

MEMP sample schedules for assorted TQE concentration areas

These sample schedules include two courses (not counting seminars) per semester, assuming that students are also engaged in substantial research efforts. Many students take two TQE classes *plus Pathology* in the first term. It is also possible to take three courses during the spring term of the first year. In later years, students funded by research assistantships are expected to manage course workload and research.

These sample schedules are provided as examples; students are encouraged to develop their own schedule, tailored to their individual interests, in conjunction with their academic advisor.

Courses counting toward TQE concentration area requirements are indicated in the tables below in *italics*.

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Aeronautics and Astronautics – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
16.453: Human Systems Engineering	16.423 Aerospace Biomedical and Life Support Engineering	HST.ThG: Thesis	2.080: Structural Mechanics	other courses as desired
16.851: Intro to Satellite Engineering (1 st half)	HST500: Frontiers in (Bio)Medical Engineering & Physics		HST.030: Human Pathology	prepare for OQE in May June
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis

Biological Engineering – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
20.420 Principles of Molecular Bioengineering	20.440 Analysis of Biological Networks	HST.ThG: Thesis	20.405 Principles of Synthetic Biology	other courses as desired
20.430 Fields, Forces, and Flows in Biological Systems	HST500: Frontiers in (Bio)Medical Engineering & Physics		HST.030: Human Pathology	prepare for OQE in May June
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis

Biological Engineering – Undergraduate Subjects for preparation, OQE in January of 3rd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring	Year 3 Fall
7.06 Cell Biology	7.05 General Biochemistry	HST.ThG: Thesis	20.420 Principles of Molecular Bioengineering	20.440 Analysis of Biological Networks	other courses as desired
HST.030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		20.430 Fields, Forces, and Flows in Biological Systems	20.405 Principles of Synthetic Biology	Prepare for OQE in January
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series	
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis	HST.ThG: Thesis

Brain & Cognitive Sciences – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
<i>9.014: Quantitative Methods and Computational Models in Neurosciences</i>	<i>9.073: Statistics for Neuroscience Research</i>	HST.ThG: Thesis	<i>HST.580: Data Acquisition and Image Reconstruction in MRI</i>	other courses as desired
HST.030: Human Pathology	HST500: Frontiers in (Bio)Medical Engineering & Physics		<i>HST.131: Neuroscience</i>	prepare for OQE in May June
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis

Chemical Engineering – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
<i>10.40: Chemical Engineering Thermodynamics</i>	<i>10.50: Analysis of Transport Phenomena</i>	HST.ThG: Thesis	<i>10.539: Fields, Forces, and Flows in Biological Systems</i>	other courses as desired
<i>10.569: Synthesis of Polymers</i>	HST500: Frontiers in (Bio)Medical Engineering & Physics		HST.030: Human Pathology	prepare for OQE in May June
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis

Chemical Engineering – Undergraduate Subjects for preparation, OQE in January of 3rd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring	Year 3 Fall
10.302: Transport Processes	10.213: Chemical and Biological Engineering Thermodynamics	HST.ThG: Thesis	<i>10.40: Chemical Engineering Thermodynamics</i>	<i>10.50: Analysis of Transport Phenomena</i>	other courses as desired
HST.030: Human Pathology	HST500: Frontiers in (Bio)Medical Engineering & Physics		<i>10.569: Synthesis of Polymers</i>	<i>10.542: Biochemical Engineering & Biomanufacturing Principles</i>	Prepare for OQE in January
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series	
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis	HST.ThG: Thesis

Chemistry - OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
5.52: Tutorial in Chemical Biology	5.64: Advances in Interdisciplinary Science in Human Health and Disease	HST.ThG: Thesis	5.062 Principles of Bioinorganic Chemistry	other courses as desired
HST.030: Human Pathology	HST500: Frontiers in (Bio)Medical Engineering & Physics		5.70 Statistical Thermodynamics	prepare for OQE in May June
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis

Computer Science – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
6.7300 Introduction to Modeling and Simulation	6.7310: Introduction to Numerical Methods	HST.ThG: Thesis	6.7900: Machine Learning	other courses as desired
HST.030: Human Pathology	HST500: Frontiers in (Bio)Medical Engineering & Physics		6.7960: Deep Learning	prepare for OQE in May June
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis

Computer Science – Undergraduate Subjects for preparation, OQE in January of 3rd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring	Year 3 Fall
6.3700 Introduction to Probability	6.1210 Introduction to Algorithms	HST.ThG: Thesis	6.7900: Machine Learning	6.7310 Introduction to Numerical Methods	other courses as desired
HST.030: Human Pathology	HST500: Frontiers in (Bio)Medical Engineering & Physics		6.7960: Deep Learning	6.8710: Computational Systems Biology: Deep Learning in the Life Sciences	Prepare for OQE in January
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series	
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis	HST.ThG: Thesis

Electrical Engineering – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
6.4832: <i>Fields, Forces, and Flows in Biological Systems</i>	6.8300 <i>Advances in Computer Vision</i>	HST.ThG: Thesis	6.7000: <i>Discrete-Time Signal Processing</i>	other courses as desired
6.6300: <i>Electromagnetics</i>	HST500: <i>Frontiers in (Bio)Medical Engineering & Physics</i>		HST.030: <i>Human Pathology</i>	prepare for OQE in May
HST.590: <i>Seminar Series</i> HST.599 <i>Research</i>	HST.590: <i>Seminar Series</i> HST.599 <i>Research</i>		HST.590: <i>Seminar Series</i> HST.ThG: <i>Thesis</i>	HST.590: <i>Seminar Series</i> HST.ThG: <i>Thesis</i>

Electrical Engineering – Undergraduate Subjects for preparation, OQE in January of 3rd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring	Year 3 Fall
6.3700 <i>Introduction to Probability</i>	6.2300 <i>Electromagnetics Waves and Applications</i>	HST.ThG: Thesis	6.6310: <i>Optics and Photonics</i>	6.8800 <i>Biomedical Signal and Image Processing</i>	other courses as desired
HST.030: <i>Human Pathology</i>	HST500: <i>Frontiers in (Bio)Medical Engineering & Physics</i>		6.7700: <i>Fundamentals of Probability</i>	6.6340: <i>Nonlinear Optics</i>	Prepare for OQE in January
HST.590: <i>Seminar Series</i> HST.599 <i>Research</i>	HST.590: <i>Seminar Series</i> HST.599 <i>Research</i>		HST.590: <i>Seminar Series</i> HST.ThG: <i>Thesis</i>	HST.590: <i>Seminar Series</i> HST.ThG: <i>Thesis</i>	HST.ThG: <i>Thesis</i>

Materials Science and Engineering – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
3.20: <i>Materials at Equilibrium</i>	3.21: <i>Kinetic Processes in Materials</i>	HST.ThG: Thesis	3.22 <i>Structure and Mechanics of Materials</i>	other courses as desired
HST.030: <i>Human Pathology</i>	HST500: <i>Frontiers in (Bio)Medical Engineering & Physics</i>		3.46 <i>Photonic Materials and Devices</i>	prepare for OQE in May June
HST.590: <i>Seminar Series</i> HST.599 <i>Research</i>	HST.590: <i>Seminar Series</i> HST.599 <i>Research</i>		HST.590: <i>Seminar Series</i> HST.ThG: <i>Thesis</i>	HST.590: <i>Seminar Series</i> HST.ThG: <i>Thesis</i>

Mechanical Engineering – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
2.795: Fields, Forces, and Flows in Biological Systems	2.140: Analysis and Design of Feedback Control Systems	HST.ThG: Thesis	2.25: Fluid Mechanics	other courses as desired
HST.030: Human Pathology	HST500: Frontiers in (Bio)Medical Engineering & Physics		2.42 General Thermodynamics	prepare for OQE in May June
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis

Mechanical Engineering – Undergraduate Subjects for preparation, OQE in January of 3rd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring	Year 3 Fall
2.004: Dynamics and Control II	2.006: Thermal-Fluids Engineering II	HST.ThG: Thesis	2.25: Fluid Mechanics	2.140: Analysis and Design of Feedback Control Systems	other courses as desired
HST.030: Human Pathology	HST500: Frontiers in (Bio)Medical Engineering & Physics		2.798: Molecular, Cellular, and Tissue Biomechanics	2.37 Fundamentals of Nanoengineering	prepare for OQE in January
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series	
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis	HST.ThG: Thesis

Nuclear Science and Engineering - OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
22.11 Applied Nuclear Physics (1 st half)	22.51: Quantum Technology and Devices	HST.ThG: Thesis	22.55: Radiation Biophysics	other courses as desired
22.12 Radiation Interactions, Control, and Measurement (2 nd half)	22.15 Essential Numerical Methods (1 st half)			
HST.030: Human Pathology	HST500: Frontiers in (Bio)Medical Engineering & Physics		other courses as desired	prepare for OQE in May June
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis

Physics – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
<i>8.333 Statistical Mechanics I</i>	<i>8.311 Electromagnetic Theory I</i>	HST.ThG: Thesis	<i>8.591 Systems Biology</i>	other courses as desired
HST.030: Human Pathology	HST500: Frontiers in (Bio)Medical Engineering & Physics		<i>8.701 Introduction to Nuclear and Particle Physics</i>	prepare for OQE in May
HST.590: Seminar Series	HST.590: Seminar Series		HST.590: Seminar Series	HST.590: Seminar Series
HST.599 Research	HST.599 Research		HST.ThG: Thesis	HST.ThG: Thesis