Instructions for Graduate Counselors:

Entering graduate students must complete the Technical Qualifying Evaluation (TQE). Their TQE plan must be submitted by Feb. 1st of the spring term following entry into the program. Students are encouraged to complete the TQE by the third term as a graduate student (summer session is not included).

To satisfy the TQE requirement, four subjects are required from an approved TQE grid composed of 9 Groups. Two subjects must be selected from a single Group. The remaining two subjects must be selected from two other Groups. A minimum of three grades of A, and one grade of B must be obtained to pass the TQE outright.

The approved TQE grid is found below with the subject titles and their term offering listed on the following page.

<table>
<thead>
<tr>
<th>Group 1: Systems in CS</th>
<th>Group 2: Theoretical CS</th>
<th>Group 3: Artificial Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 7: Bioelectrical Engineering</td>
<td>Group 8: Electromagnetics</td>
<td>Group 9: Physical Science and Engineering</td>
</tr>
<tr>
<td>6.521, 6.522 (Any 1 or 2 subject allowed)</td>
<td>6.630, 6.631, 6.634 6.561, 6.685 (Any 1 or 2 subject allowed)</td>
<td>6.720, 6.728, 6.730 (Any 1 or 2 subject allowed)</td>
</tr>
</tbody>
</table>

Note: Students in Area II (CS) select subjects from Group 1, 2, 3 only (shaded boxes).
- 6.840 or 6.854 are recommended for students who plan to take only one subject in Group 2.
- For students with strong background in area, 6.841 may be substituted for 6.840- submit dept petition.
- 6.839 can be used as the second AI subject, but not the only subject.
- 6.831 will no longer be offered starting fall term 2018.
NOT offered academic year 2018-2019
NOT offered academic year 2019-2020

Group 1: Systems in CS
Fall  6.820  Foundations of Program Analysis
Spring 6.824  Distributed Computer Systems Engineering
Fall  6.829  Computer Networks
Fall  6.830  Database Systems
Spring  6.375  Complex Digital Systems Design
Spring 6.823  Computer System Architecture
Spring 6.836  Multicore Programming
Spring 6.858  Computer Systems Security
Spring 6.831  User Interface Design and Implementation

Group 2: Theoretical CS
Fall  6.840  Theory of Computation
Fall  6.841  Advanced Complexity Theory  Fall  6.852  Distributed Algorithms
Spring 6.850  Geometric Computing  Spring 6.856  Randomized Algorithms
Fall  6.854  Advanced Algorithms  Spring 6.875  Cryptography and Cryptanalysis

Group 3: Artificial Intelligence
Spring  6.345  Automatic Speech Recognition
Spring 6.863  Natural Language and the Computer Representation of Knowledge
Fall  6.864  Advanced Natural Language Processing
Fall  6.866  Machine Vision
Fall  6.869  Advances in Computer Vision
Spring 6.437  Inference and Information
Fall  6.438  Algorithms for Inference
Fall  6.867  Machine Learning
Spring 6.832  Underactuated Robotics
Spring 6.831  User Interface Design and Implementation
Spring  6.839  Advanced Computer Graphics
Spring 6.874  Computational Systems Biology
Fall  6.878  Advanced Computational Biology: Genomes, Networks, Evolution

Group 4: System Science and Control Engineering
Spring  6.231  Dynamic Programming and Stochastic Control
Spring 6.241  Dynamic Systems and Control
Fall  6.251  Introduction to Mathematical Programming
Fall  6.255  Optimization Methods
Fall  6.341  Discrete-Time Signal Processing
Spring 6.344  Digital Image Processing
Spring 6.555  Biomedical Signal and Image Processing

Group 5: Circuits and Electronic Systems
Spring  6.334  Power Electronics
Fall  6.336  Introduction to Numerical Simulation
Fall  6.374  Analysis and Design of Digital Integrated Circuits
Spring  6.775  CMOS Analog and Mixed-Signal Circuit Design

Group 6: Information Science and Communication
Spring  6.262  Discrete Stochastic Processes
Fall  6.267  Heterogeneous Networks: Architecture, Transport, Protocols and Management
Fall  6.436  Fundamentals of Probability
Spring 6.437  Inference and Information
Fall  6.438  Algorithms for Inference
Spring 6.441  Information Theory
Fall  6.450  Principles of Digital Communication
Fall  6.453  Quantum Optical Communication

Group 7: Bioelectrical Engineering
Fall  6.521  Cellular Neurophysiology
Spring  6.522  Quantitative Physiology: Organ Transport Systems

Group 8: Electromagnetics
Fall  6.630  Electromagnetic Waves
Fall  6.631  Optics and Photonics
Spring 6.634  Nonlinear Optics
Fall  6.561  Fields, Forces, and Flows in Biological Systems
Fall  6.685  Electric Machines

Group 9: Physical Science and Engineering
Fall  6.720  Integrated Microelectronic Devices
Fall  6.728  Applied Quantum and Statistical Physics
Spring  6.730  Physics for Solid-State Applications