



**SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS**

Substantive Program Modification Form

UNIVERSITY:	SDSU
CURRENT PROGRAM DEGREE:	Bachelor of Science (B.S.)
CURRENT PROGRAM MAJOR/MINOR:	Electrical Engineering
CURRENT SPECIALIZATION:	N/A
CIP CODE:	14.1001
UNIVERSITY DEPARTMENT:	McComish Department of Electrical Engineering and Computer Science
BANNER DEPARTMENT CODE:	SEEC
UNIVERSITY COLLEGE:	Jerome J Lohr College of Engineering
BANNER COLLEGE CODE:	3E

University Approval

To the Board of Regents and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.

Dennis D. Hedge

Vice President of Academic Affairs or
President of the University

4/16/2025

Date

1. This modification addresses a change in:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Total credits required within the discipline | <input checked="" type="checkbox"/> Total credits of supportive course work |
| <input type="checkbox"/> Total credits of elective course work | <input type="checkbox"/> Total credits required for program |
| <input type="checkbox"/> Program name | <input type="checkbox"/> Existing specialization |
| <input type="checkbox"/> CIP Code | <input type="checkbox"/> Other (explain below) |
| <input type="checkbox"/> Modification requiring Board of Regents approval | |

Must have prior approval from Executive Director or designee

2. Effective date of change: 2025-2026 Academic Year

3. Program Degree Level:

Associate Bachelor's Master's Doctoral

4. Category:

Certificate Specialization Minor Major

5. If a name change is proposed, the change will occur:

- On the effective date for all students
- On the effective date for students new to the program (enrolled students will graduate from existing program)

Proposed new name:

6. Is the program being modified associated with a current articulation agreement? Yes No

- a. If yes, will the articulation agreement need to be updated with the partner institution following the approve of the program change? Please explain:**

7. Primary Aspects of the Modification:

Existing Curriculum

Proposed Curriculum (highlight changes)

Pref.	Num.	Title	Cr.Hrs.	Pref.	Num.	Title	Cr. Hrs.
Systems General Education Requirements			33	Systems General Education Requirements			33
Systems General Education Requirements – Electives			21	Systems General Education Requirements – Electives			21
		SGR #1 Written Communication	3			SGR #1 Written Communication	3
		SGR #1 Written Communication	3			SGR #1 Written Communication	3
		SGR #2 Oral Communication	3			SGR #2 Oral Communication	3
		SGR #3 Social Sciences	3			SGR #3 Social Sciences	3
		SGR #3 Social Sciences	3			SGR #3 Social Sciences	3
		SGR #4 Arts and Humanities	3			SGR #4 Arts and Humanities	3
		SGR #4 Arts and Humanities	3			SGR #4 Arts and Humanities	3
Systems General Education Requirements – Required			12	Systems General Education Requirements – Required			12
MATH	123	Calculus I (SGR #5)	4	MATH	123	Calculus I (SGR #5)	4
CHEM	112	Chemistry I (SGR #6)	3	CHEM	112	Chemistry I (SGR #6)	3
CHEM	112L	Chemistry I Lab (SGR #6)	1	CHEM	112L	Chemistry I Lab (SGR #6)	1
PHYS	207	Fundamentals of Physics I (SGR #6)	3	PHYS	207	Fundamentals of Physics I (SGR #6)	3
PHYS	207L	Fundamentals of Physics I Lab (SGR #6)	1	PHYS	207L	Fundamentals of Physics I Lab (SGR #6)	1
Major Requirements			69	Major Requirements			70
				EE	101	Introduction to Electrical Engineering	1
EE	101L	Introduction to Electrical Engineering Lab	1	EE	101L	Introduction to Electrical Engineering Lab	1
EE	216	Linear Circuits I	3	EE	216	Linear Circuits I	3
EE	216L	Linear Circuits I Lab	1	EE	216L	Linear Circuits I Lab	1
EE	218	Linear Circuits II	3	EE	218	Linear Circuits II	3
EE	218L	Linear Circuits II Lab	1	EE	218L	Linear Circuits II Lab	1
EE	222	Energy Conversion	3	EE	222	Energy Conversion	3
EE	222L	Energy Conversion Lab	1	EE	222L	Energy Conversion Lab	1
EE	245	Digital Systems	3	EE	245	Digital Systems	3
EE	245L	Digital Systems Lab	1	EE	245L	Digital Systems Lab	1
EE	260	Electronic Materials	3	EE	260	Electronic Materials and Devices	3
EE	315	Linear Control Systems	3	EE	315	Linear Control Systems	3
EE	316	Signals and Systems I	3	EE	316	Signals and Systems I	3
EE	317	Signals and Systems II	3	EE	317	Signals and Systems II	3
EE	320	Electronics I	3	EE	320	Electronics I	3
EE	320L	Electronics I Lab	1	EE	320L	Electronics I Lab	1
EE	321	Electronics II	3	EE	321	Electronics II	3
EE	321L	Electronics II Lab	1	EE	321L	Electronics II Lab	1
EE	345	Computer Organization	3	EE	345	Computer Organization	3
EE	347	Microcontroller Systems Design	3	EE	347	Microcontroller Systems Design	3
EE	347L	Microcontroller Systems Design Lab	1	EE	347L	Microcontroller Systems Design Lab	1
EE	360	Electronic Devices	3	EE	360	Electronic Devices	3
EE	385	Electromagnetics	4	EE	385	Electromagnetics	3
EE	422	Engineering Economics and Management	2	EE	422	Engineering Economics and Management	2
EE	464	Senior Design Project I	2	EE	464	Senior Design Project I	2
EE	465	Senior Design Project II	2	EE	465	Senior Design Project II	3
		Technical Electives The 12 required technical electives must be from Electrical Engineering courses at the 400-level. These may be selected from specialization areas: Biomedical, Communications, Computers, Electronic Devices, Image Processing, or Power Systems. All EE majors are strongly advised to select technical electives in a coherent manner to meet desired professional/employment goals.	12			Technical Electives The 12 required technical electives must be from Electrical Engineering courses at the 400 level. These may be selected from specialization areas: Biomedical, Communications, Computers, Electronic Devices, Image Processing, or Power Systems. All EE majors are strongly advised to select technical electives in a coherent manner to meet desired professional/employment goals.	15

Existing Curriculum

Proposed Curriculum (highlight changes)

Prof.	Num.	Title	Cr.Hrs.	Prof.	Num.	Title	Cr. Hrs.
		Some suggested areas of emphasis are listed below, which also identify courses outside of EE (courses outside of EE do not apply toward the required technical elective credits). Thus, students are not required to take all courses in an emphasis area. Following are some suggested areas and supporting courses.				Some suggested areas of emphasis are listed below, which also identify courses outside of EE (courses outside of EE do not apply toward the required technical elective credits). Thus, students are not required to take all courses in an emphasis area. Following are some suggested areas and supporting courses.	
		<i>Biomedical Engineering Emphasis</i>				<i>Biomedical Engineering Emphasis</i>	
BIOL	221	Human Anatomy	4	BIOL	221	Human Anatomy	4
BIOL	221L	Human Anatomy Lab	0	BIOL	221L	Human Anatomy Lab	1
BIOL	325	Physiology	4	BIOL	325	Physiology	4
BIOL	325L	Physiology Lab	0	BIOL	325L	Physiology Lab	1
EE	420	Electronics III	3	EE	420	Electronics III	3
EE	420L	Electronics III Lab	1	EE	420L	Electronics III Lab	1
EE	454	Biomedical Instrumentation and Electrical Safety	3	EE	454	Biomedical Instrumentation and Electrical Safety	3
		<i>Communications and Advanced Electronics Emphasis</i>				<i>Communications and Advanced Electronics Emphasis</i>	
CSC	474	Computer Networks	3	CSC	474	Computer Networks	3
EE	420	Electronics III	3	EE	420	Electronics III	3
EE	420L	Electronics III Lab	1	EE	420L	Electronics III Lab	1
EE	470	Communications Engineering	3	EE	470	Communications Engineering	3
PHYS	361	Optics	3	PHYS	361	Optics	3
		<i>Computers-Digital Hardware Emphasis</i>				<i>Computers-Digital Hardware Emphasis</i>	
CSC	474	Computer Networks	3	CSC	474	Computer Networks	3
EE	420	Electronics III	3	EE	420	Electronics III	3
EE	420L	Electronics III Lab	1	EE	420L	Electronics III Lab	1
EE	492	Topics	1-4	EE	492	Topics	1-4
MATH	471	Numerical Analysis	3	MATH	471	Numerical Analysis	3
		<i>Electronic Devices and Materials Emphasis</i>				<i>Electronic Devices and Materials Emphasis</i>	
EE	460	Sensors and Measurements	2	EE	460	Sensors and Measurements	2
EE	460L	Sensors and Measurements Lab	1	EE	460L	Sensors and Measurements Lab	1
EE	492	Topics	1-4	EE	492	Topics	1-4
PHYS	331	Introduction to Modern Physics	3	PHYS	331	Introduction to Modern Physics	3
PHYS	361	Optics	3	PHYS	361	Optics	3
PHYS	439	Condensed Matter Physics	4	PHYS	439	Condensed Matter Physics	4
PHYS	471	Quantum Mechanics	4	PHYS	471	Quantum Mechanics	4
		<i>Image Processing Emphasis</i>				<i>Image Processing Emphasis</i>	
EE	470	Communications Engineering	3	EE	470	Communications Engineering	3
EE	475	Digital Image Processing	3	EE	475	Digital Image Processing	3
MATH	471	Numerical Analysis I	3	MATH	471	Numerical Analysis I	3
PHYS	361	Optics	3	PHYS	361	Optics	3
		<i>Power Systems Emphasis</i>				<i>Power Systems Emphasis</i>	
EE	434	Power Systems Analysis	3	EE	434	Power Systems Analysis	3
EE	434L	Power Systems Analysis Lab	1	EE	434L	Power Systems Analysis Lab	1
EE	436	Photovoltaic Systems Engineering	3	EE	436	Photovoltaic Systems Engineering	3
EE	436L	Photovoltaic Systems Engineering Lab	1	EE	436L	Photovoltaic Systems Engineering Lab	1
EE	438	Power Technology Tour	1	EE	438	Power Technology Tour	1
EE	470	Communications Engineering	3	EE	470	Communications Engineering	3
EE	492	Topics	1-4	EE	492	Topics	1-4

Existing Curriculum

Proposed Curriculum (highlight changes)

Prof.	Num.	Title	Cr.Hrs.	Prof.	Num.	Title	Cr. Hrs.
Supporting Coursework			28	Supporting Coursework			27
CSC	150	Computer Science I	3	CSC	150	Computer Science I	3
GE	101	Introduction to Engineering and Technical Professions	1	GE	101	Introduction to Engineering and Technical Professions	1
MATH	125	Calculus II	4	MATH	125	Calculus II	4
MATH	225	Calculus III	4	MATH	225	Calculus III	4
MATH	321	Differential Equations	3	MATH	321	Differential Equations	3
MATH	331	Advanced Engineering Mathematics	3	MATH	331	Advanced Engineering Mathematics	3
ME	314	Thermodynamics	3	ME	314	Thermodynamics	3
PHYS	209	Fundamentals of Physics I	3	PHYS	209	Fundamentals of Physics I	3
PHYS	209L	Fundamentals of Physics I Lab	1	PHYS	209L	Fundamentals of Physics I Lab	1
STAT	381	Introduction to Probability and Statistics	3	STAT	381	Introduction to Probability and Statistics	3
Electives			0	Electives			0
Summary of Credits in Electrical Engineering (B.S.)							
System General Education Requirement			33	System General Education Requirement			33
Major Requirements			69	Major Requirements			70
Supporting Coursework			28	Supporting Coursework			27
Electives			0	Electives			0
Total number of hours required for major			109	Total number of hours required for major			109
Total number of hours required for degree			130	Total number of hours required for degree			130

8. Explanation of the Change:

The McComish Department of Electrical Engineering and Computer Science has conducted a review of the Electrical Engineering program and has requested curriculum changes aimed at improving the student experience and enhancing content knowledge. These changes are also expected to positively impact student persistence in the major.

Creation of a first-year experience, EE 101 Introduction to Electrical Engineering, will introduce students to electrical engineering concepts and provide a foundation for Linear Circuits, with some background in the expected calculations and course topics. Additionally, the course will include student success and career exploration activities, such as industry tours and guest speakers, to help students connect their interest in electrical engineering with potential career opportunities. This new course will replace GE 101 Introduction to Engineering and Technical Professions, which is currently offered to all engineering majors, with a first-year success course specifically focused on electrical engineering.

EE 260 Electronic Materials and EE 360 Electronic Devices are being combined into a single course to streamline the study of both the materials used in device creation and the devices themselves, enhancing overall efficiency in course delivery. The combination will eliminate duplication of some content between the courses that is presently included due to the separation in time between students enrolling in each course.

The number of credits associated with EE 465 Senior Design Project II will be increased from 2 to 3 credits to accommodate the addition of weekly, biweekly, and monthly agile project management deliverables. These additional requirements will require students to dedicate more time than in previous years, making an increase in credit hours necessary.

Technical electives have been revised to offer greater flexibility for students, moving away from a focus on emphasis areas. This change, addressed through advising, allows students to choose electives that better align with their individual interests and career goals.