

**B.S. Electrical Engineering + MBA**  
**5-Year Program**  
**Curriculum<sup>1</sup> — Class of 2013**

**1st YEAR**

ECE 101	Intro to ELE and CEN Engin	4	ECE 177	Intro to Progr for Engineers	4
MAT 126	Calculus I	4	MAT 127	Calculus II	4
CHY 121	Intro to Chemistry	3	PHY 121	Physics for Engineers II	4
CHY 123	Intro to Chemistry Lab	1	CMJ 103	Public Communication	3
ENG 101	College Composition	3	Elective	HV & SC (1)	3
		<b>15</b>			<b>18</b>

**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	3
MAT 228	Calculus III	4	ECP 214	Engineering Writing I	1
PHY 122	Physics II	4	ECE 271	Micro Arch & Applications	3
ECO 120	Microeconomics (HV & SC (2))	3	MAT 258	Diff Eq. & Linear Algebra	4
			ECO 121	Macroeconomics (HV & SC (2))	3
		<b>17</b>			<b>17</b>

BUA 201 <sup>4</sup>	Principles of Financial Accounting	3
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**3rd YEAR**

**Apply to MBA program and take GMAT**

ECE 300	Seminar	1	ECE 343	Electronics II	4
ECE 314	Linear Circuits & Systems	3	ECE 401	Design Project I	1
ECE 316 <sup>3</sup>	Random Signal Analysis	3	ECP 401	Engineering Writing III	1
ECE 342	Electronics I	4	ECE 414	Feedback Control System	3
ECP 342	Engineering Writing II	1	ECE 486	Digital Signal Processing	4
ECE 351	Fields and Waves	3	Elective <sup>2</sup>	Basic Science	4
		<b>15</b>			<b>17</b>

BUA 202 <sup>4</sup>	Principles of Managerial Acct.	3
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**4th YEAR**

ECE 402	Design Project II	4	ECE 403	Design Project III	2
Elective	ECE	3	Elective	Technical (2)	3
Elective	ECE EE Focus (1)	3	Elective	ECE EE Focus (3)	3
Elective	ECE EE Focus (2)	3	Elective	HV & SC (4)	3
BUA 325 or BUA 350	Technical Elective (1)	3	Elective	HV & SC (5)	3
Elective	HV & SC (3)	3	BUA 620 or BUA 626		3
		<b>16</b>			<b>17</b>

	BUA Tutorials	
BUA 604	Residency	3
BUA 694	Internship	3
		<b>6</b>

**Receive B.S. in Electrical Engineering in May**  
**MINIMUM CREDIT HOURS TO GRADUATE: 129**

+ 15 credit hours towards pre-requisites for MBA and 3 credit hours towards MBA

## 5th YEAR

BUA xxx	MBA Courses	15	BUA xxx	MBA Courses	15
May Term	International Trip	3			

### Receive MBA in August

#### Notes:

1. 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.
2. **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.
3. ECE 316 can be replaced with either CHB 350 or MAT 332.
4. BUA 201 and BUA 202 are taken over the summer and are usually offered online.

August 7, 2009

## Information About Elective Courses

**ECE Electives:** The curriculum requires Four ECE Electives to broaden a student's knowledge base in Electrical Engineering or to specialize in an area such as: Communications and Wireless, Microelectronics and Circuits, Power Systems, or Solid-State and Sensors. These four courses must be 300-level or higher ECE Courses (exclusive of ECE 394) and three of the four courses must satisfy the EE Focus Requirement. Courses which satisfy the EE Focus requirement are:

- ECE323 Electric Power Conversion
- ECE383 Communications Engineering
- ECE427 Electric Power Systems
- ECE444 Analog Integrated Circuit Design
- ECE445 Analysis and Design of Digital Integrated Circuits
- ECE453 Microwave Engineering
- ECE462 Introduction to Basic Semiconductor Devices
- ECE464 Microelectronics Science and Engineering
- ECE465 Introduction to Sensors
- ECE466 Sensor Technology and Instrumentation
- ECE484 Communications Engineering II
- ECE498 Selected Topics in ECE with EE Focus

**Technical Electives:** The Curriculum requires two open Technical Elective courses to broaden a student's technical knowledge base or to further specialization in a specific area. These two Technical Electives may be selected from: 300-level or higher ECE Courses, including ECE 394; 300-level or higher courses from Math, Physics, Biology, Chemistry, Engineering, or Computer Science; or selected from the following 200-level courses: COS 221, CHB 200, MEE 150, MEE 230, MEE 252, MEE 270, or CIE 231. For students pursuing a minor in Business Administration or the 5-year BSEE/MBA program, the two Technical Electives can be satisfied by taking BUA 325 and BUA 350 with the provision that upon graduation, the student also satisfies all requirements for the Business minor or is currently enrolled in the MBA program. Other courses may be permitted but require written approval from the ECE Department Chair.

**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](#) web page. 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 part 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.

**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 Mechanics / Special Relativity |             |                                |

## 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

### Power and Alternative Energy

ECE 323 Electric Power Conversion  
ECE 427 Electric Power Systems

### Microelectronics and Circuits

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

### 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 Mechanics

## Program Specific Requirements

1. 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.
2. 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, W, or WF is received.
3. 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.
4. Any exceptions to the program specifics listed above require approval of the ECE faculty.

## Additional Information

Check the web page of [Frequently Asked Questions \(FAQ\)](#) for additional information about the ECE program. Contact your academic advisor for assistance.

August 7, 2009

# Check List

## Graduation Requirements

### ELECTRICAL ENGINEERING – Class of 2013

**Student** \_\_\_\_\_

**Advisor** \_\_\_\_\_

1. Total hours: at least 129 \_\_\_\_\_
2. Passing grade in all required classes \_\_\_\_\_

3. Overall GPA 2.0 \_\_\_\_\_
4. Department GPA 2.0 \_\_\_\_\_

**Required Courses:**

CHY 121 _____	PHY 121 _____	ECE 101 _____	ECE 314 _____
CHY 123 _____	PHY 122 _____	ECE 177 _____	ECE 342 _____
		ECE 210 _____	ECE 343 _____
	MAT 126 _____	ECE 211 _____	ECE 351 _____
ENG 101 _____	MAT 127 _____	ECE 214 _____	ECE 401 _____
ECP 214 _____	MAT 228 _____	ECE 271 _____	ECE 402 _____
ECP 342 _____	MAT 258 _____	ECE 275 _____	ECE 403 _____
ECP 401 _____	ECE 316* _____	ECE 300 _____	ECE 414 _____
			ECE 486 _____

Note\* ECE 316 can be replaced with either CHB 350 or MAT 332.

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

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

Course	Hours	Grade	West	Soc	Cult	Pop	Art	Ethics
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.

**Basic Science Elective (4 hours)\*\*** \_\_\_\_\_

**ECE and Technical Electives (18 hours minimum)**

ECE: _____	Tech Elective #1: _____
ECE EE Focus #1: _____	Tech Elective #2: _____
ECE EE Focus #2: _____	Tech Elective #3**: _____
ECE EE Focus #3: _____	

\*\* Students may elect to take ERS102 or BIO 222/223 to concurrently satisfy the Basic Science requirement and the Population and environment segment of the HV & SC requirement. This option frees up 3 credit hours which may be satisfied by taking an additional Technical Elective.

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