organizations
  - Institute of Electrical and Electronics Engineers (IEEE), IEEE Computer Society, IEEE Engineering in Medicine and Biology, IEEE Brain Community
  - American Society for Engineering Education (ASEE)
  
7. Honors and Awards
  - Fulbright Alumni Engagement Grant (2017)
  - Florida Center for Cybersecurity Grant (\$52,500; 2015 –2016)  
PI: T. Reichherzer, Co-PI: A. Salah Eddin: Wearable Devices Security
  - Best Paper Award (2013) - 6th International IEEE EMBS Neural Engineering Conf., San Diego, CA
  - The Fulbright Scholarship (2007-2009) - U.S. Department of State, Bureau of Educational and Cultural Affairs
  
8. Service Activities
  - Service activities at Cal Poly
    - Scholarship Committee Member
    - College of Engineering Student Success Team Member
    - Microcontroller Lab Coordinator.
    - Communications & Biomedical lab Coordinator
  - Service activities Outside Cal Poly

- Moderator: 2017 ASEE Pacific Southwest Conference
  - Publication Chair: 2016, 13th ACS/IEEE International Conference on Computer Systems and Applications.
  - Reviewer:
    - 2017 ASEE-PSW
    - NSF Graduate Research Fellowship Program
    - The 13th ACS/IEEE International Conference on Computer Systems and Applications
    - 2016 IEEE Workshop on Machine Learning in Security of Cyber-Physical Systems
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
- Schuster., A, Salah Eddin, A. 2016. Vintage VR: a method of processing 19th century stereoviews for display on 21st century VR systems. Presented at SIGGRAPH Posters 2016:25
  - Salah Eddin, A., Wang, J., Wu, W., Sargolzaei, S., Bjornson, B., Jones, R.A., Gaillard, W.D., Adjouadi, M., 2014. The Effects of Pediatric Epilepsy on a Language Connectome. *Human Brain Mapping*, 5: 5996–6010. doi: 10.1002/hbm.22600
  - Sargolzaei, S., Cabrerizo, M., Goryawala, M., Salah Eddin, A., Adjouadi, M. 2014. Scalp EEG Brain Functional Connectivity Networks in Pediatric Epilepsy. *Computers in Biology and Medicine*, doi:10.1016/j.compbiomed.2014.10.018
  - Salah Eddin, A., Wang, J., Sargolzaei, S., Gaillard, W.D., Adjouadi, M., 2013. ICA-based connectivity on Brain Networks using fMRI. In *Proceedings of the 6th International IEEE EMBS Conference on Neural Engineering*, pp. 391-394, November 6-8, 2013, San Diego, CA
10. Briefly list the most recent professional development activities
- Engaging the Digital Student Initiative Summer Institute 2017
  - College of Engineering Advising workshop
  - College of Engineering Teaching workshop
  - College of Engineering Research and Grant Proposal Writing Workshop

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Smith, R. Frank

2. Education:

M.S.E.E.	Electrical Engineering	1993	Cal Poly Pomona University
M.B.A.	Business Management	1974	Pepperdine University
B.S.E.E.	Electrical Engineering	1965	New Mexico State University

3. Academic experience:

33 years of service

Lecturer Emeritus

- **Initial Appointment, Academic Rank and Effective Date:**  
Lecturer, part-time      January 1984
- **Promotion(s) in Rank and Effective Dates:**  
Lecturer, full-time      September 2004
- **Retired**  
Lecturer Emeritus, part-time lecturer      June 2004 to present,

9. Non-academic Experience:

Division Engineer, Kaiser Steel Corporation, 19 years. In charge of capital improvements throughout the plant. Annual budget greater than \$20,000,000.

Electronic Specialists, President/Owner, Manufacturer of logic modules for the aerospace industry, electronic measuring systems for the medical industry, and programmable controller systems for industry. Consultant to large industrial firms concerning automation and control. Received several patents in the biomedical field.

Independent Consultant

Expert witness and forensic investigator for Garrett Engineering Corp.

Consultant to industrial plants engaged in aluminum casting and rolling.

Consultant to hydraulic system manufactures and machine shops.

Instrumentation and controls consultant for Johnson and Johnson IOLABS Div., RCI Hudson

ITT Corporation designed seven types of solid-state relays to interface computers to large industrial loads.

10. Professional Registration

Engineering P.E.	Electrical Engineer	CA	E007096
	Control Engineer	CA	CS 001890

11. Current Memberships in Professional Societies:

Instrument Society of America, Retired

Illumination Engineering Society of North America, Sustaining Member  
Commission Internationale de l'Eclairage, CIE, Member Retired  
American Society of Engineering Educators, ASEE, Member, Retired

12. Honors and Awards

US Patent 8,531,127,B2 Computer controlled power supply assembly for a LED array, Sept .10, 2013

13. Service Activities

**Service to the Profession**

Administrator for developing educational materials for teaching a six course sequence on lighting and illumination for the Community College system in California. Funds in excess of \$800,000 were provided by the DOE through the California Energy Commission. These courses were taught in seven participating Community Colleges and the materials that were developed are available to all community colleges.

**Service to the Institution**

Administrator for program to develop and Illumination Engineering Minor ad Cal Poly Univ.  
Developed Lighting and Photometric Laboratory and course material under NSF-ILI grants, DOE grants, and private industry grants.  
Developing HVAC laboratory. Received a \$300,000 grant. Lab will be completed in 2017.  
Received SPICE grants to upgrade Illumination Research Laboratory. These will be completed in 2017.

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

*R. F. Smith, ECE 109 Introduction to Electrical Engineering Laboratory Manual using the myDAQ*, 2016 and *R. F. Smith, ECE 231 Elements of Electrical Engineering Laboratory Manual*, 2016.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Rick Sturdivant
2. Education:
  - Ph.D. Systems Engineering, Colorado State University
  - M.A. Science and Religion, Biola University
  - M.S. Electrical Engineering, University of California at Los Angeles
  - B.S. Electrical Engineering, California State University at Long Beach
  - B.A. Religion, Vanguard University
3. Academic Experience
  - 2016-2017 Assistant Professor in the Engineering and Computer Science Department at Azusa Pacific University
  
  - Invited instructor at Georgia Tech Research Institute in their Professional Education program
4. Non-academic Experience (full time)
  - 1989-2000 Principal Engineer, Hughes/Raytheon
  - 2000-2003 Technical Product Manager, Multilink Technologies
  - 2003-2016 Founder and CEO, Microwave Products and Technology
5. Certification or professional registrations.
6. Current membership in professional organizations
  - Senior Member of IEEE
7. Honors and Awards
  - Engineering Excellence Award Hughes Aircraft Company
8. Service Activities
  - Technical Program Reviewer For:
    - IEEE TWIOS Conference (2017 & 2018)
    - IEEE Asia Pacific Microwave Conference (2016 & 2017)
  
  - IEEE Technical Subcommittee (MTT-12) Member
  - Invited Speaker: IEEE 2017 Electronics Packaging Technology Conference
  - Student Paper Judge for IEEE 2017 Radio and Wireless Week Conference
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
  - K. Kuang, R. Sturdivant, Editors, *RF and Microwave Microelectronics Packaging II* (Springer Publishing, 2017)

- R. Sturdivant, M. Harris, *Transmit Receive Modules for Radar and Communication Systems* (Artech House, 2015)
- R. Sturdivant, A.J. Bogdon, *Hands On Guide To Heat Transfer For Microwave and Millimeter-wave Electronics* (Amazon.com eBook, 2015)
- R. Sturdivant, *Microwave and Millimeter-wave Electronic Packaging* (Artech House, 2013).
- Midford, T., Wooldridge, J., Sturdivant, R., “The evolution of packages for monolithic microwave and millimeter-wave circuits,” *IEEE Transactions on Antennas and Prop.*, Vol 43, No. 9, 1995, pp. 983-991.
- R. Sturdivant, “Systems Engineering Baseline Concept Of A MultiSpectral Drone Detection Solution For Airports,” *IEEE Access*, Vol. PP, Vol. 99, April 25, 2017.
- R. Sturdivant and E. K. P. Chong, “Systems engineering of a terabit elliptic orbit satellite and phased array ground station for IoT connectivity and consumer Internet access,” *IEEE Access*, Vol. PP, No. 99, Sept. 13, 2016.
- R. Sturdivant, E.K.P. Chong, “Dielectric Notch Radiator Antennas with Integrated Filtering For 5G and IoT Access,” in *IEEE Radio and Wireless Symposium*, Phoenix, AZ, January 15-18, 2017.
- R. Sturdivant, A. Bogdon, E.K.P. Chong, “Balancing Thermal and Electrical Packaging Requirements for GaN Microwave and Millimeter-Wave High Power Amplifier Modules,” *Journal of Electronics Cooling and Thermal Control*, Vol. 7, No. 1, 2017, pp. 1-7.
- R. Sturdivant, J. Yeh, M. Stambaugh, A. Zahnd, E. K. P. Chong, “Pico-hydro electric power in the Nepal Himalayas,” in *Proceedings of the 9th IEEE Annual Green Technologies Conference, IEEE GreenTech 2017*, Denver, Colorado, March 29–31, 2017.

10. Briefly list the most recent professional development activities

- SANS 401 “Information Security Essentials” (2014)
- CISSP Training Boot Camp (May 22-27, 2017) (Pursuing CISSP Certification)
- Completed Ph.D., January, 2017

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Joseph Tran
2. Education: MSEE in VLSI, University of Southern California, 1996  
BSEE with emphasis in Computer, Cal Poly Pomona, 1994
3. Academic Experience  
20 years teaching mostly digital logic labs
4. Non-academic Experience (full time)  
20+ years working as a chip designer, advancing to the level of Senior Staff Engineer
5. Certification or professional registrations.  
None
6. Current membership in professional organizations  
None
7. Honors and Awards  
Valedictorian of the College of Engineering at Cal Poly Pomona, 1994
8. Service Activities  
None
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation  
None
10. Briefly list the most recent professional development activities  
None

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Wendy Kane Wanderman
2. Education: Claremont Graduate University - Claremont, CA  
M.S (Management Information Systems) January, 1990  
(ABD)  
  
New York University - New York, NY  
MS (Electrical Engineering) June, 1973  
  
City University of New York – New York, NY  
Bachelor of Engineering (Electrical Engineering) January, 1967
3. Academic Experience: California State Polytechnic University, Pomona (39+ years)  
  
Professor Emeritus, Electrical & Computer Engineering (Fall,2012 to present)  
  
Associate Dean – College of Engineering (1984 – 1987)
4. Non-academic Experience (full time)
5. Certification or professional registrations.
6. Current membership in professional organizations
7. Honors and Awards
8. Service Activities
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
10. Briefly list the most recent professional development activities

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Mostafa R. Yazdy
2. Education: Ph.D. Electrical Engineering (from UCLA)
3. Academic Experience: 7 years part time teaching at UCLA, 5 years of part time teaching at CPP
4. Non-academic Experience (full time): 26 years in Xerox Corporation, R&D
5. Certification or professional registrations.
6. Current membership in professional organizations
7. Honors and Awards: Numerous Awards of Excellence for 26 patents obtained for Xerox Corporation
8. Service Activities
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
10. Briefly list the most recent professional development activities

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Meng-Lai Yin
2. Education – degree, discipline, institution, year  
Ph. D. Information and Computer Science, University of California, Irvine, 1995  
M.S. Information and Computer Science, University of California, Irvine, 1989  
M.S. Electrical and Computer Engineering, National Cheng-Kung University, Taiwan, 1983  
B.S. Electric Engineering, Feng-Chia University, Taiwan, 1981
3. Academic experience – institution, rank, title (chair, coordinator, etc. if appropriate), when (ex. 2002-2007), full time or part time

California State Polytechnic University, Pomona,, Full Professor, 2007 – now, Full time

California State Polytechnic University, Pomona,, Associate Professor, 2001 – 2007, Full time

4. Non-academic experience – company or entity, title, brief description of position, when (ex. 2008-2012), full time or part time  
Raytheon Company (Hughes Aircraft Company), Principal Systems Engineer, 1990-2001, full time
5. Certifications or professional registrations
6. Current membership in professional organizations: IEEE Computer Society Senior Member
7. Honors and awards

RSCA Award, Cal Poly Pomona, 2001, 2004

Cal Poly Pomona 2003-2004 Faculty Professional Development Mini Grant Program

Academic Affairs Research Mini grants 2002-2003 Cal Poly Pomona

Raytheon System Company, SETN award, 1999

Hughes Aircraft Company Doctoral Fellowship, 1992-1995

University of California Micro Grant, 1993-1995

8. Service activities (within and outside of the institution)
  - RAMS (Annual Reliability and Maintainability Symposium) 2009 Program Committee Vice Chair
  - RAMS (Annual Reliability and Maintainability Symposium) 2008 Tutorial Chair
  - RAMS (Annual Reliability and Maintainability Symposium) 2004 ~ 2007 Tutorial Vice Chair
  - PRDC 2005, 2007, 2008 Program Committee member
  - PRDC (International Symposium Pacific Rim Dependable Computing) 2006 Local Arrangement Chair
  - INCOSE LA-Chapter Mini-Conference 2006 Registration Assistant Chair
  - ISAS 2006 (The 3<sup>rd</sup> International Service Availability Symposium) Program Committee member

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
1. Meng-Lai Yin, Andrew Chan, “Real-Time Maintenance Prioritization with Learning Capability,” submitted to Annual Reliability and Maintainability Symposium (RAMS 2017).
  2. Meng-Lai Yin, John Angus, Kishor Trivedi, “Optimal Preventive Maintenance Rate for Best Availability with Hypo-Exponential Failure Distribution,” IEEE Transaction on Reliability, June, 2013.
  3. John Angus, Meng-Lai Yin, Kishor Trivedi, “Optimal Random Age Replacement for Availability,” International Journal of Reliability, Quality and Safety Engineering, Vol. 19, No. 5, 2012.
  4. Stephen Jih, Meng-Lai Yin, "An Availability Analysis on SONET Ring Networks in Power Grid Communications," Annual Reliability and Maintainability Symposium (RAMS 2012).
  5. Meng-Lai Yin, Rafael Arellano, "A Risk Analysis Framework on GPS User Range Accuracy," Annual Reliability and Maintainability Symposium (RAMS 2012).
  6. Meng-Lai Yin, John Angus, Rafael Arellano, “Allocating Redundancy with Reusable Patterns for Optimal Hierarchical-System Reliability and Series MTBF,” 2011 *Annual Reliability and Maintainability Symposium (RAMS 2011)*.
  7. Meng-Lai Yin, John Angus, “Invariants in Hierarchical-System Optimization for Reliability and Maintainability,” International Journal of Performability Engineering, Short Communications, March. 2011.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
College of Engineering  
Electrical and Computer Engineering

**FACULTY VITAE**

1. Name: Jenny Zhen Yu

2. Education:

Ph. D.	Electrical & Computer Engineering	2006	University of California, Irvine
M.S.	Electrical Engineering	2002	California State University, Fullerton
B.S.	Electrical Engineering	1994	Xian Jiaotong University

3. Academic Experience

Assistant Professor, 2014 – present  
Department of Electrical and Computer Engineering  
California State Polytechnic University, Pomona

4. Non-academic Experience (full time)

- RF Nano Corp, Newport Beach, CA, Lead Nanofabrication Engineer, 2006 – 2013. Fabricated electronic devices made of carbon nanotubes
- Developed technology on Microwave measurements and characterization of devices
- Developed and Optimized low cost and robust manufacturing processes
- Writing and participating in proposals, technical articles and filing patents

Concurrently:

University of California, Irvine, Calit2, Specialist, 2013 – 2014.

- Providing research, consulting, and education services in all its areas of expertise

5. Certification or professional registrations: None.

6. Current membership in professional organizations

IEEE Electron Devices, Circuit and System Society (EDCAS), American Physical Society

7. Honors and Awards

- IEEE Senior Member
- Industry & Government Grant:
  - (a) Agricultural Research Institute (ARI),
  - (b) Non-CSU State Matching Fund, Advanced Botanical Co. (ABC),  
“Removal of Water Contaminants Associated with Agricultural Applications”.

8. Service Activities

- ECE Department Lab Operation & Revitalization committee Chair
- ECE Department Scholarship Committee
- Academic Senate-Elections and Procedures Committee
- Chair of IEEE Electron Devices, Circuit and System Society (EDCAS) in IEEE Foothill Section

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

### **Papers/Posters Presented at Symposiums/Conferences/Published Proceedings**

- Z. Yu, Z. Li, “Photocatalysis of Rhodamine B in water using nanotechnology”, TechConnect World Innovation Conference in Washington DC, May (2016), TechConnect Briefs (2016), TechConnect.org, 8-10, ISBN 978-0-9975-1171-0
- Z. Yu, Z. Li, “Photocatalysis of Rhodamine B in water using nanotechnology”, Nanotech-2016 Conference in Baltimore, April (2016)
- Z. Yu, “Low Energy Dissipation Nano Device Research”, Proc. 2015 APS 2015, San Antonio, TX (2015)
- Z. Yu, ”Nanoelectronics Based on Carbon Nanotubes”, College of Engineering’s Annual Faculty Research Symposium March, (2015)
- INVITED: Z. Yu, “Nanoelectronic Devices”, International Workshop on Nanomaterials and nanodevices, Beijing (2012)

### **Students Presentation/Poster**

- B.Phung, Z. Yu, “Traffic Signal Status Mobile Application”, B. Phung presented at the 2nd Annual Cal Poly Pomona Creative Activities and Research Symposium (CARS), August (2016), a joint symposium with UCONNECT and CPP Office of Undergraduate Research.
- E. Walz, J. Soliman, M. Nocket, M. Gecoso, X. Viste, V. Westbrook, T. Owolabi, K. Khorasani , G. Lomiento ,Z. Yu, “3D Sensor for Structural Health Monitoring of Civil Infrastructure”, CPP students research conference in CPP, March (2016)
- B. Rebecca, Z. Yu, “Wireless Communication in Intelligent Transportation Systems (ITS) Applications”, 1st Annual Cal poly Pomona Creative Activities and Research Symposium (August, 2015)
- J. Soliman, M. Nocket, M. Gecoso, X. Viste, V. Westbrook, T. Owolabi, K. Khorasani , G. Lomiento ,Z. Yu, “Structure Damage Detection Using 3D sensors”, Engineering project Symposium on (May,2015)
- Becera, R., Lobo, T., Meza, R., Yang, K., Baril, K., Lomiento, G., Yu, Z., “3D Sensor in Structure Damage Detection Application”, 2015 CPP students research conference in CPP, CA (2015),
- K. Migliore, K. Nylund, G. Granado, S. Jollota, Z. Yu, “MEMS Sensor in Engineering Geology”, 2015 CPP students’ research conference in CPP, CA (2015),

### 10. Briefly list the most recent professional development activities

- Developed and taught a new graduate course, Nanoelectronics.
- Papers/Posters Presented at Symposiums/Conferences/Published Proceedings
- Industry & Government Grant