Plan of Study for the Electrical and Computer Engineering Track of AB Engineering Sciences Concentration
Effective for Students Declaring the Concentration after July 1, 2019

DATE: ___________________  NAME: __________________________
CLASS: _________________  EMAIL: __________________________

This Plan of Study Form is for a (Circle One): DECLARATION  REVISION

<table>
<thead>
<tr>
<th>REQUIRED COURSES</th>
<th>Semester (Fall/Spring Year)</th>
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</thead>
<tbody>
<tr>
<td><strong>Mathematics Required</strong> 4 courses</td>
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<tr>
<td>Math 1a – Intro to Calculus 1 (or Math Ma &amp; Mb)</td>
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<tr>
<td>Math 1b – Calculus, Series, and Differential Equations</td>
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<tr>
<td>Math 21a – Multivariable Calculus</td>
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<tr>
<td>(or AM 21a or 23a)</td>
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<tr>
<td>Math 21b – Linear Algebra &amp; Differential Equations</td>
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<tr>
<td>(or AM 21b or 23b)</td>
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<tr>
<td><strong>Physics</strong> 2 courses</td>
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<td>PS 12a – Mech from an Analytic, Num &amp; Exp Perspective</td>
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<tr>
<td>(or Physics 15a, 16, or AP 50a)</td>
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<tr>
<td>PS 12b – E&amp;M from an Analytic, Num &amp; Exp Perspective</td>
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<tr>
<td>(or Physics 15b, or AP 50b)</td>
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<tr>
<td><strong>Computer Science CIRCLE ONE</strong></td>
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<tr>
<td>CS 50 – Intro to Computer Science 1</td>
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<tr>
<td>CS 51 – Intro to Computer Science 2</td>
<td></td>
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<tr>
<td>CS 61 – Systems Programming &amp; Machine Organization</td>
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<tr>
<td><strong>Sophomore Forum</strong></td>
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</tbody>
</table>

**Electrical Engineering Core**
ES 150 – Probability with Engineering Applications
ES 152 – Circuits, Devices, and Transduction
CS 141 – Computing Hardware
ES 155 – Systems and Control
ES 156 – Signals and Communications
**Engineering Electives** See list on page 3

1. 
2. 
3. 
4. 

*For courses co-listed in another department, students must enroll in the Engineering Sciences offering.

No more than two of Engineering Sciences 6, 50, 51, and 53 can count toward concentration credit.

Student Signature

________________________________________                     Date: ______________

Associate Director of Undergraduate Studies

________________________________________                     Date: ______________

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

Director of Undergraduate Studies

________________________________________                     Date: ______________
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:

- ESE 6 – Introduction to Environmental Science & Engineering
- ES 50 – Introduction to Electrical Engineering
- ES 53 – Quantitative Physiology as a Basis for Bioengineering

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 108 – Nonlinear Dynamical Systems
- AP 195 – Intro to Solid State Physics
- Chemistry 160 – Quantum Chemistry
- CS 51 - Intro to Computer Science 2
- 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 54 – Electronics for Engineers
- ES 91hfr – Humanitarian Design Projects (must be taken twice)
- ES 120 – Intro to the Mechanics of Solids
- ES 121 – Intro to Optimization: Models & Methods
- ES 123 - Introduction to Fluid Mechanics & Transport Processes
- BE 110 - Physiological Systems Analysis
- ES 151 - Applied Electromagnetism
- ES 159 – Intro to Robotics
- ESE 160 - Space Science and Engineering
- ESE 166 – State of the Art Instrumentation in Environmental Sciences
- ES 173 – Intro to Electronic & Photonic Devices
- ES 175 – Photovoltaic Devices
- ES 177 – Microfabrication Laboratory
- ES 181 – Engineering Thermodynamics
- ES 190 – Intro to Materials Science & Engineering
- Physics 143a – Quantum Mechanics 1
- Physics 153 - Electrodynamics