

# MIT EECS

## Electrical Engineering

## Computer Science

## Artificial Intelligence + Decision-making

## The TECHNICAL QUALIFYING EVALUATION (TQE): Instructions

**Academic Year 2025-2026 EFFECTIVE SPRING 2026**

Graduate students enrolling in fall 2025 are expected to submit their TQE plan by February 1, 2026. Four subjects are required: two subjects from a single Group and two subjects from two other Groups. TQE plans may be submitted online at [https://eecs.mit.edu/phd\\_status.cgi](https://eecs.mit.edu/phd_status.cgi)

Once you enter your TQE plan into the portal, your graduate counselor will approve your submission online or offer other suggestions. Once agreed upon by you and your graduate counselor, your TQE plan will be monitored by the Graduate Office. If you need to change your submitted TQE plan, please see the appropriate administrative staff in the EECS Graduate Office. [Note: modifications to the TQE grid are made every fall and spring term.]

## NOTES

GROUP 1: SYSTEMS in CS			
Subj # (old #)	Title	Offered	Comments
6.5110 (6.820)	Foundations of Program Analysis [xor 6.5120]	Fall	
6.5130 (6.5981)	Introduction to Program Synthesis [xor 6.5110]	Fall	<b>Not Offered AY26/27</b>
6.5820 (6.829)	Computer Networks	Fall	
6.5900 (6.823)	Computer System Architecture	Fall	
6.5940	Tiny ML and Efficient Deep Learning Computing	Fall	
6.5080 (6.836)	Multicore Programming	Spring	<b>Not Offered AY25/26</b>
6.5120 (6.822)	Formal Reasoning about Programs [xor 6.5110]	Spring	<b>Not Offered AY25/26</b>
6.5610	Applied Cryptography and Security [xor 6.5620]	Spring	
6.5660 (6.858)	Computer Systems Security	Spring	
6.5830 (6.830)	Database Systems	Spring	
6.5840 (6.824)	Distributed Computer Systems Engineering	Spring	
6.5910 (6.375)	Complex Digital Systems Design	Spring	<b>Next Offering Unknown</b>
6.5930 (6.825)	Hardware Architecture for Deep Learning	Spring	
6.5950 (6.5983)	Secure Hardware Design	Spring	
6.8530 also 6.C85	Interactive Data Visualization	Spring	

GROUP 2: THEORETICAL COMPUTER SCIENCE (*see notes below)			
Subj # (old #)	Title	Offered	Comments
6.5210* (6.854)	Advanced Algorithms	Fall	
6.5220 (6.856)	Randomized Algorithms	Fall	<b>Not Offered AY26/27</b>
6.5240	Sublinear Time Algorithms	Fall	
6.5250 (6.852)	Distributed Algorithms	Fall	<b>Not Offered AY26/27</b>
6.5400* (6.840)	Theory of Computation	Fall	
6.5620 (6.875)	Cryptography and Cryptanalysis [xor 6.5610]	Fall	
6.7350	Numerical Algorithms for Computing and Machine Learning	Fall	<b>Not Offered AY26/27</b>
6.5320 (6.850)	Geometric Computing	Spring	<b>Not Offered AY26/27</b>
6.5410* (6.841)	Advanced Complexity Theory	Spring	

\*6.5400 or 6.5210 are recommended for students who plan to take only one subj in Group 2  
\*for students with a strong background in the area, 6.5410 may substitute 6.5400

GROUP 3: ARTIFICIAL INTELLIGENCE (AI) (*see note below)			
Subj # (old #)	Title	Offered	Comments
6.4212 (6.843)	Robotic Manipulation [xor 6.8210]	Fall	
6.7810 (6.438)	Algorithms for Inference [xor 6.7800 xor 6.7900]	Fall	
6.7900 (6.867)	Machine Learning [xor 6.7800 xor 6.7810]	Fall	
6.7960	Deep Learning	Fall	
6.8410 (6.838)	Shape Analysis	Fall	<b>Not Offered AY27/28</b>
6.8700 (6.878)	Advanced Computational Biology: Genomes, Networks, Evolution [xor 6.8710]	Fall	
6.7800 (6.437)	Inference and Information [xor 6.7810 xor 6.7900]	Spring	
6.7930 (6.871)	Machine Learning for Healthcare	Spring	
6.8200 (6.884)	Sensorimotor Learning	Spring	<b>Not Offered AY25/26</b>
6.8210 (6.832)	Underactuated Robotics [xor 6.4212]	Spring	<b>Not Offered AY25/26</b>
6.8300 (6.869)	Advances in Computer Vision	Spring	
6.8420 (6.839)	Computational Design and Fabrication	Spring	<b>Not Offered AY25/26</b>
6.8610 (6.864)	Quantitative Methods for Natural Language Processing [xor 6.8620 xor 6.8630]	Spring	
6.8620 (6.345)	Spoken Language Processing [xor 6.8630 xor 6.8610]	Spring	<b>Not Offered AY25/26</b>
6.8630 (6.863)	Natural Language and the Computer Representation of Knowledge [xor 6.8610 xor 6.8620]	Spring	<b>Not Offered AY25/26</b>
6.8710 (6.874)	Generative AI for Biology	Spring	
6.S977	Ethical Machine Learning in Human Deployments	Spring	<b>NEW to Grid</b>

\*6.8420 can be used as the second AI subject, but not the only subject.

Note: subject offerings are subject to change based on modifications to teaching schedules.

GROUP 4: SYSTEM SCIENCE and CONTROL ENGINEERING			
Subj # (old #)	Title	Offered	Comments
6.7000 (6.341)	Discrete-Time Signal Processing [xor 6.7010 xor 6.8800]	Fall	
6.7210 (6.251)	Introduction to Mathematical Programming [xor 6.7200 also 6.C57]	Fall	
6.C57 (6.255)	Optimization Methods [xor 6.7210]	Fall	
6.7010 (6.344)	Two-dimensional Signal and Image Processing	Spring	Final Offering
6.7100 (6.241)	Dynamic Systems and Control	Spring	Not Offered AY25/26
6.7220	Nonlinear Programming	Sping	
6.8800 (6.555)	Biomedical Signal and Image Processing [xor 6.7000 xor 6.7010]	Spring	Not Offered AY25/26

GROUP 5: CIRCUITS and ELECTRONIC SYSTEMS			
Subj # (old #)	Title	Offered	Comments
6.6010 (6.374)	Analysis and Design of Digital Integrated Circuits	Fall	
6.6020	High-Frequency Integrated Circuits	Fall	
6.7300 (6.336)	Introduction to Modeling and Simulation	Fall	
6.6000 (6.775)	CMOS Analog and Mixed-Signal Circuit Design	Spring	
6.6220 (6.334)	Power Electronics	Spring	

GROUP 6: INFORMATION SCIENCE and COMMUNICATION			
Subj # (old #)	Title	Offered	Comments
6.7410 (6.450)	Principles of Digital Communication	Fall	
6.7420 (6.267)	Heterogenous Networks: Architecture, Transport, Protocols and Management	Fall	
6.7480	Information Theory: from Coding to Learning	Fall	
6.7700 (6.436)	Fundamentals of Probability	Fall	Not Offered AY26/27
6.7730	Modern Mathematical Statistics	Fall	
6.7810 (6.438)	Algorithms for Inference [xor 6.7800]	Fall	NEW to Grid
6.7710 (6.262)	Discrete Stochastic Processes [xor 6.7720]	Spring	Not Offered AY25/26
6.7720	Discrete Probability and Stochastic Processes [xor 6.7710]	Spring	AY25/26 Offering Unknown
6.7800 (6.437)	Inference and Information [xor 6.7810]	Spring	

GROUP 7: BIOLOGICAL ENGINEERING			
Subj # (old #)	Title	Offered	Comments
6.4822 (6.522)	Quantitative Physiology: Organ Transport Systems	Fall	
6.4852	Multiphysics Systems Modeling	Fall	NEW to Grid; Pilot Offering
6.8810 (6.556)	Data Acquisition and Image Reconstruction in MRI	Fall	Not Offered AY26/27
6.C67	Computational Imaging: Physics to Algorithms	Fall	Pilot Offering
6.4812 (6.521)	Cellular Neurophysiology and Computing	Spring	Not Offered AY25/26

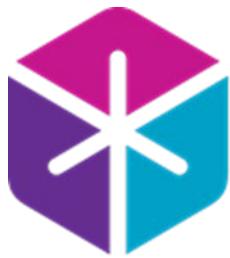
  

GROUP 8: ELECTROMAGNETICS			
Subj # (old #)	Title	Offered	Comments
6.4832 (6.561)	Fields, Forces and Flows in Biological Systems	Fall	
6.6210 (6.640)	Electromagnetic Fields, Forces and Motion [xor 6.6280]	Fall	
6.6280 (6.685)	Electric Machines [xor 6.6210]	Fall	Next Offering Unknown
6.6300 (6.630)	Electromagnetics	Fall	
6.6310 (6.631)	Optics and Photonics	Fall	
6.6340 (6.634)	Nonlinear Optics	Spring	
6.7121 (6.S967)	Principles of Modeling, Computing and Control of Decarbonized Electric Energy Systems	Spring	

GROUP 9: PHYSICAL SCIENCE and ENGINEERING			
Subj # (old #)	Title	Offered	Comments
6.6400 (6.728)	Applied Quantum and Statistical Physics	Fall	
6.6500 (6.720)	Integrated Microelectronic Devices	Fall	
6.S063	Principles/Applications of Quantum Optics: Fundamentals and Emerging Technologies	Fall	Pilot Offering
6.6320	Silicon Photonics	Spring	
6.6420	Quantum Information Science	Spring	
6.6510 (6.730)	Physics for Solid-State Applications	Spring	
6.797	Symmetry and its Applications to Machine Learning	Spring	Pilot Offering
6.S987	Physics and Engineering of Superconducting Qubits	Spring	Not Offered AY25/26

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[www.eecs.mit.edu](http://www.eecs.mit.edu)