## Plan of Study for the Electrical Engineering Track of AB Engineering Science Concentration

Effective for Students Declaring the Concentration after July 1, 2014

<table>
<thead>
<tr>
<th>DATE: _______________</th>
<th>NAME: ____________________</th>
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<tbody>
<tr>
<td>CLASS: _______________</td>
<td>EMAIL: _____________________</td>
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This Plan of Study Form is for a (Circle One): DECLARATION  

<table>
<thead>
<tr>
<th>REQUIRED COURSES</th>
<th>Semester (Fall/Spring Year)</th>
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### Mathematics Required
4 half courses
- Math 1a – Intro to Calculus 1
- Math 1b – Intro to Calculus 2
- AM 21a – Mathematical Methods in the Sciences 1
  (or Math 21a or 23a)
- AM 21b – Mathematical Methods in the Sciences 2
  (or Math 21b or 23b)

### Physics
2 half courses
- AP 50a – Physics as a Foundation for Science & Engineering 1
  (or PS 12a, Physics 15a or 16)
- AP 50b - Physics as a Foundation for Science & Engineering 2
  (or PS 12b or Physics 15b)

### Computer Science
CIRCLE ONE
- CS 50 – Intro to Computer Science 1
- CS 51 – Intro to Computer Science 2
- CS 61 – System Programming & Machine Organization

### Sophomore Forum

### Electrical Engineering Core
- ES 150 – Introduction to Probability with Engineering Applications
- ES 151 – Applied Electromagnetism
- ES 154 – Electronic Devices and Circuits
- ES 156 – Signals and Systems
<table>
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<tr>
<th>Hardware</th>
<th>ES 52 - The Joy of Electronics – Part 1</th>
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<tr>
<td></td>
<td>CS 141 – Computing Hardware</td>
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<td>ES 153 – Laboratory Electronics</td>
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<td>ES 173 – Intro to Electronic &amp; Photonic Devices</td>
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<td>ES 174 – Photonic &amp; Electronic Device Laboratory</td>
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<td>Electrical</td>
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<td>Engineering</td>
<td>Electives See list on page 3</td>
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Student Signature

________________________________________                     Date: ______________

Assistant Director of Undergraduate Studies

________________________________________                     Date: ______________

Adviser indicate if a petition is needed: Yes ____ No ____

Director of Undergraduate Studies

________________________________________                     Date: ______________
Electrical Engineering Electives

Students choosing to Concentrate in Electrical and Computer Engineering in the Engineering Sciences A.B. Program have a broad set of Engineering Electives which they may take to satisfy their degree requirements.

The following courses may serve as Engineering Electives, only if taken during the Freshman or Sophomore years. Only one of these courses may be used as an Engineering Elective:

- ES 1 – Intro to Engineering Sciences
- ES 6 – Environmental Science & Technology
- ES 50 – Introduction to Electrical Engineering

The following courses are intended to serve as a sampling of allowed Engineering Electives. Other courses may be allowed (including 200-level courses): students should confer with their Concentration Advisors to determine the suitability of a course as an Engineering Elective.

- AM 104 – Series Expansions & Complex Analysis
- AM 105 – Ordinary & Partial Differential Equations
- AM 147 – Nonlinear Dynamical Systems
- AP 195 – Intro to Solid State Physics
- Chemistry 160 – Quantum Chemistry
- CS 51 – Intro to Computer Science 2
- CS 141 – Computing Hardware
- CS 143 – Computer Networks
- CS 144r – Networks Design Projects
- CS 148 – Design of VLSI Circuits & Systems
- CS 161 – Operating Systems
- CS 175 – Computer Graphics
- CS 283 – Computer Vision
- ES 51 – Computer Aided Machine Design
- ES 52 – The Joy of Electronics – Part 1
- ES 53 – Quantitative Physiology as a Basis for Bioengineering
- ES 91r – Supervised Reading & Research (one semester only)
- ES 120 – Intro to the Mechanics of Solids
- ES 121 – Intro to Optimization: Models & Methods
- ES 123 - Introduction to Fluid Mechanics & Transport Processes
- ES 145 (BME 110) - Physiological Systems Analysis
- ES 151 - Applied Electromagnetism
- ES 159 – Intro to Robotics
- ES 173 – Intro to Electronic & Photonic Devices
- ES 174 – Photonic & Electronic Device Laboratory
- ES 181 – Engineering Thermodynamics
- ES 190 – Intro to Materials Science & Engineering
- Physics 143a – Quantum Mechanics 1
- Physics 153 - Electrodynamics