

ELECTIVES

Technical Electives (List 1)

COURSE	COURSE NAME	TERM	LEC	LAB	TUT	UNITS
CIVL 430	Reinforced Concrete Design	F	3	0.5	0.5	4
CIVL 442	Geotechnical Design	F	3	0	1	4
CIVL 450	Municipal Hydraulics	F	3	0	1	4
CIVL 451	Lake, Reservoirs & Coastal Eng.	F	3	0.5	0.5	4
CIVL 455	River Engineering	F	3	0	.50	4
CIVL 471	Subsurface Contamination	F	3	0	1	4
CIVL 490	Selected Topics	F	3	0	1	4
CIVL 500	Civil Engineering Thesis	FW	K4	0	0	4
CIVL 431	Infrastructure Rehabilitation	W	3	0.5	0.5	4
CIVL 436	Pre-stressed Concrete	W	3	0	1	4
CIVL 443	Geoenvironmental Design	W	3	1	0	4
CIVL 472	Water Treatment	W	3	0.5	0.5	4
CIVL 473	Water Resources Systems	W	3	0	1	4
CIVL 491	Selected Topics	W	3	0	1	4

Technical Electives (List 2)

COURSE	COURSE NAME	TERM	LEC	LAB	TUT	UNITS
APSC 250	Biology Through an Engineering Lens	F/W/S	Y	N	N	3.5
APSC 381	Fundamentals of Design Eng.	W	Y	N	Y	3.5
APSC 480	Multi-Disciplinary Design Project*(see note below)	FW	Y	N	Y	9
CHEE 330	Heat and Mass Transfer	F	3	0	0.5	3.5
CHEE 342	Environmental Biotechnology	F	3	0	0.5	3.5
CHEE 371	Mitigation of Industrial Pollution	W	3	0	0.5	3.5
CHEE 380	Biochemical Engineering	F	3	0	0.5	3.5
CHEE 484	Bioremediation	W	3	0	0.5	3.5
GEOE 313	Geomechanics and Engineering Geology	W	3	1	0	4
GEOE 333	Terrain Evaluation	W	3	1	0	4
GEOE 414	Foundations of the Oil and Gas Industry	W	3	0	0.5	3.5
MECH 230	Thermodynamics	F	3	0	0.5	3.5
MECH 341	Fluid Mechanics	W	3	0	0.5	3.5
MECH 346	Heat Transfer	W	3	0	0.5	3.5
MECH 371	Fracture Mechanics & Dislocation Theory	W	3	0	0.5	3.5
MECH 394	Frontiers in Biomechanical Engineering	W	3	0	0.5	3.5
MECH 424	Sustainable Product Design	F	3	0	0.5	3.5
MECH 444	Computational Fluid Dynamics	F	3	0	0.5	3.5
MECH 465	Computer-Aided Design	F	3	0.5	0	3.5
MECH 495	Ergonomics and Design	W	3	0	0.5	3.5
MINE 201	Introduction to Mining and Mineral Processing	F	3	0	1	4
MINE 272	Applied Data Science	W	3	3	0	4.5
MINE 321	Drilling and Blasting	F	3	1.5	0	4.5

MINE 324	Hydraulics for Mining Applications	W	3	0	0.5	3.5
MINE 339	Mine Ventilation	F	3	1.5	0	4.5
MINE 422	Mining and Sustainability	F	4	0	0	4
MINE 459	Reliability, Maintenance, and Risk Assessment	F	3	0	1	4
MINE 472	Mining Systems, Automation, and Robotics	O/L	-	-	-	3.5
MNTC 314	Drilling and Blasting	O/L	3	0	0	3
MNTC 408	Mine Health and Safety	O/L	3	0	0	3
MNTC 418	Sustainability and the Environment	F/W/S	3	0	0	3
MNTC 423	Geomatics	O/L	3	0	0	3
MNTC P07	Surveying Principles	O/L	3	0	0	3
SURP 853	Environmental Services		3	0	0	3
SURP 855	Environmental Planning and Management		3	0	0	3

- Choose **6** courses from Technical Electives List 1
- Choose **1** course from Technical Electives List 1 OR List 2
- Choose **1** course from Technical Electives List 1 OR List 2 OR a 'Free Elective'
- APSC 480 has been approved as a Technical List 2 + a Free Elective

What is a Free Elective?

- **Must be approved by Undergraduate Chair, please send inquiries to the Undergraduate Program Assistant (angela.brown@queensu.ca).**
- Any Applied Science course
- Any 100 level course or higher in Arts & Science (min. 3 credits) with the following subject codes: ANAT, BCHM, BIOL, CDNS, CHEM, CISC, COGS, COMM, DEVS, GEOL, GIMS, GISC, GISQ, GPHY, HLTH, IDIS, INTS, ENSC, EPID, LING, MATH, MICR, PHAR, PHYS, PHGY, STSC, STAT, WRIT
- Any approved Complementary Studies course
- Any of the Graduate courses offered in Urban & Regional Planning.
- APSC 303 – Queen's Undergraduate Internship Program (QUIP)