

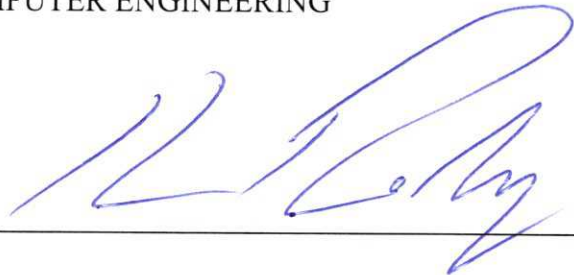
MEMORANDUM

TO: James Mower, Senate Chair
FROM: Havidán Rodríguez, President
DATE: April 9, 2019
SUBJECT: Senate Bill Approval

I am pleased to approve the following Senate Bill, which was recommended following approval by the University Senate at its meeting of March 25, 2018:

Senate Bill 1819-11: PROPOSAL TO ESTABLISH A COMBINED BS/MS IN ELECTRICAL AND COMPUTER ENGINEERING

Approved: _____


Havidán Rodríguez, President

UNIVERSITY SENATE

UNIVERSITY AT ALBANY
STATE UNIVERSITY OF NEW YORK

Introduced by: Graduate Academic Council
Undergraduate Academic Council
University Policy and Planning Council

Date: March 25, 2019

Proposal to Establish a Combined BS/MS in Electrical and Computer Engineering

IT IS HEREBY PROPOSED THAT THE FOLLOWING BE ADOPTED:

1. That the University Senate approves the attached program proposal as submitted by the Department of Electrical and Computer Engineering and approved by GAC, UAC, and UPPC.
2. That this takes effect for the Fall 2019 semester.
3. That this proposal be forwarded to President Havidán Rodríguez for approval.



**Program Revision Proposal:
Creating New Program(s) from Existing Program(s)
Form 3B
Version 2017-03-27**

This form should be used to seek SUNY’s approval to create one or more new programs from existing, registered programs. *A campus is not required to submit a Program Announcement (PA) or a Letter of Intent (LI) for these types of new programs.* The Chief Executive or Chief Academic Officer should submit a **signed cover letter and this completed form** to the SUNY Provost at program.review@suny.edu.

Section 1. General Information	
a) Institutional Information	Institution’s 6-digit SED Code : 210500
	Institution’s Name: University at Albany, SUNY
	Address: 1400 Washington Avenue Albany, NY 12222
b) Program Locations	List each campus where the entire program will be offered (with each institutional or branch campus 6-digit SED Code): Albany, 210500
	List the name and address of off-campus locations (i.e., extension sites or extension centers) where courses will offered, or check here [x] if not applicable :
c) Proposed Program Information	Program Title: Electrical and Computer Engineering
	Award(s) (e.g., A.A., B.S./M.S.): B.S. and M.S.
	Number of Required Credits: Minimum [142] If tracks or options, largest minimum []
	Proposed HEGIS Code : 0909
	Proposed 6-digit CIP 2010 Code : 14.1001
	If the program will be accredited, list the accrediting agency and expected date of accreditation:
	If applicable, list the SED professional licensure title(s) ¹ to which the program leads:
d) Campus Contact	Name and title:
	Telephone: E-mail:
e) Chief Executive or Chief Academic Officer Approval	Signature affirms that the proposal has met all applicable campus administrative and shared governance procedures for consultation, and the institution’s commitment to support the proposed program. <i>E-signatures are acceptable.</i>
	Name and title: Signature and date:
	If the program will be registered jointly² with one or more other institutions, provide the following information for <u>each</u> institution:
	Partner institution’s name and 6-digit SED Code : Name, title, and signature of partner institution’s CEO (or append a signed letter indicating approval of this proposal):

¹ If the proposed program leads to a professional license, a [specialized form for the specific profession](#) may need to accompany this proposal.
² If the partner institution is non-degree-granting, see SED’s [CEO Memo 94-04](#).

Section 2. Multi-Award and Multi-Institution Programs

Not a multi-award or multi-institution program. *Proceed to Section 3.*

Check one.

- This proposal is for a **multi-award program** that leads to two separate awards (e.g., A.S./B.A., B.S./M.S.). **Complete Section 2.1, below.** *NOTE: Such programs generally involve special admissions for students who have the capacity to complete all awards, curricular integration between the component programs, and shortened time to degree compared to taking the programs separately.*
- This proposal is for a **multi-institution program** (also called a “jointly registered program”) to be offered jointly by two or more institutions. **Complete Section 2.2 below.** *NOTE: Such programs involve a formal agreement between two or more institutions to offer courses leading to an award.*
- This proposal is for a **multi-institution, multi-award program** to be offered jointly by more two or more institutions and lead to two separate awards. **Provide a single, consolidated response that reflects all the items in Sections 2.1 and 2.2, below.**

Section 2.1. Multi-Award Programs

a) Check all SED-defined [formats, mode and other program features](#) that apply to the **entire program**.

Format(s): Day Evening Weekend Evening/Weekend Not Full-Time

Modes: Standard Independent Study External Accelerated Distance Education

*NOTE: If the program is designed to enable students to complete 50% or more of the course requirements through distance education, check Distance Education, see Section 10, and **append a Distance Education Format Proposal.***

Other: Bilingual Language Other Than English Upper Division Cooperative 4.5 year 5 year

b) List registered programs at the institution identified in Section 1 whose courses will contribute to this program. Add rows as needed.

Programs	Program Title	Award	SED Program Code
<i>Program 1</i>	Electrical and Computer Engineering	BS	38191
<i>Program 2</i>	Electrical and Computer Engineering	MS	39831

c) List all the courses required for each existing program, and indicate which ones will be counted toward both awards.

For the multi-award B.S.-M.S. program, students may count up to 12 credit hours of courses used to satisfy part of the Depth, Breadth, and Technical Elective requirements of the registered M.S. Electrical and Computer Engineering Program towards the ECE Electives within the registered B.S. Electrical and Computer Engineering Program. The requirements for the registered M.S. program are fully met by the B.S.-M.S. program. The courses from the registered M.S. Program that can be counted towards the B.S. Program are the 500-level versions of 400-level courses already in the registered B.S. Program. These 500-level courses have the same content as their 400-level counterparts, but students are expected to demonstrate greater mastery of the material in the 500-level versions through additional assignments or assignment parts, additional or different exam questions, etc.

M.S. in Electrical and Computer Engineering

Thesis Option	
Topic	Credit Requirement
Depth – Courses in a selected Concentration Area <i>[all or part may be counted towards B.S.]</i>	12
Breadth – Courses outside the selected Concentration Area <i>[all or part may be counted towards B.S.]</i>	6
Math/Physics Elective	3
Technical Elective <i>[may be counted towards B.S.]</i>	3
Master’s Thesis	6 (minimum)
Total for M.S. ECE with Thesis Option	30

Non-Thesis Option	
Topic	Credit Requirement
Depth – Courses in a selected Concentration Area <i>[all or part may be counted towards B.S.]</i>	12
Breadth – Courses outside the selected Concentration Area <i>[all or part may be counted towards B.S.]</i>	6
Math/Physics Elective	3
Technical Electives <i>[all or part may be counted towards B.S.]</i>	6
Projects Course or Master’s Project	3
Total for M.S. ECE with Non-Thesis Option	30

The course categories are:

- Depth Courses: 12 credit hours (4 courses) selected from a single concentration area. Courses are chosen from the list of concentration areas and their associated core courses that is maintained by the department. The list is shown below.
- Breadth Courses: 6 credit hours (2 courses) from the list of concentration areas but chosen from outside the student’s depth concentration area. The two courses must be chosen from different concentration areas. If a course is listed in the student’s depth concentration area as well as another area, it can only be used to satisfy the depth concentration course requirement.
- Math/Physics Elective: 3 credit hours (1 course) in mathematics (A MAT) or physics (A PHY).
- Technical Elective(s): 3 credit hours (thesis option) or 6 credit hours (non-thesis option) of courses within the College of Engineering and Applied Sciences (CEAS), mathematics (A MAT) or physics (A PHY). These credit hours can be used to gain additional breadth outside of ECE or for additional ECE courses.
- Master’s Thesis: a minimum of 6 credit hours of thesis (thesis option). In some cases, the thesis can expand to 9 credit hours, replacing the Technical Elective. Advisor and Graduate Program Coordinator approval is required for a thesis in excess of 6 credit hours.
- Projects Course or Master’s Project: non-thesis option students are required to take one of the designated ECE Projects Courses or do a 3 credit Master’s Project as a culminating experience. In the Projects Courses, students investigate state-of-the-art technologies and topics in an area within ECE through the study of current publications, student class presentations, and a major project.

Note that the program must include 24 credit hours of ICEN and ICSI courses if students wish to count the M.S. degree as one year of experience towards their Professional Engineer License.

Communications and Networking

ICEN 512 Antenna Engineering (3)

ICEN 571 Probability and Random Processes (3)

ICEN 572 Advanced Digital Communications (3)

ICEN 573 Radiowave Propagation and Remote Sensing (3)

ICEN 574 Modern Wireless Networks (3)
ICEN 672 Detection and Estimation Theory (3)
ICEN 673 Information Theory (3)
ICEN 674 Error Control Coding (3)
ICEN 676 Wireless Communication (3)
ICEN 677 Communication Network Analysis (3)
ICSI 516 Computer Communication Networks (3)

Signal and Information Processing

ICEN 562 Digital Signal Processing (3)
ICEN 563 Digital Image Processing (3)
ICEN 564 Mathematical Models of Signal Processing (3)
ICEN 571 Probability and Random Processes (3)
ICEN 581 Linear Control Theory (3)
ICEN 664 Statistical Pattern Recognition (3)
ICEN 672 Detection and Estimation Theory (3)
ICEN 673 Information Theory (3)
ICEN 680 Advanced Linear Control Theory (3)
ICEN 681 Nonlinear and Adaptive Control (3)
ICSI 536 Machine Learning (3)
ICSI 671 Computer Vision (3)

Electronic Circuits and Systems

ICEN 501 Advanced Electronic Circuits (3)
ICEN 511 Microwave Engineering (3)
ICEN 512 Antenna Engineering (3)
ICEN 513 Electrical Energy Systems (3)
ICEN 520 Introduction to VLSI (3)
ICEN 521 Digital ASIC Design (3)
ICEN 522 Integrated Circuit Devices (3)
ICEN 531 Reconfigurable Computing (3)
ICEN 553 Cyber-Physical Systems (3)
ICEN 620 Mixed-Signal IC Design (3)
ICEN 621 Radio Frequency IC Design (3)

Computer Engineering

ICEN 531 Reconfigurable Computing (3)
ICEN 532 Advanced Computer Architecture (3)
ICEN 541 Parallel Computing (3)
ICEN 551 Robotics (3)
ICEN 553 Cyber-Physical Systems (3)
ICEN 574 Modern Wireless Networks (3)
ICEN 581 Linear Control Theory (3)
ICSI 503 Algorithms and Data Structures (3)
ICSI 516 Computer Communication Networks (3)
ICSI 535 Artificial Intelligence I (3)
ICSI 600 Distributed Systems (3)

Project Courses

ICEN 629 Projects in Electronic Circuits and Systems (3)
ICEN 659 Projects in Computer Engineering (3)
ICEN 669 Projects in Signal and Information Processing (3)
ICEN 679 Projects in Communications and Networking (3)

B.S. in Electrical and Computer Engineering

Math and Science (33)

AMAT 112 Calculus I (4)
AMAT 113 Calculus II (4)
AMAT 214 Calc of Several Variables (4)
AMAT 220 Linear Algebra (3)
AMAT 311 Ordinary Differential Equations (3)
AMAT 370 Probability & Statistics for Engineering & the Sciences (3)
APHY 140 or 142/145 Physics 1: Mechanics with Lab (4)
APHY 150 or 152/155 Physics 2: Electromagnetism with Lab (4)
ACHEM 120/124 General Chemistry I with Lab (4)

Core ECE and CS Courses (49)

ICEN 110 Intro. to Engineering (2)
ICEN 111 Introduction to ECE (4)
ICEN 141 Programming for Engineers (4)
ICSI 210 Discrete Structures (4)
ICEN 231 Digital Logic Design (4)
ICSI 213 Data Structures (3)
ICEN 202 Introduction to Circuits (4)
ICEN 300 Introduction to Electronics (4)
ICEN/ICSI 333 Programming at the Hardware/Software Interface (4)
ICEN 371 Signals & Systems (3)
ICEN 310 Engineering Electromagnetics (4)
ICEN 442 Systems Analysis and Design (3)
ICEN 490 Design Lab I (3)
ICEN 491 Design Lab II (3)

ECE Electives (18) – [up to 12 credits may be counted towards MS, specific allowable courses indicated below]

- 1 (core) course from each of 3 the areas (breadth)
- 2 additional courses from one area, at least 1 of which is a (core) course (depth),
- 1 additional course from any of the 3 areas.

Area 1: Computers

ICEN 400 Operating Systems (core) (3)
ICEN 404 Computer Organization (core) (3)
ICEN 453 Cyber-Physical Systems (core) (3) [may be counted towards MS if replaced by ICEN 553 Cyber-Physical Systems (3)]
ICSI 402 Systems Programming (core) (3)
ICSI 403 Alg. & Data Structures (core) (3)
ICEN 416 Computer Comm. Nets (3) [may be counted towards MS if replaced by ICEN 516 Computer Comm. Nets (3)]
ICEN 431 Reconfigurable Computing (3) [may be counted towards MS if replaced by ICEN 531 Reconfigurable Computing (3)]
ICEN 441 GPU Architecture & Programming (3) [may be counted towards MS if replaced by ICEN 541 Parallel Computing (3)]
ICEN 451 Robotics (3) [may be counted towards MS if replaced by ICEN 551 Robotics (3)]
ICSI 435 Introduction to AI (3) [may be counted towards MS if replaced by ICSI 535 Introduction to AI (3)]
ICSI 436 Machine Learning (3) [may be counted towards MS if replaced by ICSI 536 Machine Learning (3)]

Area 2: Electronics

ICEN 401 Advanced Electronics (core) (3) [may be counted towards MS if replaced by ICEN 501 Advanced Electronics (3)]
ICEN 411 Microwave Engineering (core) (3) [may be counted towards MS if replaced by ICEN 511 Microwave Engineering (3)]

- ICEN 413 Electrical Energy Sys. (core) (3) *[may be counted towards MS if replaced by ICEN 513 Electrical Energy Sys. (3)]*
- ICEN 420 Introduction to VLSI (core) (3) *[may be counted towards MS if replaced by ICEN 520 Introduction to VLSI (3)]*
- ICEN 422 Integrated Circuit Dev. (core) (3) *[may be counted towards MS if replaced by ICEN 522 Integrated Circuit Dev. (3)]*
- ICEN 412 Antenna Engineering (3) *[may be counted towards MS if replaced by ICEN 512 Antenna Engineering (3)]*
- ICEN 421 Digital ASIC Design (3) *[may be counted towards MS if replaced by ICEN 521 Digital ASIC Design (3)]*
- ICEN 431 Reconfigurable Computing (3) *[may be counted towards MS if replaced by ICEN 531 Reconfigurable Computing (3)]*
- ICEN 453 Cyber-Physical Systems (3) *[may be counted towards MS if replaced by ICEN 553 Cyber-Physical Systems (3)]*
- ICEN 441 GPU Architecture & Programming (3) *[may be counted towards MS if replaced by ICEN 541 Parallel Computing (3)]*
- Area 3: Signal Processing, Communications, and Control**
- ICEN 416 Computer Comm. Nets. (core) (3) *[may be counted towards MS if replaced by ICEN 516 Computer Comm. Nets. (3)]*
- ICEN 462 Digital Signal Processing (core) (3) *[may be counted towards MS if replaced by ICEN 562 Digital Signal Processing (3)]*
- ICEN 463 Digital Image Processing (core) (3) *[may be counted towards MS if replaced by ICEN 563 Digital Image Processing (3)]*
- ICEN 471 Communication Systems (core) (3)
- ICEN 481 Linear Control Theory (core) (3) *[may be counted towards MS if replaced by ICEN 581 Linear Control Theory(3)]*
- ICEN 451 Robotics (3) *[may be counted towards MS if replaced by ICEN 551 Robotics (3)]*
- ICEN 452 Internet of Things (3)
- ICEN 472 Advanced Digital Comm. (3) *[may be counted towards MS if replaced by ICEN 572 Advanced Digital Comm. (3)]*
- ICEN 473 Radiowave Prop. & Remote Sensing (3) *[may be counted towards MS if replaced by ICEN 573 Radiowave Prop. & Remote Sensing (3)]*
- ICSI 426 Cryptography (3)

- d) What is the length of time students will have to complete the proposed program?

There is no time limit for students to complete the program. However, it is expected that most students will complete the program in 5 academic years.

- e) What are the admissions requirements for the new program, and how are they related to student success?

Students may be admitted to the program after completing the fall of their junior year or after the successful completion of 75 credit hours of the B.S. ECE program. A GPA of 3.2 or higher and three supportive letters of recommendation from faculty are required. The admissions decision will strongly weigh student performance in their mathematics and ECE courses which are strong predictors of future success in graduate courses.

- f) Complete a *SUNY Program Schedule* to show how students will be able to schedule all required courses to complete the multi-award program.

Section 2.2. Multi-Institution Programs

All partner institutions are listed in Section 1, with CEO information and a signature for each partner.

a) Check all SED-defined [formats, mode and other program features](#) that apply to the **entire program**.

Format(s): Day Evening Weekend Evening/Weekend Not Full-Time

Modes: Standard Independent Study External Accelerated Distance Education

NOTE:** If the program is designed to enable students to complete 50% or more of the course requirements through distance education, check Distance Education, see Section 10, and **append a Distance Education Format Proposal.

Other: Bilingual Language Other Than English Upper Division Cooperative 4.5 year 5 year

b) List all the courses required for the program, and indicate which ones will be completed at each institution.

c) Describe the administrative provisions for coordinating admissions, advisement and financial aid for the program between the two institutions.

d) Describe the program's policies governing residency requirements and tuition charges.

e) Explain any other special arrangements or requirements arising from the multi-institution nature of the program.

f) Complete a ***SUNY Program Schedule*** to show how students will be able to schedule all required courses to finish the program.

Section 3. New Program from Option/ Concentration/Track in an Existing Program

This section should be used to propose the creation of a new program from an option/concentration/track³ in existing, registered programs, which is sometimes called “disaggregation.”

The new program must be based entirely on existing courses from an option/concentration/track in a registered program.

A new program proposal (SUNY Form 2A or 2B) must be submitted – instead of this form – when:

- the new program will be offered at a different location than the campuses identified in Section 1, or
- a Master Plan Amendment is required for the new program, or
- one or more new courses will be added to the program at the same time, or
- there are changes to the program admissions, or
- there will be changes to the evaluation elements

Note: The institution can use this form (3B) to register a new program from an existing option/concentration/track, and make changes to it after it is registered by submitting Form 3A. As always, institutions can only advertise and offer a program *as it is currently registered*.

Section 3.1. Revision of Existing Program

Registered Program to be Changed	
Program Title:	
SED Program Code	
Award(s) (e.g., A.A., B.S.):	
Number of Required Credits:	Minimum [] If tracks or options, largest minimum []
HEGIS Code :	
CIP 2010 Code :	
Effective Date of Change:	
Effective Date of Completion ⁴	

- a) List all registered options/concentrations/tracks and indicate which, if any, will be removed.

Section 3.2. Proposed New Program

- a) Describe the new program and the rationale for converting the existing coursework to a separately registered program.
- b) Affirm that the admissions standards and evaluation methods are unchanged from the currently registered program.
- c) Explain the expected impact of the new program on existing programs (enrollment, facilities, budget, faculty assignments, etc.)

³ SUNY System uses these terms interchangeably.

⁴ If the current program(s) must remain in its current form until enrolled students have graduated, the anticipated effective date by which continuing students will have completed the current version of the program(s).

- d)** Describe adjustments the institution will make to its current resource allocations to support the new program.
- e)** Complete a SUNY *Program Schedule*. If the new program has separate options/concentrations/tracks, complete a *Program Schedule* for each one.
- f)** Complete a SUNY *Faculty Table* for all full-time, part-time, and faculty to be hired.

SUNY Undergraduate Sample Program Schedule

Campus Name	University at Albany								
Program/Track Title and Award	Electrical and Computer Engineering/Bachelor of Science-Master of Science/Thesis Option								
Calendar Type	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Semester</td> <td style="width: 25%;">Quarter</td> <td style="width: 25%;">Trimester</td> <td style="width: 25%;">Other</td> </tr> <tr> <td style="text-align: center;">x</td> <td></td> <td></td> <td></td> </tr> </table>	Semester	Quarter	Trimester	Other	x			
Semester	Quarter	Trimester	Other						
x									
SUNY Transfer Path Name (if one exists)	Engineering: Electrical								

<----- Use
Dropdown Arrow.

Use the table to show how a typical student may progress through the program. Check all columns that apply to a course or enter credits where applicable.

KEY Course Type: Required (R), Restricted Elective (RE), Free Elective (FE). Course Credits: Number of Credits for individual course (Enter number.) GER Area: SUNY General Education Requirement Area (Enter Area Abbreviation from the drop-down menu.) GER Credits: (Enter number of course credits.) LAS: Liberal Arts & Sciences Credits (Enter X if course is an LAS course.) Major: Major requirement (Enter X.) TPath: SUNY Transfer Path Major & Cognate Courses (Enter X.) Elective/Other: Electives or courses other than specified categories (Enter X.) Upper Div: Courses intended primarily for juniors and seniors outside of the major (Enter X.) Upper Div Major: Courses intended primarily for juniors and seniors within the major (Enter X.) New: new course (Enter X.) Co/Prerequisite(s): List co/prerequisite(s) for the noted courses. SUNY GER Area Abbreviations (the first five listed in order of their frequency of being required by SUNY campuses): Basic Communication (BC), Math (M), Natural Sciences (NS), Social Science (SS), Humanities (H), American History (AH), The Arts (AR), Other World Civilizations (OW), Western Civilization (WC), Foreign Language (FL).

The table will automatically update the number of credits, courses and categories in the program totals table at the bottom of the chart.

Label each term in sequence, consistent with the institution's academic calendar (e.g., Fall 1, Spring 1, Fall 2).

Fall 1											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 110 Intro. to Engineering (REQ)	2			2	2				X		Co/P:AMAT 112 or 118
ICEN 111 Introduction to ECE (REQ)	4				4						Co/P:AMAT 112 or 118
AMAT 112 or 118 Calculus I (REQ)	4	M	4	4	4				X		
APHY 140 or 142 Physics 1: Mechanics (REQ)	3	NS	3	3	3				X		Co/P:AMAT 112 or 118
APHY 145 Physics Lab I (REQ)	1			1	1				X		Co/P:APHY 140 or 142
Basic Communication Gen Ed (RE)	3	BC	3	3							
Term Totals	17	3	10	13	14				4		(X)
Spring 1											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 141 Programming for Engineers (REQ)	4				4				X		P:ICEN 111, AMAT 112 or 118
AMAT 113 or 119 Calculus II (REQ)	4	M	4	4	4				X		P:AMAT 112 or 118
APHY 150 or 152 Physics 2: Electromagnetism (REQ)	3	NS	3	3	3				X		P:APHY 140 or 142
APHY 155 Physics Lab II (REQ)	1			1	1				X		Co/P:APHY 150 or 152
ICSI 210 Discrete Structures (REQ)	4			4	4						P:AMAT 112 or 118
Term Totals	16	2	7	12	16				4		(X)
Fall 2											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
AMAT 214 or 218 Calc of Several Variables (REQ)	4			4	4				X		P:AMAT 113 or 119
ICEN 231 Digital Systems (REQ)	4				4				X		P: ICSI 210, ICEN 141, and ICEN 111
ICSI 213 Data Structures (REQ)	3			3	3				X		P:ICEN 141
ACHEM 120 General Chemistry I (REQ)	3	NS	3	3	3				X		
ACHEM 124 General Chemistry Lab I (REQ)	1			1	1				X		Co/P:ACHEM 120
US History Gen Ed (RE)	3	AH	3	3							
Term Totals	18	2	6	14	15				5		(X)

Spring 2											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
AMAT 311 Ordinary Differential Equations (REQ)	3			3	3		3	3	X		P:AMAT 214 or 218
ICEN 202 Introduction to Circuits (REQ)	4				4				X		Co/P:AMAT 311, AMAT 220 or 222 P: APHY 150 or 152
AMAT 220 or 222 Linear Algebra (REQ)	3			3	3						P:AMAT 113 or 119
Arts/International Perspectives Gen Ed (RE)	3	AR/OW	3	3							
Foreign Language Gen Ed (RE)	4	FL	4	4							
Term Totals	17	3	7	13	10		3	3	2		(X)
Fall 3											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 300 Intro. to Electronics (REQ)	4				4		4	4			P:ICEN 202
ICEN 371 Signals & Systems (REQ)	3				3		3	3			P:ICEN 202
ICEN 333 Prog at the Hardware/Software Interface (REQ)	4				4		4	4			P:ICSI 213
AMAT 370 Probability & Stat for Eng. & Sci. (REQ)	3			3	3		3	3			P:ICSI 210
Term Totals	14			3	14		14	14			(X)
Spring 3											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 310 Engineering Electromagnetics (REQ)	4				4		4	4			P:ICEN 202
ECE U/L Elective (RE)	3				3		3	3			
Humanities Gen Ed (RE)	3	H	3	3							
CEN 442 Systems Analysis and Design (REQ)	3				3		3	3			P: ICEN 300
Term Totals	13	1	3	3	10		10	10			(X)
Fall 4											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 490 ECE Design Lab I (REQ)	3				3		3	3			P:ICEN 371, ICEN 300, and ICEN 333
ECE U/L Elective (RE)	3				3		3	3			
ECE U/L Elective/MS Depth Area Course 1 (RE)	3				3		3	3			
ECE U/L Elective/MS Breadth Course 1 (RE)	3				3		3	3			
Challenges 21st Century Gen Ed (RE)	3	local	3	3							
Term Totals	15	1	3	3	12		12	12			(X)
Spring 4											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 491 ECE Design Lab II (REQ)	3				3		3	3			P:ICEN 490
ECE U/L Elective/MS Depth Area Course 2 (RE)	3				3		3	3			
ECE U/L Elective/MS Depth Area Course 3 (RE)	3				3		3	3			
Elective (FE)	2					2					
Social Sciences Gen Ed (RE)	3	SS	3	3							
Term Totals	14	1	3	3	9	2	9	9			(X)
Fall 5											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
MS Depth Area Course 4	3										
MS Breadth Courses 2	3										
ECE 699 Master's Thesis	3										
Term Totals	9										

Spring 5											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
MS Technical Elective	3										
MS Math/Physics Elective	3										
ECE 699 Master's Thesis	3										
Term Totals	9										

Program Total Summary

Total Credits	SUNY GER Areas	SUNY GER Credits	Liberal Arts & Sciences Credits	Major Credits	Elective and Other Credits	Upper Division Credits	Upper Division Major Credits	Total TPath Courses	New Courses
142	9	36	64	100	2	48	48	15	0

GER Area Summary

Basic Communication (BC)	1	The Arts (AR)	1
Mathematics (M)	2	American History (AH)	1
Natural Sciences (NS)	3	Western Civilization (WC)	
Social Sciences (SS)	1	Other World Civilizations (OW)	1
Humanities (H)	1	Foreign Language (FL)	1

SUNY Undergraduate Sample Program Schedule

Campus Name	University at Albany								
Program/Track Title and Award	Electrical and Computer Engineering/Bachelor of Science-Master of Science/Non-Thesis Option								
Calendar Type	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Semester</td> <td style="width: 25%;">Quarter</td> <td style="width: 25%;">Trimester</td> <td style="width: 25%;">Other</td> </tr> <tr> <td style="text-align: center;">x</td> <td></td> <td></td> <td></td> </tr> </table>	Semester	Quarter	Trimester	Other	x			
Semester	Quarter	Trimester	Other						
x									
SUNY Transfer Path Name (if one exists)	Engineering: Electrical								

<----- Use
Dropdown Arrow.

Use the table to show how a typical student may progress through the program. Check all columns that apply to a course or enter credits where applicable.

KEY Course Type: Required (R), Restricted Elective (RE), Free Elective (FE). Course Credits: Number of Credits for individual course (Enter number.) GER Area: SUNY General Education Requirement Area (Enter Area Abbreviation from the drop-down menu.) GER Credits: (Enter number of course credits.) LAS: Liberal Arts & Sciences Credits (Enter X if course is an LAS course.) Major: Major requirement (Enter X.) TPath: SUNY Transfer Path Major & Cognate Courses (Enter X.) Elective/Other: Electives or courses other than specified categories (Enter X.) Upper Div: Courses intended primarily for juniors and seniors outside of the major (Enter X.) Upper Div Major: Courses intended primarily for juniors and seniors within the major (Enter X.) New: new course (Enter X.) Co/Prerequisite(s): List co/prerequisite(s) for the noted courses. SUNY GER Area Abbreviations (the first five listed in order of their frequency of being required by SUNY campuses): Basic Communication (BC), Math (M), Natural Sciences (NS), Social Science (SS), Humanities (H), American History (AH), The Arts (AR), Other World Civilizations (OW), Western Civilization (WC), Foreign Language (FL).

The table will automatically update the number of credits, courses and categories in the program totals table at the bottom of the chart.

Label each term in sequence, consistent with the institution's academic calendar (e.g., Fall 1, Spring 1, Fall 2).

Fall 1											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 110 Intro. to Engineering (REQ)	2			2	2				X		Co/P:AMAT 112 or 118
ICEN 111 Introduction to ECE (REQ)	4				4						Co/P:AMAT 112 or 118
AMAT 112 or 118 Calculus I (REQ)	4	M	4	4	4				X		
APHY 140 or 142 Physics 1: Mechanics (REQ)	3	NS	3	3	3				X		Co/P:AMAT 112 or 118
APHY 145 Physics Lab I (REQ)	1			1	1				X		Co/P:APHY 140 or 142
Basic Communication Gen Ed (RE)	3	BC	3	3							
Term Totals	17	3	10	13	14				4		(X)
Spring 1											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 141 Programming for Engineers (REQ)	4				4				X		P:ICEN 111, AMAT 112 or 118
AMAT 113 or 119 Calculus II (REQ)	4	M	4	4	4				X		P:AMAT 112 or 118
APHY 150 or 152 Physics 2: Electromagnetism (REQ)	3	NS	3	3	3				X		P:APHY 140 or 142
APHY 155 Physics Lab II (REQ)	1			1	1				X		Co/P:APHY 150 or 152
ICSI 210 Discrete Structures (REQ)	4			4	4						P:AMAT 112 or 118
Term Totals	16	2	7	12	16				4		(X)
Fall 2											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
AMAT 214 or 218 Calc of Several Variables (REQ)	4			4	4				X		P:AMAT 113 or 119
ICEN 231 Digital Systems (REQ)	4				4				X		P: ICSI 210, ICEN 141, and ICEN 111
ICSI 213 Data Structures (REQ)	3			3	3				X		P:ICEN 141
ACHEM 120 General Chemistry I (REQ)	3	NS	3	3	3				X		
ACHEM 124 General Chemistry Lab I (REQ)	1			1	1				X		Co/P:ACHEM 120
US History Gen Ed (RE)	3	AH	3	3							
Term Totals	18	2	6	14	15				5		(X)

Spring 2											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
AMAT 311 Ordinary Differential Equations (REQ)	3			3	3		3	3	X		P:AMAT 214 or 218
ICEN 202 Introduction to Circuits (REQ)	4				4				X		Co/P:AMAT 311, AMAT 220 or 222 P: APHY 150 or 152
AMAT 220 or 222 Linear Algebra (REQ)	3			3	3						P:AMAT 113 or 119
Arts/International Perspectives Gen Ed (RE)	3	AR/OW	3	3							
Foreign Language Gen Ed (RE)	4	FL	4	4							
Term Totals	17	3	7	13	10		3	3	2		(X)
Fall 3											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 300 Intro. to Electronics (REQ)	4				4		4	4			P:ICEN 202
ICEN 371 Signals & Systems (REQ)	3				3		3	3			P:ICEN 202
ICEN 333 Prog at the Hardware/Software Interface (REQ)	4				4		4	4			P:ICSI 213
AMAT 370 Probability & Stat for Eng. & Sci. (REQ)	3			3	3		3	3			P:ICSI 210
Term Totals	14			3	14		14	14			(X)
Spring 3											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 310 Engineering Electromagnetics (REQ)	4				4		4	4			P:ICEN 202
ECE U/L Elective (RE)	3				3		3	3			
Humanities Gen Ed (RE)	3	H	3	3							
CEN 442 Systems Analysis and Design (REQ)	3				3		3	3			P: ICEN 300
Term Totals	13	1	3	3	10		10	10			(X)
Fall 4											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 490 ECE Design Lab I (REQ)	3				3		3	3			P:ICEN 371, ICEN 300, and ICEN 333
ECE U/L Elective (RE)	3				3		3	3			
ECE U/L Elective/MS Depth Area Course 1 (RE)	3				3		3	3			
ECE U/L Elective/MS Breadth Course 1 (RE)	3				3		3	3			
Challenges 21st Century Gen Ed (RE)	3	local	3	3							
Term Totals	15	1	3	3	12		12	12			(X)
Spring 4											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
ICEN 491 ECE Design Lab II (REQ)	3				3		3	3			P:ICEN 490
ECE U/L Elective/MS Depth Area Course 2 (RE)	3				3		3	3			
ECE U/L Elective/MS Depth Area Course 3 (RE)	3				3		3	3			
Elective (FE)	2					2					
Social Sciences Gen Ed (RE)	3	SS	3	3							
Term Totals	14	1	3	3	9	2	9	9			(X)
Fall 5											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
MS Depth Area Course 4	3										
MS Technical Elective	3										
ECE 696 Master's Project or Projects Course (ECE 629, ECE 659, ECE 669 or ECE 679)	3										
Term Totals	9										

Spring 5											
Course Number & Title (& Type)	Number of Credits	GER Area	GE Credits	LAS	Major	Elective/Other	Upper Div	Upper Div Major	TPath	New Course	Co/Prerequisite
MS Technical Elective 2	3										
MS Math/Physics Elective	3										
MS Breadth Course 2	3										
Term Totals	9										
Program Total Summary	Total Credits	SUNY GER Areas	SUNY GER Credits	Liberal Arts & Sciences Credits	Major Credits	Elective and Other Credits	Upper Division Credits	Upper Division Major Credits	Total TPath Courses	New Courses	
	142	9	36	64	100	2	48	48	15	0	
GER Area Summary	Basic Communication (BC)		1	The Arts (AR)		1					
	Mathematics (M)		2	American History (AH)		1					
	Natural Sciences (NS)		3	Western Civilization (WC)							
	Social Sciences (SS)		1	Other World Civilizations (OW)		1					
	Humanities (H)		1	Foreign Language (FL)		1					

Section 4. SUNY Faculty Table

- a) If applicable, provide information on faculty members who will be teaching new or significantly revised courses in the program. Expand the table as needed.
- b) **Append** at the end of this document position descriptions or announcements for each to-be-hired faculty member.



When submitting a program proposal please submit this form to indicate the resource implications of the proposal.

Proposal Title: B.S. - M.S. in Electrical and Computer Engineering

College or School: CEAS **Department:** ECE

Program Director or Sponsor: Gary J. Saulnier **Email:** gsaulnier@albany.edu

Action Category: Program Proposal Does this proposal include any space resource implications? Approx. sq. ft. needed: _____ Yes No
 Other (describe)

Action Type: New Does the Office of Financial Aid identify this as a **Gainful Employment Program (GEP)**? Yes No
 Revision
 Deactivation
 Other (describe)

Brief Description of Proposal: *(attach additional pages if necessary)*

The proposal is to create a multi-award B.S.-M.S program in Electrical and Computer Engineering from our existing B.S. and M.S. programs. For the multi-award B.S.-M.S. program, students may count up to 12 credit hours of courses used to satisfy part of the Depth, Breadth, and Technical Elective requirements of the registered M.S. Electrical and Computer Engineering Program towards the ECE Electives within the registered B.S. Electrical and Computer Engineering Program. The requirements for the registered M.S. program are fully met by the B.S.-M.S. program. The courses from the registered M.S. Program that can be counted towards the B.S. Program are the 500-level versions of 400-level courses already in the registered B.S. Program. These 500-level courses have the same content as their 400-level counterparts, but students are expected to demonstrate greater mastery of the material in the 500-level versions through additional assignments or assignment parts, additional or different exam questions, etc.

Students may be admitted to the program after completing the fall of their junior year or after the successful completion of 75 credit hours of the B.S. ECE program. A GPA of 3.2 or higher and three supportive letters of recommendation from faculty are required. The admissions decision will strongly weigh student performance in their mathematics and ECE courses which are strong predictors of future success in graduate courses.

Is there an impact on other service units? Please attach documentation that you have consulted with each unit listed below:

Yes	No	ITS
<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	University Libraries
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Scientific Core Facilities
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other services (i.e., advisement, parking, facilities, security), please list:

Is there an impact on other academic programs? Please list all academic departments consulted regarding impact and attach documentation.

No significant impact. We expect some growth in the M.S. program with additional B.S. students continuing to receive that degree since it requires fewer credits. M.S. students take one graduate course of their choosing in either Physics or Mathematics. The net result should be a small increase in enrollment in a number of those courses.

Faculty and Staff *(attach additional pages if necessary)*

(a) Describe new faculty hiring needed during the next 3 years

(b) Explain how program will be administered for the purposes of admissions, advising, course offerings, etc. Discuss the available support staff.

a) No new faculty are needed as a result of this program. We are currently offering both the B.S. and M.S. programs and can easily accommodate more students in our graduate courses.

b) The department Graduate Admissions Committee will review applications and make admit/reject recommendations to the Chair. Staff Advisors will advise students in satisfying the B.S. portion of their program. As with all M.S. Students, students will submit a Plan of Study to the Graduate Program Director for approval to ensure that they meet all requirements. The Plan of Study will be developed in consultation with a Faculty Advisor.



Program Expenses

List all resources that will be engaged specifically as a result of the proposed program (e.g., a new faculty position or additional library resources). If they represent a continuing cost, new resources for a given year should be included in the subsequent year(s), with adjustments for inflation or negotiated compensation.

Program Expense Categories	Expenses (in dollars)					
	Prior to implementation	Academic Year 1:	Academic Year 2:	Academic Year 3:	Academic Year 4:	Academic Year 5:
<i>(a) Personnel (Including faculty and all others)</i>	0	0	0	0	0	0
<i>(b) Library</i>	0	0	0	0	0	0
<i>(c) Equipment</i>	0	0	0	0	0	0
<i>(d) Laboratories</i>	0	0	0	0	0	0
<i>(e) Supplies</i>	0	0	0	0	0	0
<i>(f) Capital Expenses</i>	0	0	0	0	0	0
<i>(g) Student stipends or scholarships</i>	0	0	0	0	0	0
<i>(h) Other (specify):</i>	0	0	0	0	0	0
Sum of Rows Above	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

Explanatory Notes (add additional pages as needed):

No new resources are needed because the B.S. and M.S. programs are already being offered. The multi-award program courses are already being offered in the existing programs and have available capacity for additional students.



APPROVALS

Department Chair Gary J. Saulnier February 12, 2019
Department Chair _____ Date _____

Dean  22 FEB 2019
Dean _____ Date _____

UPPC Chair _____
UPPC Chair _____ Date _____

- It is the sponsoring department's responsibility to request and attach all required documentation and to obtain all required signatures (with the exception of the chair of UPPC's) **before** presenting the documentation.
- Completed forms should be sent to the **Office of Undergraduate Education**, the **Office of Graduate Education**, or **both** as appropriate.
- When the Chair of UPPC has received the proposal from the appropriate office(s), s/he will notify you that it has been placed on the UPPC agenda and invite you to attend the meeting.