

Chemical Engineering Curriculum - Fall 2024

Non-CEGEP Entry

1st Term (Fall)		18 credits	Prerequisites/Co-requisites
CHEM 110	General Chemistry	4	P - College level math and physics or instructor permission
MATH 133	Linear Algebra and Geometry	3	P - A course in functions
MATH 140	Calculus 1	3	P - High-school calculus
PHYS 131	Mechanics and Waves	4	C - Calculus course [MATH 140]
FACC 100	Intro to the Engineering Profession	1	-
CS	Complementary Studies Group B (HSSML) - 1	3	-
2nd Term (Winter)		18 credits	Prerequisites/Co-requisites
CHEM 120	General Chemistry 2	4	P - College level math and physics or instructor permission
MATH 141	Calculus 2	4	P - MATH 140
PHYS 142	Electromagnetism and Optics	4	P - PHYS 131 / C - MATH 141
CS	Complementary Studies Group A (Impact)	3	-
CS	Complementary Studies Group B (HSSML) - 2	3	-
3rd Term (Fall)		17 credits	Prerequisites/Co-requisites
CHEE 200	Chemical Engineering Principles 1	3	-
CHEE 291	Instrumentation and Measurement 1	4	C - CHEE231
CHEM 212	Introductory Organic Chemistry 1	4	P - CHEM 110 / C - CHEM 120
CHEE 231	Data Analysis and Design of Experiments	3	-
MATH 262	Intermediate Calculus	3	P - MATH 141, MATH 133
4th Term (Winter)		18 credits	Prerequisites/Co-requisites
CHEE 204	Chemical Engineering Principles 2	3	P - CHEE 200
CHEE 220	Chemical Engineering Thermodynamics	3	P - CHEE 200 / C - MATH 262
CHEM 234	Topics in Organic Chemistry	3	P - CHEM 212
COMP 208	Computers in Engineering	3	P - MATH 140, MATH 141 / C - MATH 133
MATH 263	Ordinary Differential Equations for Engineers	3	C - MATH 262
FACC 300	Engineering Economy	3	-
5th Term (Fall)		18 credits	Prerequisites/Co-requisites
CHEE 314	Fluid Mechanics	3	C - CHEE 204, MATH 264
CHEE 370	Elements of Biotechnology	3	-
CHEE 380	Materials Science	3	-
CHEE 390	Computational Methods in Chemical Engineering	3	P - CHEE 204, COMP 208, MATH 263 / C - MATH 264
MATH 264	Advanced Calculus for Engineers	3	P - MATH 262 / C - MATH 263
FACC 250	Responsibilities of the Professional Engineer	0	P - FACC 100 or BREE 250
CHEE xxx	Technical Complementary	3	-
6th Term (Winter)		18 credits	Prerequisites/Co-requisites
CHEE 310	Physical Chemistry for Engineers	3	C - CHEE 220
CHEE 315	Heat and Mass Transfer	3	P - CHEE 314
CHEE 351	Separation Processes	3	P - CHEE 220 / C - CHEE 204, CHEE 315
CHEE 474	Biochemical Engineering	3	P - CHEE 370/ C- CHEE 315
CHEE 484	Materials Engineering	3	P - CHEE 380
CHEE xxx	Technical Complementary	3	-
7th Term (Fall)		18.5 credits	Prerequisites/Co-requisites
CHEE 400	Principles of Sustainable Energy Conversion	3	P - CHEE 315 / C- CHEE 390, CHEE 484
CHEE 423	Chemical Reaction Engineering	3	P - CHEE 310, CHEE 315
CHEE 453	Process Design	4	C - CHEE 315, CHEE 351
CHEE 456-D1	Design Project	4.5	C - CHEE 453, FACC 300
CHEE 455	Process Control	3	P - CHEE 291/ C- CHEE 423, CHEE 453
FACC 400	Engineering Professional Practice	1	P - FACC 100, FACC 250, and 60 program credits
8th Term (Winter)		17.5 credits	Prerequisites/Co-requisites
CHEE 401	Energy Systems Engineering	3	P - CHEE 400
CHEE 440	Process Modelling	3	P - CHEE 423, MATH 264
CHEE 456-D2	Design Project	4.5	P - CHEE 456D1
CHEE 491	Instrumentation and Measurement 2	4	P - CHEE 231, CHEE 455
CHEE xxx	Technical Complementary	3	-

Notes:

1) **Technical Complementary** courses are selected from an approved list given on the next page.

2) The **Complementary Studies (CS)** courses are *Impact of Technology* courses (Group A) and *Humanities & Social Sciences, Management Studies and Law* courses (Group B). Students **must take one course (3 credits) from Group A and two courses (6 credits) from Group B**. The curriculum above includes suggested terms during which these courses can be taken. These must be chosen from an approved list under "Complementary Studies", found in the Program Requirements in the Faculty of Engineering Undergraduate section of the *Programs, Courses and University Regulations* publication - www.mcgill.ca/study (Go to Browse by "Faculties & Schools" to see your program listing).

Students are responsible for satisfying pre-/co-requisites and verifying with their department that they are meeting the requirements of their program.

Technical Complementary Courses - Chemical Engineering

A minimum of 9 credits of complementary courses must be chosen from a list of technical complementaries approved by the Department. The purpose of this requirement is to provide students with an area of specialization within the broad field of chemical engineering. Alternatively, some students use the technical complementaries to increase the breadth of their chemical engineering training.

List A

3-9 credits from the following:

		Credits	Prerequisites/Co-requisites
CHEE 301	Resource Recovery from Waste	3	P - CHEE 204, CHEE 220
CHEE 511	Catalysis for Sustainable Fuels and Chemicals	3	P - CHEE 204 and CHEE 310 or permission of instructor
CHEE 512	Stem Cell Bioprocess Engineering	3	P - MATH 262 and (CHEE 370 or BIOL 200), or Permission of Instructor
CHEE 515	Interface Design: Biomimetic Approach	3	P - (CHEE 310 and CHEE 380) or (CHEM 233 and MIME 261 and MIME 317) or permission of instructor
CHEE 521*	Nanomaterials and the Aquatic Environment	3	P - (CHEE 315 or CIVE 225 or MIME 356), (CHEE 310 or CIVE 430 or CHEM 233) or permission of instructor
or CIVE 521*	Nanomaterials and the Aquatic Environment	3	
CHEE 541	Electrochemical Engineering	3	P - CHEE 310 or instructor permission
CHEE 543	Plasma Engineering	3	P - CHEE 220, CHEE 314
CHEE 563*	Biofluids and Cardiovascular Mechanics	3	P - CHEE 314 or MECH 331 or instructor permission
or MECH 563*	Biofluids and Cardiovascular Mechanics	3	
CHEE 582	Polymer Science & Engineering	3	P - CHEE 314 or equivalent
CHEE 584	Polymer Processing	3	C - CHEE 315 or MIME 356 or equivalent
CHEE 585	Foundations of Soft Matter	3	-
CHEE 591	Environmental Bioremediation	3	-
CHEE 593*	Industrial Water Pollution Control	3	P - CHEE 314 or equivalent
or CIVE 430*	Water Treatment and Pollution Control	3	P - CIVE 225, CIVE 327
MECH 534	Air Pollution Engineering	3	P - MECH 331, MECH 341

*Students may choose only one course in each of the following sets:

- CHEE 521 or CIVE 521
- CHEE 563 or MECH 563
- CHEE 593 or CIVE 430

List B

0-6 credits from the following:

		Credits	Prerequisites/Co-requisites
BIEN 550	Biomolecular Devices	3	P - Permission of instructor
BREE 325	Food Process Engineering	3	-
BREE 522	Bio-Based Polymers	3	P - BREE 216 and BREE 341, or permission of instructor
CHEE 363**	Projects Chemical Engineering 1	2	P - CHEE 200
or CHEE 494**	Research Project and Seminar 1	3	-
or CHEE 495**	Research Project and Seminar 2	4	-
or CHEE 496**	Environmental Research Project	3	-
CIVE 557	Microbiology for Environmental Engineering	3	P - CIVE 225 or instructor permission
MIME 470	Engineering Biomaterials	3	P - MIME 261 or equivalent, instructor permission
MIME 515	(Bio)material Surface Analysis and Modification	3	(CHEM 233 and MIME 261 and MIME 317) or (CHEE 310 and CHEE 380) or permission of instructor
MIME 558	Engineering Nanomaterials	3	P - MIME 260 or MIME 261, MIME 362, or equivalent, or instructor permission

**Students may choose only one project course: CHEE 363, CHEE 494, CHEE 495, or CHEE 496

List C

0-3 credits:

The remaining credits, up to a maximum of 3 credits, may be taken from other suitable undergraduate courses in the Faculty of Engineering, with departmental permission.

Last update: May 8, 2024

For the official program listing, see the *Programs, Courses and University Regulations* publication (www.mcgill.ca/study).