The TECHNICAL QUALIFYING EVALUATION (TQE)
Department of Electrical Engineering and Computer Science
Academic Year 2018-2019

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>6.831*, 6.836, 6.858, 6.888*</td>
<td>(*see notes below)</td>
<td>[6.437 xor 6.438 xor 6.867],</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.832, 6.838</td>
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<tr>
<td></td>
<td></td>
<td>[6.831* xor 6.839*],</td>
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<tr>
<td></td>
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<td>[6.874 xor 6.878]</td>
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<tr>
<td></td>
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<td>(*see notes below)</td>
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</tbody>
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</thead>
<tbody>
<tr>
<td>[6.251 xor 6.255],</td>
<td></td>
<td>[6.437 xor 6.438],</td>
</tr>
<tr>
<td>(Any 1 or 2 subject allowed)</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<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>(Any 1 or 2 subject allowed)</td>
<td>6.561, 6.685</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Any 1 or 2 subject allowed)</td>
<td></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 will no longer be offered starting fall term 2018.
- 6.888 is a temporary number and will be changed to a permanent number at a later date.
NOT offered academic year 2018-2019
NOT offered academic year 2019-2020

Group 1: Systems in CS
Spring 6.375 Complex Digital Systems Design
Fall 6.820 Foundations of Program Analysis
Spring 6.823 Computer System Architecture
Fall 6.829 Computer Networks
Spring 6.831 User Interface Design and Implementation
Spring 6.836 Multicore Programming
Spring 6.858 Computer Systems Security
Spring 6.888 Hardware Architecture for Deep Learning

Group 2: Theoretical CS
Fall 6.840 Theory of Computation
Fall 6.841 Advanced Complexity Theory
Fall 6.852 Distributed Algorithms
Spring 6.856 Randomized Algorithms

Group 3: Artificial Intelligence
Spring 6.345 Automatic Speech Recognition
Spring 6.437 Inference and Information
Fall 6.438 Algorithms for Inference
Spring 6.831 User Interface Design and Implementation
Spring 6.832 Underactuated Robotics
Spring 6.838 Shape Analysis
Spring 6.839 Advanced Computer Graphics
Spring 6.863 Natural Language and the Computer Representation of Knowledge
Fall 6.864 Advanced Natural Language Processing
Fall 6.866 Machine Vision
Fall 6.867 Machine Learning
Fall 6.869 Advances in Computer Vision
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 Electromagnetics
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