

From: [Smith, Randy](#)
To: [Zia, Saideh](#); [Krishna, Sanjay](#)
Cc: [Sutherland, Sue](#); [Reed, Katie](#); [Smith, Randy](#); [Duffy, Lisa](#); [Hunt, Ryan](#); [Shanker, Balasubramaniam](#); [Quinzon-Bonello, Rosario](#); [Tomasko, David](#); [Croxtton, Keely](#); [Brown, Trevor](#)
Subject: CORRECTION - Proposal to establish an UG Embedded Certificate in Tech Entrepreneurship
Date: Thursday, January 23, 2025 1:50:22 PM
Attachments: [image001.png](#)

Saideh and Sanjay:

Apologies for the mistake in the previous message.

The proposal from the Department of Electrical and Computer Engineering to establish an undergraduate embedded certificate (category 1b) in Tech Entrepreneurship was approved by the Council on Academic Affairs at its meeting on January 22, 2025. Thank you for attending the meeting to respond to questions/comments.

No additional level of internal review/approval is necessary. This action will be included in the Council's next Annual Activities Report to the University Senate (July 2025).

The Office of the University Registrar will work you with any implementation issues.

Please keep a copy of this message for your file on the proposal and I will do the same for the file in the Office of Academic Affairs.

If you have any questions please contact the Chair of the Council, Professor Sue Sutherland. (43), or me.

Randy



W. Randy Smith, Ph.D.

Vice Provost for Academic Programs

Office of Academic Affairs

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Memo

To: Randy Smith, Vice Provost for Academic Programs

From: Rosie Quinzon-Bonello, Assistant Dean for Curriculum and Assessment

Date: December 9, 2024

Re: Proposal to establish an Undergraduate Embedded Certificate in Tech Entrepreneurship in ECE

Attached is a proposal submitted by the Department of Electrical and Computer Engineering to establish an Undergraduate Embedded Certificate in Tech Entrepreneurship in ECE.

This proposal was presented to the COE's College Committee on Academic Affairs on December 6, 2024. There were no questions or concerns, and the committee voted unanimously to approve the proposal.

Yours sincerely,

Rosie Quinzon-Bonello

Proposal for an Undergraduate Embedded Certificate in Tech Entrepreneurship in ECE

October 16, 2024

Betty Lise Anderson, Department of Electrical and Computer Engineering

I. Program definition

A. Title of program

Undergraduate TechPreneurship in Electrical and Computer Engineering Certificate Program (Undergraduate Academic Certificate 1b Embedded Post-High School Diploma)

B. Certificate Category and Justification

Many faculty members evolve their research efforts into small businesses to commercialize the outcome of their research. We also recognize the increasing interest among students in exploring entrepreneurship within the technology sector; hence we aim to provide the students with tailored opportunities to pursue their passions and realize their potential.

C. Purpose of program

1. This certificate can be completed by undergraduates currently pursuing BS degrees at Ohio State.
2. Method of delivery will be primarily in-person, in accordance with current offering of the courses in the certificate.

D. Methods of delivery

The courses are primarily offered in-person currently.

E. Timing

Desired start up is Spring 2025.

F. Goals

In alignment with ECE department's vision of fostering innovation and leadership in technology, the Tech Entrepreneurship Certificate Program will empower the undergraduate ECE students with hardware development in Tech space.

G. Outcomes

Upon completion of the academic certificate in TechPreneurship, learners will:

1. Be equipped with entrepreneurial skills.
2. Foster innovation and startup culture within the ECE department.
3. experience enhance interdisciplinary collaboration.

H. Minimum requirements

A minimum GPA of 3.0 in the certificate courses is required for completion. Only grades of C- or better may be counted toward the certificate.

Completion of the certificate requires a minimum of 13 credit hours.

I. Methods of delivery

Number	Title	Online	In-Person	In-person or online
ECE5078	Empowering the Entrepreneurial Electrical and Computer Engineer		X	
ECE3906	Senior Design Capstone 1		X	
ECE4905	Senior Design Capstone 2		X	
ECE 4998.01	Undergraduate Research		X	
BUSADM 3533	Technology Commercialization		X	
BUSMHR 3510	New Venture Creation		X	
BUSADM 3531	General Entrepreneurship		X	

J. MOU with ODEE

Not required.

K. List of required and elective courses

1. Required:

ECE5078 Empowering the Entrepreneurial Electrical and Computer Engineer (3 credits)

Prerequisites and Co-requisites: Prerequisite: 3010 , 3020, 3030, 3040, or 3050; or grad standing in Engineering

Exclusions: Not open to student with credit for ECE 5194.13

ECE 3906 Capstone Design I (4 credits)

Prerequisites and Co-requisites: Option 1: Prereq or concur: 3080 or PHILOS 1332; 2560, 3010, 3020, 3027, 3030, 3040, 3050, Credit for a first writing course, and Sr standing, and enrollment in Electrical Engineering Program of Study (EES subplan) of the ECE major.

Option 2: Prereq or concur: 2050 or 2100; 3080 or PHILOS 1332; 3020, 3027, 3090, 3561,3567, CSE 2231, and 2451, and Sr standing, and enrollment in Computer Engineering Program of Study (CES subplan).

Exclusions: Not open to students with credit for 3900, 3905, 4900, 4900H, 4901, or ENGR 5901.01, 5901.01H, 5902.01 or 5902.01H.

ECE 4905 Capstone Design 2 (3 credits)

Prerequisites and Co-requisites: Prereq: 3905 and 3090, or 3906.

Exclusions: Not open to students with credit for 4900, 4900H, 4901, or Engr 5901.01, 5901.02H, 5902.01, or 5902.02H.

A. Pick at least one:

ECE 4998.01 Undergraduate Research

(3 credits)

Contact hours and meeting with the instructor: 1-2 hours, bi-weekly. Letter-Graded.

Number of guest lectures: 5

Points of focus includes but not limited to sales and customer-centric thinking for engineers, marketing, need-based product development, product leadership. The ideal mentor for this independent study is engineering faculty with entrepreneurship experience. The deliverable is a Final Presentation and/or Report

BUSADM 3533 – Technology Commercialization

(3 credits)

BUSMHR 3510 – New Venture Creation

(3 credits)

BUSADM 3531, General Entrepreneurship

(3 credits)

B. Length of program compared to similar programs

We are not aware of any similar programs.

C. Semesters of offering

Number	Title	Even Aut	Odd Spr	Odd Aut	Even Spr
ECE5078	Empowering the Entrepreneurial Electrical and Computer Engineer		X		X
ECE3906	Capstone Design 1	X		X	
ECE4905	Capstone Design 2		X		X
ECE 4998.01	Undergraduate Research	X	X	X	X
BUSADM 3533	Technology Commercialization				
BUSMHR 3510	New Venture Creation				
BUSADM 3531	General Entrepreneurship				

D. Transfer Credits

All courses in the Certificate must be taken at Ohio State.

E. Arranged/Individual Study Courses

Three credit hours of individual study courses (research credit) will apply to the certificate.

F. Overlap

All credits in the certificate can overlap with the major, e.g. be counted toward both.

II. Enrollment

A. Projected enrollment

We have no experience with these certificates, so we can only guess at the number of students who might be interested, potentially 10 per year.

1. Will there be problems if too many students enroll in the certificate program?

It is unlikely; students must apply to the certificate program and from the pool of students, the academic advisors at the ECE department will select 20 applicants and send to the TechEntrepreneurship faculty advisors. Ten of the applicants will be admitted to the program by reviewing the application material and interviews if needed. The application material includes letter of intent and e-portfolio.

2. Will there be problems if too few students enroll in the certificate program?

No.

B. Opportunities for graduates

This certificate is mainly designed for ECE undergraduates, but it may be expanded to graduate (MS) students in the future.

C. Admission requirements

A minimum GPA of 3 to apply. Initially admitted to the university as part of an Associates or Bachelors Degree program. An embedded certificate program is “declared” in a similar path to majors.

III. Sufficient resources

A. Adequacy and availability of facilities and staff

All courses listed above exist and are already offered. They run on the schedule listed under Section I.M.

B. Projected resource needs and plans to meet those needs

The certificate can run and serve students immediately.

IV. Justifiable expenses

A. Additional Faculty

We currently have enough faculty with the appropriate expertise to offer the certificate.

B. Course additions or deletions

No new courses are needed at this time.

C. Necessary budget adjustments

We can run the certificate with existing resources.

D. Available and anticipated funding
None.

V. Adequate demand

A. Evidence of sufficient demand by students faculty, general public, and/or business

We have letter of support from Sheryl Turnbull from the KEENAN center to collaborate with our program on Entrepreneurship efforts currently active at the university level.

B. Duration of demand (long/short term)

To be determined. Since no additional resources are required to run this certificate, we can try it and see.

C. Ability of other programs to meet demand

All courses required for this certificate are hosted at the department level.

VI. Competitiveness with other institutions: limited overlap within the University

A. Overlap with other programs or departments

OSU offers a Minor in Entrepreneurship and Innovation minor program which doesn't overlap with this certificate program. The focus of this program is product development in ECE.

B. Duplication of effort by other areas in the University, another university or another school

This certificate focuses on product development which to our knowledge is unique to the Ohio state. Other universities such as Harvard and Stanford Online universities offer Technology Entrepreneurship in software development.

C. Similar programs at other universities in Ohio, or in the United States, and their levels of success

No similar programs exist as far as we know.

Supporting letter from Cheryl Turnbull, Senior Director of Keenan Center for Entrepreneurship



Keenan Center for Entrepreneurship

1636 N. High Street
Columbus, OH 43201

614-292-1315 Phone

August 14, 2024

Via email: Saeedeh Ziaeeafard
Sanjay Krishna

Dear Saeedeh and Sanjay:

I am pleased to express my support for your efforts to advance entrepreneurship within the College of Engineering. Each year, student interest in entrepreneurship seems to increase if the participation in Keenan Center programming is any indication!

I believe that students would appreciate a certificate program that exists alongside the entrepreneurship minor. Please let me know how I can support you. I hope we have many opportunities to collaborate in providing best in class entrepreneurial programming for our students.

Sincerely,

Cheryl Turnbull

Cheryl Turnbull
Senior Director

Letter of support from Kevin Taylor, Chief Innovation Officer, Office of Innovation and Economic Development



THE OHIO STATE UNIVERSITY

Innovation and Commercialization

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September 3, 2024

Department of Electrical and Computer Engineering
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205 Dreese Labs
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Dear Drs. Ziaeefard and Krishna,

Thank you for reaching out to Innovation and Commercialization within the Enterprise for Research, Innovation and Knowledge about student intellectual property ownership in connection with the Techpreneurship in Electrical and Computer Engineering certificate program you are developing.

On behalf of The Ohio State University, I confirm that non-employee student participation in the Techpreneurship in Electrical and Computer Engineering certificate program shall not result in university ownership of intellectual property created solely by one or more non-employee students in the program as part of coursework performed during the certificate program.

I am grateful for your leadership of this important program and appreciate your commitment to enriching the lives of our students with education and experience in technology-based entrepreneurship.

Sincerely,

DocuSigned by:

Kevin M. Taylor

Kevin Taylor

Chief Innovation Officer