

**Sample Electrical and Computer Engineering (ECE) Program
with an Economics (ECON) Dual Major**

(Program with one AP Math Credit and two AP SS-H Credits)

FIRST YEAR	
Fall Semester	Spring Semester
1. WRITING 20	1. ECE 27L, Fundamentals of ECE
2. CHEM 31L, Core Concepts in Chemistry	2. PHYSICS 61L, Mechanics
3. MATH 32, Calculus II	3. MATH 103, Intermediate Calculus
4. EGR 53L, Computational Methods in Engineering	4. ECON 51D, Economic Principles
SOPHOMORE YEAR	
Fall Semester	Spring Semester
1. ECON 55D, Intermediate Economics I	1. ECE 51L, Microelectronic Devices & Circuits
2. ECE 52L, Digital Systems	2. ECE 54L, Signals & Systems
3. PHYSICS 62L, Electricity, Magnetism & Optics	3. BIOLOGY 101L, 102L, 144, or 147, Gateways to Biology
4. MATH 107, Linear Algebra & Differential Equations	4. MATH 108, Ordinary & Partial Differential Equations
	5. ECON 105D, Intermediate Economics II
JUNIOR YEAR	
Fall Semester	Spring Semester
1. ECE 53L, Electromagnetic Fields	1. ECE Elective
2. ECE Concentration Elective (1)	2. ECE Concentration Elective (2)
3. COMPSCI 100E, Program Design & Analysis II	3. STA 113, Probability & Statistics or MATH 135, Probability or ECE 255, Probability for ECEs (see NOTE)
4. ECON Elective (see NOTES)	4. ECON 139D, Intro to Econometrics
5. ECON 110D, Intermediate Economics III	
SENIOR YEAR	
Fall Semester	Spring Semester
1. ECE Concentration Elective (3)	1. ECE Concentration Elective (4)
2. ECE Elective or Approved ECE Design Elective	2. Approved ECE Design Elective or ECE Elective
3. ECON Elective (see NOTES)	3. ECON Elective (see NOTES)
4. ECON Elective (see NOTES)	4. ECON Elective (see NOTES)
5. SS-H	

NOTES:

- **Departmental Requirements for an Economics Major (BS level):** Ten courses in Economics, which must include the core courses ECON 51D, 55D, 105D, 110D and 139D. The remaining courses must be at the 100-level or above,

excluding ECON 151, 182 and 888. These requirements are reflected in the above sample program. *It is important that students wishing to pursue a second major in Economics discuss their specific program with the Director of Undergraduate Studies (DUS) in Economics and with their ECE faculty adviser.*

- **Free Electives:** This sample program does not include any Free Electives (any Duke course counting toward the BSE degree beyond those courses required for the dual major). Free electives and increased flexibility for Study Abroad, for example, could result from additional AP credit in mathematics (e.g., MATH 32, Calculus II), from AP credit for the SS-H course shown (see the SS-H Note below), from additional program overload (5 or more courses in a semester), or from summer courses. Overload is not recommended for the First Year.
- **SS-H:** Social Sciences & Humanities electives: Because at least two of the five ECON courses are in the Social Sciences (SS) area of knowledge, two of the three remaining required SS-H courses must be distributed among at least two of the three knowledge areas: Arts, Literature, and Performance (ALP); Civilizations (CZ); and Foreign Languages (FL). If appropriate for a student's goals, one or two of those three courses could be ECON courses chosen from the set belong to both SS and CZ areas -- for example, ECON 132, 136, 138, 140 & 150 -- and counted as CZ courses. By a combination of ECON courses in the CZ area and two suitable AP SS-H credits only one explicit SS-H course must be taken. This appears in the sample program as SS-H. If there are AP credits in the ALP area, even this SS-H course might not be required, in which case a Free Elective could be elected or the course load in one of the 5-course semesters reduced. *It is strongly recommended that students discuss their selection of upper-level ECON courses with the DUS in Economics and the SS-H requirements with their ECE Faculty Adviser or the ECE DUS.*
- **WRITING 20:** University Writing Program, required in first year.
- **CHEM 31L:** AP credit CHEM 19 is also acceptable.
- **PHYSICS 61L & 62L:** Matriculating students who have AP credit for PHYSICS 61L (but not 62L) take PHYSICS 62L; those who have AP credit for PHYSICS 61L and 62L take PHYSICS 63L; and international students who have IPCs for GCE A-level physics take PHYSICS 63L *or* 143.
- **BIOLOGY 101L, 102L, 144 or 147:** AP credit BIOLOGY 19 is also acceptable.
- **STA 113** is recommended but students may substitute MATH 135 or ECE 255.
- **ECE Concentration Electives:** Four courses selected from the set approved for the ECE program. Courses must be selected from at least two areas, and at least two courses must be from the same area.
- **ECE Elective:** Any ECE course at the 100 level or above except ECE 148L, which latter course may be taken as as a general Elective.
- **ECON Elective:** Any ECON course at the 100 level or above, excluding ECON 151, 182 and 888.
- **Approved Design Elective:** Approved Electrical Engineering Design Elective, required in Junior or Senior year. Currently ECE 123, 135, 154, 164, 251 and 261 are approved. The same course may not be used as a Concentration Elective and count as a required Design Elective or ECE Elective
- **Independent Study:** Accepted for up to two of the Elective ECE Courses and for any Free Electives, but not for any other required course in the ECE Program.