

Chemistry, MS (Boston)

Master's Coursework Option

The Department of Chemistry and Chemical Biology offers a full-time or part-time, course-based master's degree. Classes are generally offered in the evenings to accommodate students who have full-time jobs. A research thesis is not a requirement for the degree.

Master's Thesis Option

A thesis-based master's option is available only by department approval. Students who wish to pursue the thesis option must have a chemistry and chemical biology tenure-track faculty member willing to serve as their faculty advisor.

Program Requirements

Complete all courses and requirements listed below unless otherwise indicated.

Concentration or Option

- Analytical Chemistry (p. 1)
- Chemical Biology (p. 2)
- Chemical Toxicology and Environmental Chemistry (p. 2)
- Coursework Option (p. 3)
- Thesis Option (p. 3)

OPTIONAL CO-OP EXPERIENCE

Code	Title	Hours
If pursuing a co-op, regardless of concentration or option, the following must be completed:		
CHEM 5621 and CHEM 5622	Principles of Chemical Biology and Lab for CHEM 5621	4
CHEM 5628 and CHEM 5631	Principles of Spectroscopy of Organic Compounds and Lab for CHEM 5628	4
CHEM 5638 or CHEM 5641 or CHEM 5649	Molecular Modeling Computational Chemistry Numerical Strategies and Data Analytics for Chemical Sciences	3
EESC 6400	Pre-co-op Work Experience	0
EESC 6500	Pathways to Professional Success	1

Program Credit/GPA Requirements

30 total semester hours required

Additional hours required for students who opt to participate in co-op

Minimum 3.000 GPA required

ANALYTICAL CHEMISTRY CONCENTRATION

Code	Title	Hours
CHEM 5611	Analytical Separations	3
CHEM 5612	Principles of Mass Spectrometry	3
CHEM 5628	Principles of Spectroscopy of Organic Compounds	3
Complete 21 semester hours as follows.		21
Complete at least one of the following:		
CHEM 5614	Electroanalytical Chemistry	
CHEM 5642	Photochemistry Fundamentals and Applications	
CHEM 5660	Analytical Biochemistry	
CHEM 5670	Global Biogeochemistry	
CHEM 5688	Principles of Nuclear Magnetic Resonance	
Complete remaining coursework from the following range:		
CHEM 5550 to CHEM 7750		

CHEMICAL BIOLOGY CONCENTRATION

Code	Title	Hours
CHEM 5621	Principles of Chemical Biology	3
CHEM 5676	Bioorganic Chemistry	3
Complete 24 semester hours as follows.		24
Complete one of the following:		
CHEM 5611	Analytical Separations	
CHEM 5612	Principles of Mass Spectrometry	
CHEM 5628	Principles of Spectroscopy of Organic Compounds	
CHEM 5660	Analytical Biochemistry	
Complete at least two of the following:		
CHEM 5620	Protein Chemistry	
CHEM 5630	Nucleic Acid Chemistry	
CHEM 5638	Molecular Modeling	
CHEM 5640	Biopolymeric Materials	
CHEM 5648	Chemical Principles and Application of Drug Metabolism and Pharmacokinetics	
CHEM 5670	Global Biogeochemistry	
Complete remaining coursework from the following range:		
CHEM 5550 to CHEM 7750		

CHEMICAL TOXICOLOGY AND ENVIRONMENTAL CHEMISTRY CONCENTRATION

Code	Title	Hours
CHEM 5611	Analytical Separations	3
CHEM 5621	Principles of Chemical Biology	3
CHEM 5628	Principles of Spectroscopy of Organic Compounds	3
CHEM 5642	Photochemistry Fundamentals and Applications	3
Complete 18 semester hours as follows.		18
Complete at least one of the following:		
CHEM 5640	Biopolymeric Materials	
CHEM 5643	Plastics Sustainability and Circular Economy: A Chemical Perspective	
CHEM 5670	Global Biogeochemistry	
CHEM 5692	Carbon Capture, Utilization, and Storage	
Complete one of the following:		
CHEM 5648	Chemical Principles and Application of Drug Metabolism and Pharmacokinetics	
CHEM 5660	Analytical Biochemistry	
Complete remaining coursework from the range CHEM 5550 to CHEM 7750 or up to 6 semester hours from the following restricted electives:		
CIVE 5250	Organic Pollutants in the Environment	
CIVE 5255	Tools and Techniques of Environmental Health	
CIVE 5275	Life Cycle Assessment of Materials, Products, and Infrastructure	
CIVE 5300	Environmental Sampling and Analysis	
CIVE 5366	Air Quality Engineering and Science	
CIVE 7250	Environmental Chemistry	
CIVE 7251	Environmental Biological Processes	
CIVE 7255	Environmental Physical/Chemical Processes	
CIVE 7279	Advanced Air Quality	
ENVR 5350	Sustainable Energy and Climate Solutions	
PHSC 5560	Nanotoxicity	
PTH 5202	Introduction to Epidemiology	
PTH 5210	Biostatistics in Public Health	
PTH 5214	Environmental Health	
PTH 6208	Foundations of Community Health Assessment	
PPUA 5240	Health Policy and Politics	
PPUA 5268	International Environmental Policy	

COURSEWORK OPTION

Code	Title	Hours
Complete 30 semester hours from the following range:		30
CHEM 5550 to CHEM 7750		

THESIS OPTION

A thesis-based master's option is available only by department approval. Students who wish to pursue the thesis option must have a chemistry and chemical biology tenure-track faculty member willing to serve as their faculty advisor.

Code	Title	Hours
Coursework		
Complete 18 semester hours from the following:		18
CHEM 5550 or any course within the range of CHEM 5610 to CHEM 7320		
Graduate Seminar		
Seminar must be completed twice. At least one seminar must be taken for a letter grade.		2
CHEM 5904 or CHEM 8504	Seminar Graduate Seminar	
Laboratory		
Complete the following (repeatable) course twice:		2
CHEM 5501	Chemical Safety in the Research Laboratory	
Research		
CHEM 5984 or CHEM 8984	Research Research	4-6
Thesis		
CHEM 7990	Thesis	4