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 work load 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.*

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	*22.55: Radiation Biophysics*	Research	*2.080: Structural Mechanics*	other courses as desired
16.851: Satellite Engineering	HST500: Frontiers in (bio)Medical Engineering & Physics		HST030: Human Pathology	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research

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*	Research	*20.410 Molecular, Cellular, and Tissue Biomechanics*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*20.430 Fields, Forces, and Flows in Biological Systems*	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research

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	Research	*20.420 Principles of Molecular Bioengineering*	*20.440 Analysis of Biological Networks*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*20.430 Fields, Forces, and Flows in Biological Systems*	*20.415 Physical Biology*	Prepare for OQE in January
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series	
Research	Research		Research	Research	Research

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

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
9.014: Quantitative Methods and Computational Models in Neurosciences	*9.073: Statistics for Neuroscience Research*	Research	*HST.580: Data Acquisition and Image Reconstruction in MRI*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*HST.131: Neuroscience*	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research

Chemical Engineering – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
10.40: Chemical Engineering Thermodynamics	*10.569: Synthesis of Polymers*	Research	*10.539: Fields, Forces, and Flows in Biological Systems*	other courses as desired
10.50: Analysis of Transport Phenomena	HST500: Frontiers in (bio)Medical Engineering & Physics		HST030: Human Pathology	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research

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	Research	*10.40: Chemical Engineering Thermodynamics*	*10.569: Synthesis of Polymers*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*10.50: Analysis of Transport Phenomena*	*10.542: Biochemical Engineering*	Prepare for OQE in January
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series	
Research	Research		Research	Research	Research

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: Frontiers of Interdisciplinary Science in Human Health and Disease*	Research	*5.062 Principles of Bioinorganic Chemistry*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*5.70 Statistical Thermodynamics*	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research

Computer Science – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
6.338: Parallel Computing	*6.337: Introduction to Numerical Methods*	Research	*6.867: Machine Learning*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*HST.508 Quantitative Genomics*	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research

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
6.006: Introduction to Algorithms	6.041: Introduction to Probability I	Research	*6.046: Design and Analysis of Algorithms*	*6.555: Biomedical Signal and Image Processing*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*6.434: Statistics for Engineers and Scientists*	*6.874: Computational Systems Biology*	Prepare for OQE in January
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series	
Research	Research		Research	Research	Research

Electrical Engineering – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
6.561: Fields, Forces, and Flows in Biological Systems	*6.777: Design and Fabrication of Microelectromechanical Systems*	Research	*6.341: Discrete-Time Signal Processing*	other courses as desired
6.630: Electromagnetics	HST500: Frontiers in (bio)Medical Engineering & Physics		HST030: Human Pathology	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research

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
6.003: Signals and Systems	6.013: Electromagnetics and Applications	Research	*6.631: Optics and Photonics*	*6.555 Biomedical Signal and Image Processing*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*6.525: Medical Device Design*	*6.634: Nonlinear Optics*	Prepare for OQE in January
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series	
Research	Research		Research	Research	Research

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: Materials at Equilibrium	*3.21: Kinetic Processes in Materials*	Research	*3.40: Modern Physical Metallurgy*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*3.23: Electrical, optical, and magnetic properties of materials*	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research

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, ad Flows in Biological Systems	*2.140: Analysis and Design of Feedback Control Systems*	Research	*2.25: Fluid Mechanics*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*2.75: Medical Device Design*	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research

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	Research	*2.25: Fluid Mechanics*	*2.140: Analysis and Design of Feedback Control Systems*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*2.798: Molecular, Cellular, and Tissue Biomechanics*	*2.372: Design and Fabrication of Microelectromechanical Systems*	prepare for OQE in January
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series	
Research	Research		Research	Research	Research

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 (1st half)	22.51: Quantum Theory of Radiation Interactions	Research	22.15 Essential Numerical Methods (*1st half*)	other courses as desired
22.12 Radiation Interactions, Control, and Measurement (*2nd half*)				
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		22.55: Radiation Biophysics	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research

Physics – OQE in Spring of 2nd year

Year 1 Fall	Year 1 Spring	Summer	Year 2 Fall	Year 2 Spring
8.333 Statistical Mechanics I	*8.311 Electromagnetic Theory I*	Research	*8.591 Systems Biology*	other courses as desired
HST030: Human Pathology	HST500: Frontiers in (bio)Medical Engineering & Physics		*8.701 Introduction to Nuclear and Particle Physics*	prepare for OQE in May
HST590: Seminar Series	HST590: Seminar Series		HST590: Seminar Series	HST590: Seminar Series
Research	Research		Research	Research