**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>
</table>

|-----------------------------------------------|----------------------------------------|-----------------------------------------------|

<table>
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<tr>
<th>Group 7: Bioelectrical Engineering</th>
<th>Group 8: Electromagnetics</th>
<th>Group 9: Physical Science and Engineering</th>
</tr>
</thead>
<tbody>
<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 a strong background in the 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 can be the second subject in Group 1 or 3, but not the only subject in either group.*
IMPORTANT: SEE NOTES BELOW REGARDING OFFERINGS

NOT offered academic year 2016-2017
NOT offered academic year 2017-2018

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
Fall 6.858 Computer Systems Security
Spring 6.831 User Interface Design and Implementation

Group 2: Theoretical CS

Fall 6.840 Theory of Computation
Spring 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
Fall 6.863 Natural Language and the Computer Representation of Knowledge
Spring 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
Fall 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 6.241 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 I
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