

ENGINEERING CHEMISTRY: TECHNICAL ELECTIVES

****Note - Information on this page may be out of date**

**Please view the current 2022-2023 Academic Calendar here: <https://calendar.engineering.queensu.ca/index.php> (<https://calendar.engineering.queensu.ca/>)

Please Note: Some of these elective courses may not be available to students due to pre-requisite course requirements. The student is responsible for confirming that he/she has the necessary prerequisites or permission of the instructor.

Please Note: Course availability and the term in which a course is held can change from one academic year to the next. This can occur due to instructor availability or a change to departmental resources. Please refer to SOLUS to find out if the **Tech** course is offered this upcoming year.

Group A Technical Electives

Biomedical

Code	Title	Units
CHEE 340	Biomedical Engineering	3.50
CHEE 440	Pharmaceutical Technology	3.50
MECH 393	Biomechanical Product Developm	3.50
MECH 492	Biological Fluid Dynamics	3.50

Energy, Energy Resources, and Petroleum Engineering

Code	Title	Units
CHEE 414	Foundations of the Oil and Gas Industry	3.50
MECH 435	Internal Combustion Engines	3.50
MECH 437	Fuel Cell Technology	3.50
MECH 439	Turbomachinery	3.50

Environmental

Code	Title	Units
CHEE 342	Environmental Biotechnology	3.50
CHEE 371	Mitigation of Industrial Pollution	3.50
CHEE 484	Bioremediation	3.50
CIVL 371	Groundwater Engineering	3.75
CIVL 372	Water and Wastewater	4.00
CIVL 451	Lake, Reservoir and Coastal	3.75
CIVL 471	Subsurface Contamination	4.00

Materials Processing

Code	Title	Units
CHEE 323	Industrial Catalysis	3.50
CHEE 490	Polymer Forms & Proc Tech	3.50

Minerals Processing

Code	Title	Units
MINE 331	Methods Of Mineral Separation	4.50
MINE 335	Mineral Processing	3.00
MNTC 306	Mineral Processing Unit Operations	3.00
MINE 451	Chemical Extraction Of Metals	4.00
MNTC 415	Metal Extraction Processes	4.00
MNTC 311	Ore Body Modelling and Resource Estimation	4.50

General

Code	Title	Units
APSC 303	Professional Internship	3.50
APSC 381	Advanced Design and Skills for Innovation	3.50
APSC 401	Interdisciplinary Projects	4.50
CHEE 319	Process Dynamics & Control	3.50
CHEE 410	Technical Entrepreneurship	3.00
CHEE 412	Transport Phenomena	3.50
CHEE 418	Strategies Proc Investigations	3.50
CHEE 434	Process Control II	3.50
MECH 430	Thermal Systems Design	4.00
MECH 480	Airplane Aerodynamics and Performance	3.50

Note: APSC 303 Professional Internship will count as a Group A Technical Elective upon successful completion of internship.

Group B Technical Electives

All CHEM/ENCH courses numbered from 311 to 489, excluding those courses already required in the core of the program, can be considered as a Group B TECH course.

Code	Title	Units
ENCH 311	Mechanistic Organic Chem	3.50
ENCH 321	Instrumental Chemical Analysis	3.50
ENCH 322	Chem Bond: Comp & Spectro.	3.50
ENCH 323	Biological Chemistry	3.00
ENCH 326	Environmental&Green Chemistry	3.00
ENCH 411	Adv. Analytical Chem	3.00
ENCH 412	Statistical Mechanics	3.00
ENCH 413	Computational Chemistry	3.00



ENCH 414	Catalysis	3.00
ENCH 421	Adv. Meth. Physical Chem.	3.00
ENCH 422	Synthetic Organic Chem	3.50
ENCH 423	Topics In Inorg/Organomet Chem	3.00
ENCH 424	Polymer Chemistry	3.00
ENCH 425	Self Assembly & Materials	3.00