From:	Smith, Randy
To:	Anderson, Betty Lise; Shanker, Balasubramaniam
Cc:	Andridge, Rebecca; Reed, Katie; Smith, Randy; Orr, James; Duffy, Lisa; Quinzon-Bonello, Rosario; Tomasko, David
Subject:	Proposal to establish a 1b Undergraduate Certificate and Minor in Signal Processing
Date:	Friday, May 19, 2023 2:40:21 PM
Attachments:	image001.png

Betty Lise and Shanker:

The proposal from the Department of Electrical and Computer Engineering to establish a 1b Undergraduate Certificate and Minor in Signal Processing was reviewed by the Council on Academic Affairs at its meeting on May 16, 2023, and electronically approved by the Council on May 19, 2023. Thank you for attending the meeting to respond to questions/comments.

No additional level of internal approval is necessary. This action will be included in the Council's next Annual Activities Report to the University Senate (July 2023).

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 Rebecca Andridge.1 or me.

I wish you success with this important program development.

Randy

THE OHIO STATE UNIVERSITY

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Memo

To: Randy Smith, Vice Provost for Academic Programs
From: Rosie Quinzon-Bonello, Assistant Dean for Curriculum and Assessment
Date: February 24, 2023

Re: UG Minor in Signal Processing

On February 3, 2023, the College of Engineering Committee for Academic Affairs voted unanimously to approve the UG Minor in Signal Processing proposal submitted by the Department of Electrical and Computer Engineering.

If you require additional information, feel free to contact me.

Yours sincerely,

Rosario Quinzon-Bonello

Rosie Quinzon-Bonello

Undergraduate Minor in Signal Processing

December 14, 2022

Betty Lise Anderson, Department of Electrical and Computer Engineering

Motivation

Analyzing and synthesizing complex electrical signals such as sound, images, and measurements are useful skills for anyone in the sciences.

Target audience

Undergraduates in engineering, math, physical sciences. These students will likely have the necessary math and physics courses to go directly into the courses in this minor.

Timing

Desired start up is Autumn 2023.

Coursework

Completion of the minor requires a minimum of 15 credit hours. The required courses are ECE 2020 Introduction to Analog Circuits and Systems, ECE 2060 Introduction to Digital Logic, ECE 2050 Introduction to Discrete Time Signals and Systems, ECE 3050 Signals and Systems. Student may choose the fifth course as either ECE 5206 Medical Imaging and Processing or ECE 5200 Introduction to Signal Processing.

Required:

ECE 2020 Introduction to Analog Circuits and Systems (3 credits)

Prereq: Engr 1182.01, 1182.02, 1182.03, 1282.01H, 1282.02H, 1282.03H, 1282.04H, or 1186, 1187 and 1188 concurrent; and Math 1152, 1161.01, 1161.02, 1172, or 1181H; and Physics 1250, 1250H, or 1260; and CPHR 2.00 or above.

Proposed changes: Math 1152, 1161.01, 1161.02, 1172, or 1181H; and Physics 1250, 1250H, or 1260, or Chem 1210 or 1250.

Offered every semester

ECE 2060 Introduction to Digital Logic (3 credits)

Prereq: CSE 1222, 2221, Engr 1222, 1281.01H, or 1281.02H; and Math 1152, 1161.01, 1161.02, 1172, or 1181H; and Physics 1250, 1250H, or 1260; and Engr 1182.01, 1182.02, 1182.03, 1282.01H, 1282.02H, 1282.03H, 1282.04H, or 1186, 1187, and 1188 concurrent, or major in CIS or CIS-PRE; and CPHR 2.00 or above.

Proposed changes: CSE 1222, 2221, Engr 1222, 1281.01H, or 1281.02H; and Math 1152, 1161.01, 1161.02, 1172, or 1181H; and Physics 1250, 1250H, or 1260, or CHEM 1210 or 1250.

Offered every semester

ECE 2050 Introduction to Discrete Time Signals and Systems (3 credits)

Prereq: 2000, or 2060, or 2061 and 2067. Prereq or concur: Math 2174 or 2568.
Proposed changes: Prereq: 2060. Prereq or concur: Math 2174 or 2568.
Offered every semester.

ECE 3050 Signals and Systems (3 credits)

Prereq: 2020, 2050, and 2060; or 2100; and Math 2568; and prereq or concur Math 2415; and enrollment in ECE or EngPhysics major.
Proposed changes: Prereq: 2060. Prereq or concur: Math 2174 or 2568.
Offered every semester.

Pick one:

ECE 5200 Introduction to Digital Signal Processing (3 credits)

Prereq: 3050, and Stat 3470 or Math 4530; or Grad standing.
Offered every spring.

ECE 5206 Medical Imaging and Processing (3 credits)

Prereq: 3050 (352). Prereq or concur: 3090 or 582, or Grad standing in ECE, BiomedE, or Biophys.
Proposed changes: 3050, or Grad standing in ECE, BiomedE, or Biophys.
Offered every spring.

Semesters of offering

Number	Title	Even Aut	Odd Spr	Odd Aut	Even Spr
2020	**Introduction to Analog Circuits and Systems**	X	X	X	X
2060	**Introduction to Digital Logic**	X	X	X	X
2050	**Introduction to Discrete Time Signals and Systems**	X	X	X	X
3050	**Signals and Systems**	X	X	X	X
5200	**Introduction to Digital Signal Processing**		X		X
5206	**Medical Imaging and Processing**		X		X

Resources required

All courses listed above exist and are already offered

Admission requirements

Minimum GPA of 1.7 (C-) to apply. Initially admitted to the university as part of an Associates or Bachelors Degree program.

Completion requirements

Minimum GPA of 2.0 in the minor courses. Only grades of C- or better may be counted toward the minor.

Pass/Nonpass Courses

No courses graded Pass/Non-Pass may be applied to the minor.

Transfer Credits

At least half of the credits counting toward the minor must be earned in regular OSU coursework.

Overlap with the major and additional minors

A maximum of 6 credit hours of the minor may overlap with the credits required for the major.

Overlap with the GE

A student is permitted to overlap up to 6 credit hours between the GE and a minor.

Electrical and Computer Engineering Students

Not available to ECE students

Outcomes

Upon completion of the Minor in Signal Processing, learners will be better prepared to:

1) Be competent with linear systems as approximate models of physical systems
2) Master Fourier series, Fourier transform, and discrete-time Fourier transform
3) Master the fundamentals of sampling and reconstruction