# M.S. / Ph.D. Degree Planner: Machine Learning & Data Science (EC93) 2020-2021

## Core Coursework (16 Units):
- Minimum of 12 units (Plan I) or 14 units (Plan II) must be 201+ ECE courses that must count towards your degree.
- All courses counted towards the degree must be taken for a letter grade.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>ECE 143</td>
<td>Programming for Data Analysis</td>
</tr>
<tr>
<td>ECE 269</td>
<td>Linear Algebra &amp; Application</td>
</tr>
<tr>
<td>ECE 271A</td>
<td>Statistical Learning I</td>
</tr>
<tr>
<td>ECE 225A</td>
<td>Probability and Statistics for Data Science</td>
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</tbody>
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## 16 additional units (at least 1 course in each area) from the following:

### Analytics
- ECE 271B Statistical Learning II
- ECE 273 Convex Optimization and Applications
- ECE 275A-B Parameter Estimation I/II

### Computation
- ECE 226 Optimization and Acceleration of Deep Learning on Various Hardware Platforms
- ECE 229 Computational Data Analysis and Product Development
- ECE 289 Scalable Learning
- ECE 277 GPU Programming

### Applications
- ECE 208 Computational Evolutionary Biology
- ECE 285 Machine Learning for Image Processing
- ECE 209 Statistical Learning for Biosignal Processing
- ECE 227 Big Network Data
- ECE 228 Machine Learning for Physical Applications
- ECE 268 Security of Hardware Embedded Systems
- ECE 271C Deep Learning & Applications
- ECE 276A-B-C Sensing & Estimation in Robotics, Planning & Learning in Robotics, Robot Reinforcement Learning
- ECE 286 SoA Topics in Computational Statistics & M.L.

## Technical Electives (16 Units)
- Any 4 unit, 200+ course from ECE, CSE, MAE, BENG, CENG, NANO, SE, MATS, MATH, PHYS or COGS taken for a letter grade may be counted. In particular, the following courses are recommended: MATH 245 A-B-C (Convex Analysis and Optimizations), MATH 282 A-B (Applied Statistics), MATH 289C (Exploratory Data Analysis and Inferences), COGS 260 (Image Recognition), and COGS 289 (Machine Learning and Signal Processing for EEG-based Brain Computer Interfaces).
- Up to 12 units of undergraduate ECE coursework (ECE 111+ only*) OR up to two 4-unit courses of undergraduate ECE coursework (ECE 100+ only**) may be counted.
- MS students (Plan II) are allowed no more than 4 units of ECE 299 (research units) as technical electives. PhD and MS students (Plan I) are allowed no more than 8 units of ECE 299 as technical electives.
  * Not including ECE 195, 197, 198, 199 or 298
  ** Not including CSE 123A, 140, 140L, or 143

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**Curriculum Advisor:** Michael Yip  
**Curriculum/Faculty Advisor:** Advises M.S. students regarding course selection; Considers any exception requests requiring faculty approval (such as course substitutions); Sign forms; Technical engineering related questions & job advice- PLEASE CONTACT YOUR STAFF ADVISOR FOR ALL OTHER ISSUES.