# Plan of Study for the Mechanical and Materials Science and Engineering Track of AB Engineering Sciences Concentration

Effective for Students Declaring the Concentration after July 1, 2017

DATE: _____ NAME: _____

CLASS: _____ EMAIL: _____

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

| **REQUIRED COURSES**<br>(Circle course and % for course you are taking or plan to take in each category.) | **Semester**<br>(Fall/Spring Year) |
|---|---|
| **Mathematics Required** 4 courses<br>Math 1a – Intro to Calculus 1<br>Math 1b – Calculus, Series, and Differential Equations<br>AM 21a – Mathematical Methods in the Sciences 1<br>(or Math 21a or 23a)<br>AM 21b – Mathematical Methods in the Sciences 2<br>(or Math 21b or 23b) | <br>_____<br>_____<br>_____<br><br>_____ |
| **Physics** 2 courses<br>AP 50a – Physics as a Foundation for Science & Engineering 1<br>(or PS 12a, Physics 15a or 16)<br>AP 50b - Physics as a Foundation for Science & Engineering 2<br>(or PS 12b or Physics 15b) | <br><br>_____<br><br>_____ |
| **Computer Science** CIRCLE ONE<br>CS 50 – Intro to Computer Science 1<br>CS 51 – Intro to Computer Science 2<br>CS 61 – Systems Programming & Machine Organization | <br>_____ |
| **Sophomore Forum** | <br><br>_____ |
| **Applied Mathematics** See list on page 3<br>1. | <br>_____ |
| **Mechanical Engineering Core**<br>ES 120 – Intro to the Mechanics of Solids<br>ES 123 – Intro to Fluid Mechanics & Transport Processes<br>ES 125 – Mechanical Systems<br>ES 181 – Engineering Thermodynamics<br>ES 190 – Intro to Materials Science & Engineering | <br>_____<br>_____<br>_____<br>_____<br>_____ |

| **REQUIRED COURSES**<br>(Circle course and % for course you are taking or plan to take in each category.) | **Semester**<br>(Fall/Spring Year) |
|---|---|
| **Electronics*** See list on page 3<br>1. | _____ |
| **Mechanical Engineering Electives*** See list on page 3<br>1.<br>2. | _____<br>_____ |

* *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: _____

**Applied Mathematics**

- AM 104 – Series Expansions & Complex Analysis
- AM 105 – Ordinary & Partial Differential Equations
- AM 108 – Nonlinear Dynamical Systems
- AM 111 – Intro to Scientific Computing
- AM 120 – Applied Linear Algebra and Big Data

**Electronics**

- ES 50 – Introduction to Electrical Engineering
- ES 52 - The Joy of Electronics – Part 1
- ES 151 – Applied Electromagnetism
- ES 153 – Laboratory Electronics
- ES 154 - Electronic Devices and Circuits

**Mechanical Engineering Electives**

*Only if taken during Freshman or Sophomore years:*

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

- AP 195 – Intro to Solid State Physics
- BE 110 - Physiological Systems Analysis
- Chemistry 160 – Quantum Chemistry
- ES 109 – Earth Resources and the Environment
- ES 51 – Computer Aided Machine Design
- ES 91r – Supervised Reading and Research (one semester only)
- ES 96 – Engineering Problem Solving & Design Project
- ES 128 - Computational Solid and Structural Mechanics
- ES 131 – Introduction to Physical Oceanography and Climate
- ES 132 - Introduction to Meteorology and Climate
- ES 151 – Applied Electromagnetism
- ES 156 - Signals and Systems
- ES 159 – Intro to Robotics
- ES 162 - Hydrology and Environmental Geomechanics
- ES 173 – Intro to Electronic & Photonic Devices
- ES 177 – Photonic & Electronic Device Laboratory
- Physics 143a – Quantum Mechanics 1