

B.S. Computer Engineering + MBA 5-Year Program

Computer Engineering: 4 Years, 128 credit hours

MBA: 5th Year, 42 credit hours

^a Curriculum — Class of 2013

1st Year

FALL

MAT 126	Calculus I	4
PHY 121	Physics for Engineers I	4
ECE 101	Intro to ELE & CEN Eng	4
CHY 121	Intro to Chemistry	3
CHY 123	Intro to Chemistry Lab	1
		16

Spring

MAT 127	Calculus II	4
PHY 122	Physics for Engineers II	4
ECE 177	Intro to Prog for Engineers	4
ENG 101	College Composition	3
CMJ 103	Fund of Public Communication	3
		18

2nd Year

Fall

MAT 228	Calculus III	4
ECE 210	Electrical Networks I	3
ECE 275	Sequential Logic Systems	3
COS 221	Intro to Computer Science II	3
^{b,c} ECO 120	.Microeconomics HV & SC (1)	3
		16

Spring

MAT 258	Diff Eq & Linear Algebra	4
ECE 211	Electrical Networks II	3
ECE 214	Elec Networks Lab	3
ECP 214	Engineering Writing I	1
ECE 271	Micro Arch & Applications	3
^{b,c} ECO 121	Macroeconomics HV&SC (2)	3
		17

Summer

^b BUA 201	Principles of Financial Account	3
		3

Apply to MBA, take GMAT

3rd Year

Fall

ECE 300	Seminar	1
ECE 314	Signals and Systems	3
ECE 342	Electronics I	4
ECP 342	Engineering Writing II	1
^e ECE 471/ Elective	Microproc Appl Engineering <i>or</i> Computer Elective (1)	3
ECE 316 ^d / Elective ^f	Random Signal Analysis <i>or</i> Computer Elective (2)	3
		15

Spring

ECE 401	Design Project I	1
ECP 401	Engineering Writing III	1
ECE 343	Electronics II	4
Elective	Basic Science	4
^e ECE 477/ Elective	Hardware Applications in C <i>or</i> Computer Elective (1)	3
CHB 350 ^d / Elective ^f	Statistical Proc & Analysis <i>or</i> Computer Elective (2)	3
		16

Summer

^b BUA 202	Principles of Managerial Account	3
		3

4th Year

Fall		
ECE 402	Design Project II	4
ECE 473	Computer Architecture & Org	3
COS 431	Operating Systems	3
BUA 350 ^d	Finance (Technical Elective 3)	3
Elective	HV & SC (3)	3
		16

Spring		
ECE 403	Design Project III	2
Elective ^f	Computer Elective (3)	3
Elective ^f	Technical Elective (5)	3
MAT 481	Discrete Mathematics	3
Elective	HV&SC (4)	3
BUA 620 or 626	Law, Business and Society or Behavioral Analysis of Administrative Decisions	3
		17

Summer		
	BUA Tutorials	
BUA 695	Internship	3
BUA 604	Residency	3
		6

Receive BSCEN in May (128 credit hrs for CEN + 15 hrs towards MBA)

5th Year

Fall	
15 hours of MBA courses	
	15

Spring	
15 Hours of MBA courses	
	15

Summer	
May Term international trip	
	3

Receive MBA in August (42 credits)

- a This is a sample curriculum and courses can be taken any semester depending on satisfactory completion of pre-requisites and course offerings. **BIO 222/223 or ERS 102** can count in both areas of Basic Science and HV&SC under Population and Environment category. The total number of HV&SC must at least be 18 credit hours. The total 128 credit hours for graduation assumes election of one of these courses. If an alternative Basic Science course is taken, the minimum credit hours for graduation would be **131**. Check with your academic advisor for assistance. Additional information can be found on the check-off sheet.
- b The ECO120 & 121 and BUA201 & 202 are pre-requisites of MBA courses.
- c The ECO120&121 are used to satisfy “Social” category of the HV&SC requirement.
- d CHB 350 can be replaced by ECE 316 or MAT 332. However, students will be allowed to take either MAT 332 or CHB 350 with ECE 316 as tech elective.
- e Either ECE 471 (fall) or ECE 477 (spring) is required.
- f Of the five technical electives, three must be **computer focus** excluding ECE 394. In addition to 300 or 400 level computer science technical electives, the following ECE courses satisfy the “Computer Focus” requirement: ECE 331, ECE 417, ECE 435, ECE 471, ECE 477, ECE 478, ECE 486, and ECE 487.

Information about Elective Courses

Technical Electives: The curriculum requires **five** technical elective courses used to broaden a student's knowledge base or to specialize in areas like Supercomputing, Neural Network, Microelectronics, Sensors, Power and Industrial Control, Computer Hardware, or Communications and Signal Processing. Of these five elective courses, at least **three** must be computer focus.

1. Computer focus technical electives include 300 or 400 level computer science courses and the following ECE courses. ECE 394 **cannot** meet the computer focus requirement.

ECE 331	Intro. to Unix Systems Administration	ECE 417	Introduction to Robotics
ECE 435	Network Engineering	ECE 471	Microprocessor Applications Engineering
ECE 477	Hardware Applications Using C	ECE 478	Industrial Computer Control
ECE 486	Digital Signal Processing	ECE 498	Select topics (CEN focus)

2. Other 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, Computer Science, or Business courses. 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 200-level courses can be used as non-computer focus technical electives. 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 Engineering	MEE 252	Statics and Strength of Materials
MEE 150	Applied Mechanics: Statics	MEE 270	Applied Mechanics: Dynamics
GE 298	Intro to Nanoscale Science and Technology		

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

Embedded Control

ECE 478	Industrial Computer Control
ECE 477	Hardware Applications Using C
ECE 471	Microprocessor App. Engineering
ECE 414	Feedback Control Systems

High-performance Computing

ECE 331	Intro. to Unix Systems Admin.
ECE 574	Cluster Computing

Robotics

ECE 417	Introduction to Robotics
ECE 477	Hardware Applications Using C
ECE 471	Microprocessor App. Engineering
ECE 535	Computer Vision

Networking

ECE 435	Network Engineering
ECE 585	Wireless Communication

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 is 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 part of the 18 credit hour HV&SC requirement. If neither ERS 102 nor BIO 222/223 is taken, three additional credit hours of HV&SC are required for graduation (i.e., a minimum of 131 credit hours for graduation).

Basic Science Elective: In addition to CHY 121/123, PHY 121 and PHY 121, the Curriculum requires at least one additional physical or biological science course, with a lab, 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	Modern Physics and Special Relativity		

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) Dismissal from the program will be recommended if any required course in the program is taken twice without achieving a passing grade. This includes courses where a grade of AU, L, W, or WF is received.
- 3) To obtain a BS in Computer Engineering, a student must:
 - a. meet all University academic requirements;
 - b. meet all Computer Engineering curriculum requirements;
 - c. have a GPA of 2.0 or better in all ECE courses; and
 - d. have a GPA of 2.0 or better in all COS 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 \(FAQ\)](http://www.eece.maine.edu/programs/undergrad/ece_faq) for additional information about the ECE program:
http://www.eece.maine.edu/programs/undergrad/ece_faq