

# Major: Electrical and Computer Engineering (ECE)

Accredited by ABET under the title Electrical Engineering (see inside front cover.)

Offered by: **School of Electrical and Computer Engineering**

223 Phillips Hall, 255-4309, [www.ece.cornell.edu](http://www.ece.cornell.edu)

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## Program objectives

Our objectives are designed to serve the needs of our constituents: our graduates, the employers of our graduates, the graduate study programs that our graduates enter, our faculty, and our society.

Objective 1. To provide our students with a broad education in the fundamentals of Electrical and Computer Engineering as well as advanced knowledge in one or more technical areas that lead to and sustain a productive engineering career.

Objective 2. To enable our students to achieve engineering goals through problem solving, design, experimentation, teamwork, and effective communication.

Objective 3: To endow our students with an appreciation of the impact of electrical and computer engineering on society and to encourage creative responses to the needs of society by our graduates.

Objective 4. To create leading scholars and professionals who are committed to excellence, integrity, life-long learning, and professional citizenship.

## Areas of Concentration

Computer architecture and organization, digital systems, and computer vision; power systems, control, optimization, numerical and state-space methods; communications, computer networks, information theory and coding, signal processing; electronic circuits, VLSI, solid state physics and devices, MEMs, nanotechnology, lasers and optoelectronics; electromagnetics, radiophysics, space sciences, and plasmas.

## Engineering Distributions

ENGRD 230	Introduction to Digital Logic Design
ENGRD 211	Computers and Programming (recommended for those interested in the Computer Engineering specialty area)

## Required Major Courses

ECE/ENGRD 210	Introduction to Circuits for Electrical and Computer Engineers
ECE 220	Signals and Information (starting with class of May '06)
ECE 303	Electromagnetic Fields and Waves
ECE 314	Computer Organization
ECE 315	Introduction to Microelectronics
ECE 320	Systems and Networks (starting with class of May '07)

## Major-Approved Electives

Advanced ECE Electives: 6 lecture courses

Major-complementary electives (outside the Major)\*\*: 9 minimum credits

The minimum total number of Major credits is currently 52. Details are available on the ECE graduation checklist available in 223 Phillips Hall

### **Culminating Design Experience (CDE)**

We are committed to providing our students with the most useful and relevant educational experience possible. The Culminating Design Experience courses, of which two are required for graduation, include a significant and open-ended engineering design assignment with realistic constraints. Consideration of most of the following issues will be an integral part of a CDE: an ability to design a component, system, or process to meet desired needs that includes most of the following considerations: economic, environmental, sustainability, manufacturability, ethical, health and safety, social, and political. An updated list of courses that meet the CDE requirement will be posted each semester on the bulletin board outside of 223 Phillips Hall. The CDE courses for the academic year 2004\_2005 are ECE 402, 415, 426, 432, 437, 445, 446, 453, 457, 467, 474, 475, 476, and 488.

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Independent projects such as ECE 391, 392, 491, or 492 count only in the outside ECE Technical Electives category.

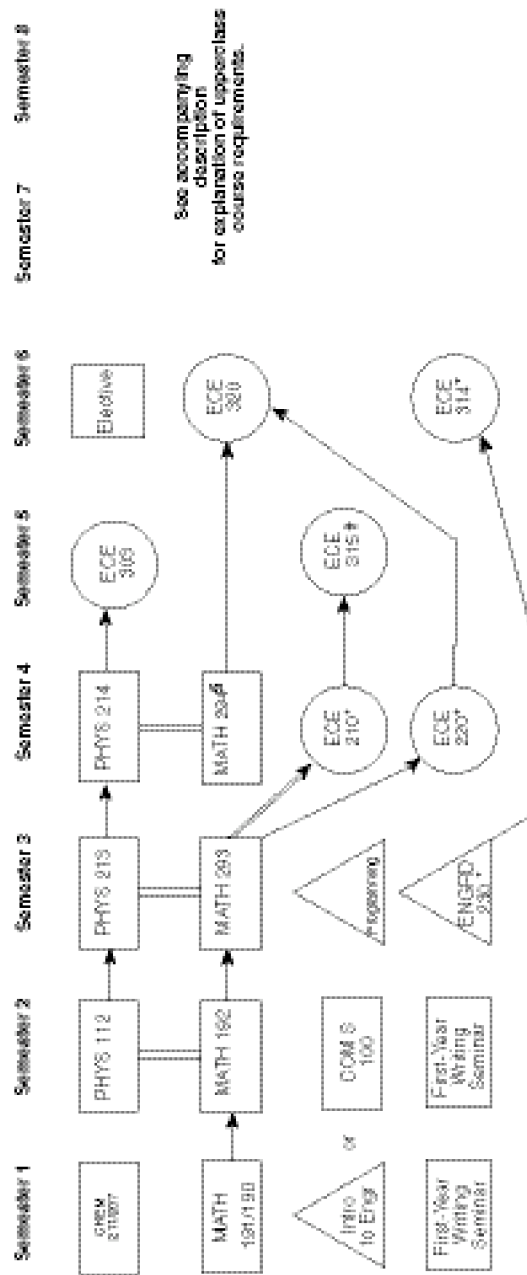
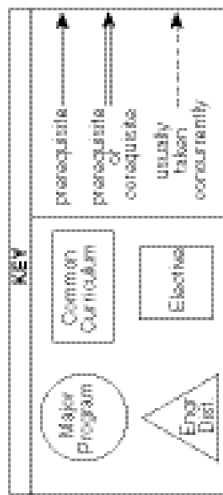
\*\*Must include one course numbered + 300, and all courses must have a college-level prerequisite.

Students must also meet a college requirement for technical communications.

# ELECTRICAL AND COMPUTER ENGINEERING MAJOR (ECE)

Note: Courses without prerequisites may be rearranged

- \* Can be taken semester 5
- † Can be taken semester 6
- ‡ Can be taken concurrently with MATH 293, 192, or 290



## Electrical and Computer Engineering Major Checklist

	<i>Min.</i> <i>Credit Hours</i>	<i>✓ When Done</i>
MATH 191/190	4	n
MATH 192	4	n
MATH 293 (must earn grade of C+ or better)	4	n
MATH 294	4	n
CHEM 211 (or 207 or 215)	4	n
PHYS 112 or 116	4	n
PHYS 213 or 217 (must earn grade of C+ or better)	4	n
PHYS 214 or 218	4	n
COM S 100	4	n
Intro. to Engr. (ENGR 1XX)	3	n
Engr. Dist. 1: ENGRD 230 (required)	4	n
Engr. Dist. 2: *ENGRD 211 (rec. for Comp. Engr.)	3	n
First-Year Writing Seminar 1†	3	n
First-Year Writing Seminar 2	3	n
Liberal Studies Distribution—6 courses (18-credit minimum)‡		
Lib. Studies 1		n
Lib. Studies 2		n
Lib. Studies 3		n
Lib. Studies 4		n
Lib. Studies 5		n
Lib. Studies 6		n
College/Advisor-Approved Elective (2 courses; 6-credit minimum)		n
College/Advisor-Approved Elective		n
Physical Education (2 semesters) and swim test		
***Core Major Requirements (52 credits)		
Additional Engineering Requirements		
†Technical Writing Course		n
§Applications of Probability and Statistics		n
Total Required Credits	128 min.	_____

†In addition to the first-year writing seminars, a technical writing course must be taken as an engineering distribution, liberal studies, or approved elective.

‡Approved courses must be chosen from at least three of the following six groups: (1) Cultural Analysis (CA), (2) Historical Analysis (HA), (3) Literature and the Arts (LA), (4) Knowledge, Cognition, and Moral Reasoning (KCM), (5) Social and Behavioral Analysis (SBA), (6) Foreign Languages (not literature courses). At least two courses must be from the first three groups (CA, HA, LA). At least two of the six courses must be at 200-level or higher.

§Three credits must be from ECE 310, T&AM 310 or ENGRD 270.

\*\*\*Note: This engineering checklist is formatted to conform to the general specifications of the College of Engineering and accurately reflects the freshman- and sophomore-year requirements. We strongly recommend that you visit 223 Phillips Hall or the Electrical and Computer Engineering web page ([www.ece.cornell.edu](http://www.ece.cornell.edu)) for an official Electrical and Computer Engineering Major checklist appropriate for the junior and senior years. The form of the checklist on the web is the only one used for documenting degree requirements. The ECE web checklists are updated to reflect corrections and changes.