

B.S. Electrical Engineering
Sample Curriculum¹ - Class of 2014

<i>Fall</i>		1st YEAR		<i>Spring</i>	
ECE 100	ECE 1st Year Seminar	1	ECE 177	Intro to Prog for Engineers	4
ECE 101	Intro to ELE & CEN Eng	3	MAT 127	Calculus II	4
MAT 126	Calculus I	4	PHY 121	Physics for Engineers I	4
CHY 121	Intro to Chemistry	3	ENG 101	College Composition	3
CHY 123	Intro to Chemistry Lab	1	Elective	HV & SC (1)	3
CMJ 103	Fund of Public Communication	3			
		15			18

		2nd YEAR			
ECE 210	Electrical Networks I	3	ECE 211	Electrical Networks II	3
ECE 275	Sequential Logic Systems	3	ECE 214	Electrical Networks Lab	2
MAT 228	Calculus III	4	ECP 214	Engineering Writing I	1
PHY 122	Physics for Engineers II	4	ECE 271	Micro Arch & Applications	3
Elective ²	Basic Science	4	ECE 316 ³	Random Signal Analysis	3
			MAT 258	Diff Eq. & Linear Algebra	4
		18			16

		3rd YEAR			
ECE 314	Signals & Systems	3	ECE 343	Electronics II	4
ECE 342	Electronics I	4	ECE 401	Seminar & Design Project	1
ECP 342	Engineering Writing II	1	ECE 486	Digital Signal Processing	4
ECE 351	Fields and Waves	3	Elective	ECE Technical Elective (2)	3
Elective	ECE Technical Elective (1)	3	Elective	EE Focus (1)	3
Elective	HV & SC (2)	3			
		17			15

		4th YEAR			
ECE 402	Design Project II	4	ECE 403	Design Project III	2
Elective	Generic Technical Elective (1)	3	ECP 403	Engineering Writing III	1
Elective	EE Focus (2)	3	ECE 414	Feedback Control System	3
Elective	EE Focus (3)	3	Elective	Generic Technical Elective (2)	3
Elective	HV & SC (3)	3	Elective	HV & SC (4)	3
			Elective	HV & SC (5)	3
		16			15

MINIMUM CREDIT HOURS TO GRADUATE: 130

- This is only a sample curriculum. Adjustments, such as interchanging HV & SC and technical electives, and switching ECE 351, ECE 486 and ECE 414 between junior and senior years, can be made to suit individual preferences. Check with your academic advisor for assistance. Be sure all degree requirements listed on the check-off sheet are met.
- BIO 222/223 or ERS 102** can be used to satisfy the Basic Science Elective and the HV&SC Elective under the Population and Environment categories. If either of these courses is taken, the three credit hours that is freed up can be replaced with a technical elective.
- ECE 316 can be replaced with either CHB 350 or MAT 332.

Check List
Graduation Requirements
ELECTRICAL ENGINEERING – Class of 2014

STUDENT _____

ADVISOR _____

1. Total hours (at least 130) _____
 2. Passing grade in all required courses _____

3. Overall GPA 2.0 _____
 4. Department GPA 2.0 _____

Required Courses:

- | | | | |
|---------------|---------------|---------------|---------------|
| PHY 121 _____ | MAT 126 _____ | ECE 100 _____ | ECE 314 _____ |
| PHY 122 _____ | MAT 127 _____ | ECE 101 _____ | ECE 316 _____ |
| | MAT 228 _____ | ECE 177 _____ | ECE 342 _____ |
| CHY 121 _____ | MAT 258 _____ | ECE 210 _____ | ECE 343 _____ |
| CHY 123 _____ | | ECE 211 _____ | ECE 351 _____ |
| | ENG 101 _____ | ECE 214 _____ | ECE 401 _____ |
| | | ECE 271 _____ | ECE 402 _____ |
| ECP 214 _____ | | ECE 275 _____ | ECE 403 _____ |
| ECP 342 _____ | | | ECE 414 _____ |
| ECP 403 _____ | | | ECE 486 _____ |

HV&SC + Ethics General Education Requirements (minimum of 18 hours in the first 5 of the 6 areas)

Each of the 6 areas below must be represented. A course may represent multiple areas.

Course	Hours	Grade	18 Credit Hours Required					Ethics
			West	Soc	Cult	Pop	Art	
CMJ 103	3			X				

West - Western cultural tradition; Soc - Social context and institutions; Cult - Cultural diversity and international perspectives; Pop - Population and the environment; Art - Artistic and creative expression.

Grade

Basic Science Electives (4 hours) _____

ECE and Technical Electives (21 hours minimum)

- | | | | |
|-----------------------------|-------|---------------------------------|-------|
| EE Focus #1: _____ | Grade | Generic Tech Elective #1: _____ | Grade |
| EE Focus #2: _____ | _____ | Generic Tech Elective #2: _____ | _____ |
| EE Focus #3: _____ | _____ | | |
| ECE Tech Elective #1: _____ | _____ | | |
| ECE Tech Elective #2: _____ | _____ | | |

Advisor Reviews

Date	Initials	Comments
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Graduation Requirements - Electrical Engineering

1. To obtain a BS in Electrical Engineering, a student must:
 - a. meet all University academic requirements;
 - b. meet all Electrical Engineering curriculum requirements;
 - c. have a GPA of 2.0 or better in all ECE courses.
2. Any exceptions to the program specifics listed above require approval of the ECE faculty.
3. Repeating any ECE course for which a grade of F, L, or WF has been recorded requires a grade of C- or better in prerequisites for the course.
4. Any required course in the ECE curricula cannot be taken more than twice. If any required course in the program is taken twice without achieving a passing grade then dismissal from the program will be recommended. This includes courses where a grade of AU, L, or WF is received.

Information about Elective Courses

Technical Electives: The curriculum requires **seven** technical elective courses used to broaden a student's knowledge. Of these seven elective courses, at least **three electives** must be Electrical Engineering (EE) focus courses chosen from the list below; two must be 300-level or higher ECE courses excluding ECE 394, and two must be Generic Technical Elective courses described below.

1. Courses that satisfy the Electrical Engineering Focus requirement are:

ECE 323	Electric Power Conversion	ECE 462	Introduction to Basic Semiconductor Devices
ECE 383	Communications Engineering	ECE 464	Microelectronics Science and Engineering
ECE 427	Electric Power Systems	ECE 465	Introduction to Sensors
ECE 444	Analog Integrated Circuit Design	ECE 466	Sensor Technology and Instrumentation
ECE 445	Analysis and Design of Digital Integ. Cir.	ECE 484	Communications Engineering II
ECE 453	Microwave Engineering	ECE 498	Selected Topics in ECE with EE Focus

2. Generic technical electives include 300-level or higher ECE courses including ECE 394, or with approval of the student's advisor, selected from various advanced Math, Physics, Biology, Chemistry, Engineering or Computer Science courses. For a minor in Business Administration or 5-year BS/MBA program, up to two technical electives can be satisfied by taking BUA 325 or BUA 350 with the provision that upon graduation, the student also satisfied all requirements for the Business minor or BS/MBA program. The following 100- and 200-level courses have been approved to satisfy the Generic Technical Elective requirement. Other courses may be permitted but require written approval from the ECE Department Chair.

CHB 200	Fundamentals of Process Engineering	MEE 230	Thermodynamics I
CIE 231	Fundamentals of Environmental Eng.	MEE 252	Statics and Strength of Materials
COS 221	Introduction to Computer Science II	MEE 270	Applied Mechanics: Dynamics
MEE 150	Applied Mechanics: Statics		

Areas of Concentration: Students may choose to concentrate electives in various sub-disciplines of Electrical Engineering. The recommended electives for the various specialties are listed below:

Communications and Wireless

ECE 383	Communications Engineering I
ECE 484	Communications Engineering II
ECE 453	Microwave Engineering

Microelectronics and Circuits

ECE 444	Analog Integrated Circuit Design
ECE 445	Digital Integrated Circuit Design
ECE 462	Intro. to Basic Semiconductor Devices
ECE 464	Microelectronics Science and Engineering
PHY 236	Introduction to Quantum Physics

Power and Alternative Energy

ECE 323	Electric Power Conversion
ECE 427	Electric Power Systems

Solid-State and Sensors

ECE 465	Introduction to Sensors
ECE 466	Sensor Technology and Instrumentation
ECE 453	Microwave Engineering
ECE 462	Introduction to Basic Semiconductor Devices
ECE 464	Microelectronics Science and Engineering
PHY 236	Introduction to Quantum Physics

Basic Science Elective: In addition to CHY 121/123, PHY 121 and PHY 122, the Curriculum requires at least 4-credit hours in physical or biological sciences to broaden a student's knowledge base in science. Courses satisfying the Basic Science Elective include:

AST 215/110	General Astronomy I	BIO 222/223	Biology
AST 216/110	General Astronomy II	ERS 101	Introduction to Geology
CHY 122/124	Molecular Basis of Chemical Change	ERS 102	Environmental Geology of Maine
PHY 236/223	Quantum Physics/Special Relativity		

Human Values and Social Context and Ethics: In addition to CMJ 103, the curriculum requires **five** courses to complete the General Education Requirements in Ethics and Human Values and Social Context (HV&SC). In addition to the Ethics requirement, the five areas under HV&SC are: Western Cultural Tradition, Social Contexts and Institutions, Cultural Diversity and International Perspective, Population and the Environment, and Artistic and Creative Expression. Note that CMJ 103 satisfies the Social Contexts and Institutions requirement. A list of HV&SC courses with the categories that they satisfy are available on the [Office of Student Records](http://studentrecords.umaine.edu/academics/genedreq.htm) web page (<http://studentrecords.umaine.edu/academics/genedreq.htm>). The structure of the ECE curriculum guarantees that all other General Education Requirements are met. You may elect to take ERS 102 or BIO 222/223 to satisfy your Basic Science requirement and the "Population and the Environment" area of the 18 credit hour HV&SC requirement. This option frees up 3 credit hours which can be used to take an additional Technical Elective.

Additional Information

Check the web page of [Frequently Asked Questions \(FAQ\)](http://www.eece.maine.edu/programs/undergrad/ece_faqs) for additional information about the ECE program: http://www.eece.maine.edu/programs/undergrad/ece_faqs. Contact your academic advisor for assistance.

B.S. Electrical Engineering
Sample Curriculum¹ - Class of 2014

<i>Fall</i>		1st YEAR		<i>Spring</i>	
ECE 100	ECE 1st Year Seminar	1	ECE 177	Intro to Prog for Engineers	4
ECE 101	Intro to ELE & CEN Eng	3	MAT 127	Calculus II	4
MAT 126	Calculus I	4	PHY 121	Physics for Engineers I	4
CHY 121	Intro to Chemistry	3	ENG 101	College Composition	3
CHY 123	Intro to Chemistry Lab	1	Elective	HV & SC (1)	3
CMJ 103	Fund of Public Communication	3			
		15			18

		2nd YEAR			
ECE 210	Electrical Networks I	3	ECE 211	Electrical Networks II	3
ECE 275	Sequential Logic Systems	3	ECE 214	Electrical Networks Lab	2
MAT 228	Calculus III	4	ECP 214	Engineering Writing I	1
PHY 122	Physics for Engineers II	4	ECE 271	Micro Arch & Applications	3
Elective ²	Basic Science	4	ECE 316 ³	Random Signal Analysis	3
			MAT 258	Diff Eq. & Linear Algebra	4
		18			16

		3rd YEAR			
ECE 314	Signals & Systems	3	ECE 343	Electronics II	4
ECE 342	Electronics I	4	ECE 401	Seminar & Design Project	1
ECP 342	Engineering Writing II	1	ECE 486	Digital Signal Processing	4
ECE 351	Fields and Waves	3	Elective	ECE Technical Elective (2)	3
Elective	ECE Technical Elective (1)	3	Elective	EE Focus (1)	3
Elective	HV & SC (2)	3			
		17			15

		4th YEAR			
ECE 402	Design Project II	4	ECE 403	Design Project III	2
Elective	Generic Technical Elective (1)	3	ECP 403	Engineering Writing III	1
Elective	EE Focus (2)	3	ECE 414	Feedback Control System	3
Elective	EE Focus (3)	3	Elective	Generic Technical Elective (2)	3
Elective	HV & SC (3)	3	Elective	HV & SC (4)	3
			Elective	HV & SC (5)	3
		16			15

MINIMUM CREDIT HOURS TO GRADUATE: 130

- This is only a sample curriculum. Adjustments, such as interchanging HV & SC and technical electives, and switching ECE 351, ECE 486 and ECE 414 between junior and senior years, can be made to suit individual preferences. Check with your academic advisor for assistance. Be sure all degree requirements listed on the check-off sheet are met.
- BIO 222/223 or ERS 102** can be used to satisfy the Basic Science Elective and the HV&SC Elective under the Population and Environment categories. If either of these courses is taken, the three credit hours that is freed up can be replaced with a technical elective.
- ECE 316 can be replaced with either CHB 350 or MAT 332.

Check List
Graduation Requirements
ELECTRICAL ENGINEERING – Class of 2014

STUDENT _____

ADVISOR _____

1. Total hours (at least 130) _____
 2. Passing grade in all required courses _____

3. Overall GPA 2.0 _____
 4. Department GPA 2.0 _____

Required Courses:

- | | | | |
|---------------|---------------|---------------|---------------|
| PHY 121 _____ | MAT 126 _____ | ECE 100 _____ | ECE 314 _____ |
| PHY 122 _____ | MAT 127 _____ | ECE 101 _____ | ECE 316 _____ |
| | MAT 228 _____ | ECE 177 _____ | ECE 342 _____ |
| CHY 121 _____ | MAT 258 _____ | ECE 210 _____ | ECE 343 _____ |
| CHY 123 _____ | | ECE 211 _____ | ECE 351 _____ |
| | ENG 101 _____ | ECE 214 _____ | ECE 401 _____ |
| | | ECE 271 _____ | ECE 402 _____ |
| ECP 214 _____ | | ECE 275 _____ | ECE 403 _____ |
| ECP 342 _____ | | | ECE 414 _____ |
| ECP 403 _____ | | | ECE 486 _____ |

HV&SC + Ethics General Education Requirements (minimum of 18 hours in the first 5 of the 6 areas)

Each of the 6 areas below must be represented. A course may represent multiple areas.

Course	Hours	Grade	18 Credit Hours Required					Ethics
			West	Soc	Cult	Pop	Art	
CMJ 103	3			X				

West - Western cultural tradition; Soc - Social context and institutions; Cult - Cultural diversity and international perspectives; Pop - Population and the environment; Art - Artistic and creative expression.

Grade

Basic Science Electives (4 hours) _____

ECE and Technical Electives (21 hours minimum)

- | | | | | | |
|-----------------------------|-------|--|---------------------------------|-------|--|
| EE Focus #1: _____ | Grade | | Generic Tech Elective #1: _____ | Grade | |
| EE Focus #2: _____ | | | Generic Tech Elective #2: _____ | | |
| EE Focus #3: _____ | | | | | |
| ECE Tech Elective #1: _____ | | | | | |
| ECE Tech Elective #2: _____ | | | | | |

Advisor Reviews

Date	Initials	Comments
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Graduation Requirements - Electrical Engineering

1. To obtain a BS in Electrical Engineering, a student must:
 - a. meet all University academic requirements;
 - b. meet all Electrical Engineering curriculum requirements;
 - c. have a GPA of 2.0 or better in all ECE courses.
2. Any exceptions to the program specifics listed above require approval of the ECE faculty.
3. Repeating any ECE course for which a grade of F, L, or WF has been recorded requires a grade of C- or better in prerequisites for the course.
4. Any required course in the ECE curricula cannot be taken more than twice. If any required course in the program is taken twice without achieving a passing grade then dismissal from the program will be recommended. This includes courses where a grade of AU, L, or WF is received.

Information about Elective Courses

Technical Electives: The curriculum requires **seven** technical elective courses used to broaden a student's knowledge. Of these seven elective courses, at least **three electives** must be Electrical Engineering (EE) focus courses chosen from the list below; two must be 300-level or higher ECE courses excluding ECE 394, and two must be Generic Technical Elective courses described below.

1. Courses that satisfy the Electrical Engineering Focus requirement are:

ECE 323	Electric Power Conversion	ECE 462	Introduction to Basic Semiconductor Devices
ECE 383	Communications Engineering	ECE 464	Microelectronics Science and Engineering
ECE 427	Electric Power Systems	ECE 465	Introduction to Sensors
ECE 444	Analog Integrated Circuit Design	ECE 466	Sensor Technology and Instrumentation
ECE 445	Analysis and Design of Digital Integ. Cir.	ECE 484	Communications Engineering II
ECE 453	Microwave Engineering	ECE 498	Selected Topics in ECE with EE Focus

2. Generic technical electives include 300-level or higher ECE courses including ECE 394, or with approval of the student's advisor, selected from various advanced Math, Physics, Biology, Chemistry, Engineering or Computer Science courses. For a minor in Business Administration or 5-year BS/MBA program, up to two technical electives can be satisfied by taking BUA 325 or BUA 350 with the provision that upon graduation, the student also satisfied all requirements for the Business minor or BS/MBA program. The following 100- and 200-level courses have been approved to satisfy the Generic Technical Elective requirement. Other courses may be permitted but require written approval from the ECE Department Chair.

CHB 200	Fundamentals of Process Engineering	MEE 230	Thermodynamics I
CIE 231	Fundamentals of Environmental Eng.	MEE 252	Statics and Strength of Materials
COS 221	Introduction to Computer Science II	MEE 270	Applied Mechanics: Dynamics
MEE 150	Applied Mechanics: Statics		

Areas of Concentration: Students may choose to concentrate electives in various sub-disciplines of Electrical Engineering. The recommended electives for the various specialties are listed below:

Communications and Wireless

ECE 383	Communications Engineering I
ECE 484	Communications Engineering II
ECE 453	Microwave Engineering

Microelectronics and Circuits

ECE 444	Analog Integrated Circuit Design
ECE 445	Digital Integrated Circuit Design
ECE 462	Intro. to Basic Semiconductor Devices
ECE 464	Microelectronics Science and Engineering
PHY 236	Introduction to Quantum Physics

Power and Alternative Energy

ECE 323	Electric Power Conversion
ECE 427	Electric Power Systems

Solid-State and Sensors

ECE 465	Introduction to Sensors
ECE 466	Sensor Technology and Instrumentation
ECE 453	Microwave Engineering
ECE 462	Introduction to Basic Semiconductor Devices
ECE 464	Microelectronics Science and Engineering
PHY 236	Introduction to Quantum Physics

Basic Science Elective: In addition to CHY 121/123, PHY 121 and PHY 122, the Curriculum requires at least 4-credit hours in physical or biological sciences to broaden a student's knowledge base in science. Courses satisfying the Basic Science Elective include:

AST 215/110	General Astronomy I	BIO 222/223	Biology
AST 216/110	General Astronomy II	ERS 101	Introduction to Geology
CHY 122/124	Molecular Basis of Chemical Change	ERS 102	Environmental Geology of Maine
PHY 236/223	Quantum Physics/Special Relativity		

Human Values and Social Context and Ethics: In addition to CMJ 103, the curriculum requires **five** courses to complete the General Education Requirements in Ethics and Human Values and Social Context (HV&SC). In addition to the Ethics requirement, the five areas under HV&SC are: Western Cultural Tradition, Social Contexts and Institutions, Cultural Diversity and International Perspective, Population and the Environment, and Artistic and Creative Expression. Note that CMJ 103 satisfies the Social Contexts and Institutions requirement. A list of HV&SC courses with the categories that they satisfy are available on the [Office of Student Records](http://studentrecords.umaine.edu/academics/genedreq.htm) web page (<http://studentrecords.umaine.edu/academics/genedreq.htm>). The structure of the ECE curriculum guarantees that all other General Education Requirements are met. You may elect to take ERS 102 or BIO 222/223 to satisfy your Basic Science requirement and the "Population and the Environment" area of the 18 credit hour HV&SC requirement. This option frees up 3 credit hours which can be used to take an additional Technical Elective.

Additional Information

Check the web page of [Frequently Asked Questions \(FAQ\)](http://www.eece.maine.edu/programs/undergrad/ece_faqs) for additional information about the ECE program: http://www.eece.maine.edu/programs/undergrad/ece_faqs. Contact your academic advisor for assistance.