

Chemical Engineering

2016/2017

Program Guide



Chemical Engineering provides the basic scientific engineering knowledge for the design, construction and operation of equipment and plants that process materials by chemical and physical operations into desired products. The curriculum is aimed at provision of a broad background in the underlying sciences of Chemistry, Physics and Mathematics, and detailed knowledge of Chemical Engineering principles, that will enable the graduate to proceed to further academic degrees by study and research at this University or elsewhere, or to carry on research, development or production operations in any process industry.

Students can choose the general program or specialize in an area by completing an option program: Energy Conversion Engineering or Biomedical Engineering Option.

The Department of Chemical Engineering considers practical training and close contact with Industry an important aspect of the engineering curriculum. The Industrial Practice Program includes both the two week Chemical Engineering Practice School and the work term or co-op components carried out in industry.

Important Notes

With permission from the Engineering Curriculum Committee, the Department of Chemical Engineering has modified some key courses in the undergraduate program, based on the feedback received from the students through the Chemical Engineering Undergraduate Society and the Town Hall Meetings and our internal feedback reviews facilitated by the Canadian Engineering Accreditation Board (CEAB) accreditation process.

Students entering their first or second year of chemical engineering studies

will follow the 2016/2017 course matrix. This will include taking the following courses in Term 3 of their studies:

- BIOL1001: Biological Principles I
- CHE2003: Fundamentals – Mass Balances
- CHE2012: Engineering Thermodynamics
- CHE2501: General Materials Science
- CHE2506: Materials Science Laboratory
- CHEM2401: Introductory Organic Chemistry for Non-Chemistry Majors
- MATH2513: Multivariable Calculus for Engineers

Term 4 courses are as follows:

- CHE2004: Fundamentals II – Mass & Energy Balances
- CHE2301: Transport Phenomena (new course)
- CHE2412: Chemical Engineering Lab I
- CHE2525: Fundamentals of Chemical Process Design
- CHE2703: Fluid & Fluid Particle Mechanics (modified course)
- Math3503: Differential Equations for Engineers

CHE2301 Transport Phenomena in Chemical Engineering

Foundational analogies between fluid mechanics, heat transfer, and mass transfer, and the applications of those analogies to practice: Navier-Stokes, Fourier's Law, Fick's Laws and Chilton-Colburn J-factor. Turbulence: boundary layers, scaling, dispersion. Graphical techniques for solving unsteady-state systems. Empirical correlations for estimating heat and mass transfer coefficients.

CHE2703 Fluid & Fluid-Particle Mechanics

Introduction to practical fluid mechanics, including fluid properties, statics and kinematics, and fluid momentum and energy. Emphasis on internal flows: laminar/turbulent flows, friction factor, loss coefficients for fittings and valves, and pipe networks. Design of piping networks and pump selection using pump curves. Motion of particles in fluids. Theory and design of industrial equipment for clarification/sedimentation and cyclone separation.

Students entering their third year of chemical engineering studies

will take the following courses in Term 5 of their studies:

- CHE3123: Chemical Engineering Thermodynamics
- CHE3304: Heat Transfer
- CHE3332: Mass Transfer (new course)
- CHE3424: Chemical Engineering Lab II
- CHEM3621: Physical Chemistry II
- CHEM3886: Analytical Chemistry Laboratory for Chemical Engineers
- 1 NTE or 1 TE

CHE3332 Mass Transfer

Fundamentals of the theory of mass transport; diffusion in gases, liquids, solids, and between phases. Effect of reactions on mass transfer. Mass transfer rates by convection and dispersion.

Upon completion of Term 5, students will take the following courses in Term 6:

- CHE3324: Unit Operations I (modified course)
- CHE3418: Numerical Methods and Modelling in Chemical Engineering (modified course)
- CHE3434: Chemical Engineering Lab III
- CHE3505: Chemical Process Design
- CHEM3897: Organic Chemistry Laboratory for Chemical Engineers
- STAT2593: Statistics for Engineers (if not taken last year)
- 1 NTE or 1 TE

CHE3324: Unit Operations I

Analysis and design procedures for mass transfer operations based on equilibrium stage concept. Graphical procedures for simple systems. Numerical stagewise procedures. Distillation, gas absorption and liquid extraction. Flow through porous media and fluidization.

CHE3418: Numerical Methods and Modelling in Chemical Engineering

Numerical methods and their applications to chemical engineering. Root finding techniques, data interpolation, least-squares regression and numerical integration. Modelling of physical and chemical processes in the steady and unsteady states. Analytical and numerical solutions of model equations.

Students entering their forth (final) year of chemical engineering studies

will take the following courses in Term 7 of their studies:

- CHE4101: Chemical Reaction Engineering I
- CHE4225: Chemical Plant Design
- CHE4341: Unit Operations II (formerly Mass Transfer Operations)

- CHE4404: Chemical Engineering Lab IV
- 9 ch of NTE or TE

Students will follow the schedule for Term 8.

Technical Electives

Please see the list of technical electives for 2016/2017 in the following pages. The department remains committed to offering its students a breadth of technical elective courses, consistent with the faculty's expertise and our program options. Please be aware that elective courses from other engineering programs are considered creditable courses with the written permission of the Director of Undergraduate Studies.

The Department of Chemical Engineering will try ensure that all students registered in an Option have a reasonable opportunity to complete that Option over two academic years of study.

Academic Advisors

The academic advisors for the 2016/2017 academic year

- 1st year: Dr. Guida Bendrich
- 2nd year: Dr. Guida Bendrich
- 3rd year: Dr. Brian Lowry
- 4th year: Dr. Mladen Eic
- 5th year: Dr. Mladen Eic
- Transfer students within one year of CHE: Dr. Guida Bendrich

I wish you all well and best luck in your studies in 2016/2017



Technical Electives

Technical Electives are scheduled as follows for 2016-2017:

Fall 2016

CHE 5234 Oil Refining and Natural Gas Processing 3 ch (3C)

An introduction to the physical, chemical, and engineering principles used in the processing of natural gas, petroleum, and bitumen. The nomenclature, common processes, basic designs, and relevant regulations will be covered. Prerequisites: CHE 2004, CHE 3123 or approval by the instructor.

CHE 5313 Energy and the Environment 3 ch (3C)

Explores generation and the use of energy; extraction of raw materials through product production. Includes: survey of known energy reserves, emerging technologies, discusses the thermodynamic and regulatory constraints to energy conversion. Fossil fuels, nuclear power and renewable energy sources are described. Prerequisites: CHE 2012 or equivalent; Chem 1982/1987 or permission of the instructor.

CHE 5314 Chemical Process Industries 3 ch (3C)

A technical overview of selected chemical industries with consideration of their impact on the environment. Emphasis is on current process technology and pollution control methods. Environmental guidelines and regulations are also presented. Five modules; each covering a specific chemical industry, taught by Chemical Engineering faculty.

CHE 5434 Advanced Transport Phenomena 3 ch (3C)

Foundational analogies between fluid mechanics, heat transfer, and mass transfer, and the applications of those analogies to practice. Derivation of differential and partial differential transport equations. Turbulence: boundary layers, scaling, dispersion. Core and optional models also cover key aspects of related topics such as dimensional analysis, mixing in pipe flows, reverse osmosis, ion transport, polymer rheology, and evaporation/condensation processes. Prerequisites: CHE 3304 and Math 2513, or equivalents.

CHE 5421 Water Quality and Treatment 4 ch (3C 2L)

Applied wastewater microbiology, wastewater analysis (physical, chemical, and biological), wastewater treatment processes, industrial and municipal wastewater treatment and management, wastewater treatment systems and plant design. The course content will focus on treatment and management issues of wastewater from industrial, municipal, and domestic sources. Pollution control strategies and protocols are also examined. Prerequisites: Chem 1982 (or equivalent) and CE 3403 or CHE 2004m or permission of course instructor.

Winter 2016

CHE 5522 Nanotechnology 3 ch (3C)

Studies the science of nanotechnology and surveys current and emerging applications of nanomaterials and nanodevices in many engineering disciplines. The unique physical properties of materials at the nano-meter scale are discussed and explained. Fabrication methods and advanced instrumentation for the construction, manipulation and viewing of nanometer-sized materials are presented. Pre-requisite: CHEM1982/1987 or equivalent, plus 100ch of degree credit. Restricted to science and engineering students.

CHE 5923 Papermaking 3 ch (3C)

Overview of pulping and papermaking processes; pulp and paper properties; requirements for different grades of paper and board; stock preparation; applications of fluid mechanics; wet-end chemistry; dry-end operations. Prerequisites: Math 1013; CHE 2703 or equivalent, or permission of the instructor.

CHE 5423**Practice School****4 ch (W)**

A two week industrial practice school in selected industrial process plants scheduled after spring examinations. Groups of students, with Faculty supervisors, are assigned to engineering projects to be carried out on industrial process units. Students are required to present an oral report to plant operating and technical personnel at the end of the practice session. A written report is also required. As there will be practical limitations to the number of students in any one practice school, application for positions in this course will be treated on a first-come, first-served basis. This course is strongly recommended as a technical elective for students not planning to complete either the co-op or professional experience programs. Prerequisites: CHE 2004, CHE 2412.

Non-Technical Electives

Non-technical electives are an important element of engineering education. Regardless of engineering role, engineers require an appreciation of business concepts, good communication skills and a broad sense of the impact of technology on society. Most engineers end up in management roles, making decisions on time, people and money. It is wise therefore, for students with an interest in management to choose their complimentary studies courses carefully. In the chemical engineering program at UNB, three of the four non-technical elective courses required for the degree (12 ch total) are area specific:

Humanities (3 ch) – Sociology, Anthropology, History, Philosophy, Classics, Political Science

Business (3 ch) – Any TME or ADM course; or select ECON courses

Non-Language (3 ch) – Any Humanities or Business course; PSYC, RLS, ENVS, ENR, IDS, RCLP, ARTS, WLCS

Other (3 ch) – must be approved by the Director of Undergraduate Studies

The Department STRONGLY recommends that students to obtain business-related education through the complementary studies stream and to pursue a diploma in **Technology Management and Entrepreneurship** which is offered by the Faculty of Engineering. For more information on integrating this diploma with the undergraduate degree in chemical engineering, please contact the Director of Undergraduate Studies.

Transfer Credits

As per university regulations, current students who are seeking transfer credit for courses taken at other institutions must receive permission prior to taking the course. Courses that have been taken without the proper approvals will not be counted towards your degree. Please obtain the appropriate permission slip (Request Form for Off-Campus Study) from the UNB Registrar or online http://www.unb.ca/cel/_resources/pdf/bis/off-campus-study-form.pdf, and seek approval from the Director of UG Studies for any courses you wish to take.

Pre- and Co-Requisites

Pre- and co-requisites are important guideposts along the degree program path. You must not attempt a chemical engineering course without having its stated pre- and co-requisites. If you find yourself out of sequence in the program (for example, as a transfer student or because of a late withdraw), please seek advising from the Academic Advisor or Director of UG Studies, and obtain official permission from the course instructor before enrolling into a course: a record of this permission must be put into your personal file in the Department. There is enough flexibility in the program to allow minor deviations, but no student will be allowed to take courses out of sequence if they are in academic jeopardy ($GPA \leq 2.2$).

Course Equivalents

Please note that students must follow the course program only. Students are NOT permitted to take any other courses in place of the required courses. Permission may be granted under exceptional circumstances, however, credit will not be given without a letter of permission on file.

Chemical Engineering Option Registration Form

- refer to Calendar or Program Guide for details on Option programs
- the Department of Chemical Engineering reserves the right to remove registration in a chosen Option program, where students do not register in Option courses or where their studies clearly diverge from that Option program.
- the Department of Chemical Engineering will try to ensure that all students registered in an Option have a reasonable opportunity to complete that Option over two academic years of study.
- withdrawing from or failing Option courses is normally not a problem, but either could potentially make subsequent completion of an Option impossible.
- admission to Options is automatic for students enrolled in the BScE (Chemical Engineering) program who have successfully completed both ChE 2004 (or 2014) and ChE 2012, **along with the completion of this form.**

Name: _____ UNB email: _____

ID # _____ Expected Graduation Year: _____

For a list of courses required for completion of the Options below please refer to the Program Guide.

OPTIONS (You may register in more than one Option)

Biomedical Engineering Option

Energy Conversion Engineering Option

Signed: _____ Date: _____

Please return this completed form to the Chemical Engineering Office.

Biomedical Engineering Option in Chemical Engineering

The Biomedical Option is available to students in the Department of Chemical Engineering. In order to enter the option program students must meet approval by the Department of Chemical Engineering.

To complete the option program the student must complete four technical electives (12 ch minimum), consisting of one core course (which is normally offered every year),

APSC 3953	Basis of Biomedical Engineering	3ch
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and three courses selected from the list below (most courses are offered every year):

BIOL 2023	Biochemistry	3ch
BIOL 3043	Cell Biology	3ch
BIOL 2023	Evolutionary Genetics	3ch
BIOL 2753*	Introduction to Human Anatomy	3ch
BIOL 2792	Human Physiology - Systems	3ch
CHEM 3003**	Biocomputing in Drug Design I	5ch
CHEM 4523	Medicinal Chemistry	3ch
KIN 2062*	Introductory Biomechanics	3ch
KIN 3061*	Advanced Biomechanics	4ch
KIN 4163*	Workplace Ergonomic Design And Analysis	3ch
ME 5913	Biomechanics	4ch
PHYS 5993	Magnetic Resonance Imaging	3ch

* some option courses require that Biol 2753 be taken as a pre-requisite.

** some option courses require that Biol 1001 be taken as a pre-requisite.

Students with a special interest in biology and biochemical engineering are encouraged to pursue a Minor in Biology through the Faculty of Science. Such students should seek advising from the Director of Undergraduate Studies to embark upon this path as soon as possible in the degree program.

Energy Conversion Engineering Option in Chemical Engineering

This option places emphasis on emerging technologies and societal issues in the energy and environment sector within chemical engineering. This directed path consists of 3 technical elective courses and 1 complementary studies course (minimum total of 15 ch) selected from the approved lists below. Students may elect to receive a further specialization within the ECE Option by focusing their technical electives in nuclear & power plant technology, oil & gas processing or environmental disciplines.

To participate in the option, students must seek approval of the department.

Core:

CHE 5313 Energy and the Environment

Complementary Studies Elective: (1 course from the following list):

ECON 3865 Energy Economics
ENVS 2003 Intro. to Environmental Studies
ENVS 2023 Climate Change
ENVS 4001 Environmental Impact Assessment and Management
ENVS 4002 Stakeholder Approaches to Environmental Problem Solving
ENR 2021 Natural Resource Management, Institutions, Policy, Governance
HIST 3925 Technology and Society

Technical Elective: (3 courses from the following list):

Oil & Gas Processing

CHE 5234 Oil Refining and Natural Gas Processing
CHE 5244 Enhanced Oil Recovery
CHE 5264 Oil Sands Technology
CHE 5933 Biorefining: Principles, Processes and Products

Nuclear & Power Plant Technology

CHE 5344 Combustion
CHE 5744 Steam Supply Systems
CHE 5824 Corrosion Processes
CHE 5834 or Nuclear Engineering
ME 5373 Nuclear Engineering

Environmental

CE 5432 Wastewater Treatment and Pollution Control
CHE 5314 Chemical Process Industries
CHE 5413 Air Pollution Control
ME 5553 Ocean Wave Energy Conversion
ME 5933 Industrial Ecology

Students with special interest in environmental studies are also encouraged to pursue a minor or secondary major in this area through the university's *Environmental Studies Program*, administered by the Faculty of Forestry and Environmental Management. The Department also encourages interested students to pursue a Masters of Engineering degree in environmental studies after graduation.



 **UNB** | Student
EST. 1785 UNIVERSITY OF NEW BRUNSWICK Abroad

STUDENT ABROAD PROGRAM: THE WORLD IS YOUR CLASSROOM

Studying abroad allows you to earn credits while discovering new cultures and experiences.

International opportunities are available to UNB students through our co-op, internship, summer school, exchanges or group-travel with a UNB professor.

You can choose between short-term abroad programs ranging from 1-3 weeks to studying or working abroad for a full term and up to a year.

To help with the practicalities of studying/working or interning abroad, UNB offers tools and workshops to help you maximize your experience, gain important skills for enhanced employability after graduation and build an international network of contacts.

Internationally mobile students are in a better position to find their first job, and studying abroad is a great investment in your future career.

UNB HAS MORE THAN 89 INTERNATIONAL PROGRAMS IN 36 COUNTRIES.

For more [testimonials](#) and a full list of [destinations](#) suitable for Chemical Engineering students, and more, see unb.ca/exchange.

Talk to the Director of Undergraduate Studies for advice on courses and how these would integrate into your CHE degree.



TAYLER HUNT



Throughout my time at UNB, I've had the opportunity to experience two semesters abroad - one as a co-op student and one as an exchange student. In Germany, I was able to practice a new language, embrace a new culture, and visit neighboring countries. A year later, I chose to do an exchange to Singapore, which was even more challenging and equally as rewarding. It's great to be able to travel while adding value to your resume and it's always the first topic that comes up in interviews! I highly recommend an international work term and/or academic exchange! You won't regret it!



Tayler was an exchange student at Nanyang Technological University in Singapore and did a co-op in Germany.

KIRSTEN MELNYCK



"Working in a country where English isn't the main language was difficult at first and pushed me outside of my comfort zone, but now I can understand full conversations and sometimes respond in German. I would never have thought that I would learn so much German in such a short period of time!

Thanks to my internship in Germany I was hired for an 8-month co-op term at Nexen, Alberta."



Kisten was the UNB 2014-15 and 2015-16 DAAD (German Academic Exchange) Young Ambassador. She did an 8-month co-op at Gambio Dyalisatoren GmbH in Germany



	standard program	recommended co-op schedule	16 month Co-op work term after third year	courses abroad
Year 1	Sept.	term 1	term 1	term 1
	Jan.	term 2	term 2	term 2
	May			Summer School / Travel Study
Year 2	Sept.	term 3	term 3	term 3
	Jan.	term 4	term 4	term 4
	May		Co-op	Summer School / Travel Study
Year 3	Sept.	term 5		term 5 : exchange or
	Jan.	term 6	term 6	term 6 : exchange
	May		Co-op	Summer School / Travel Study
Year 4	Sept.	term 7		term 7
	Jan.	term 8	Co-op	term 8
	May	<i>graduation 4 years</i>		<i>graduation 4 years</i>
Year 5	Sept.		term 7	
	Jan.		term 8	
	May		<i>graduation 5 years</i>	<i>graduation 5 years</i>

Chemical Engineering Co-op Scheduling

Students completing their BScE in Chemical Engineering may wish to gain work experience during their studies. The co-op program in Chemical Engineering is recommended for students who wish to maximize the reinforcement between academic and work experience. The schedule shown below is the recommended pattern for work terms for students in the co-op program who wish to add no more than one year to their time at UNB. By simply switching the order in which terms 5 and 6 are taken, it is possible to fit 20 months of co-op experience into a five-year degree program. An example of a 16 month Co-op term is also shown.

Year of Study	4 Years	4 Years with Co-op	5 Years with Co-op	5 Years with Co-op
Year 1	September	Study Term 1	Study Term 1	Study Term 1
	January	Study Term 2	Study Term 2	Study Term 2
	May		Co-op	Co-op
Year 2	September	Study Term 3	Study Term 3	Study Term 3
	January	Study Term 4	Study Term 4	Study Term 4
	May		Co-op	Co-op
Year 3	September	Study Term 5	Study Term 5	Study Term 5
	January	Study Term 6	Study Term 6	Coop
	May		Coop	Coop
Year 4	September	Study Term 7	Study Term 7	Coop
	January	Study Term 8	Study Term 8	Study Term 6
	May	Graduation	Graduation	Coop
Year 5	September			Study Term 7
	January			Study Term 8
	May			Graduation

Year of Study	4 Years with Exchange	5 Years with Exchange	5 Years with Exchange & Co-op
Year 1	September	Study Term 1	Study Term 1
	January	Study Term 2	Study Term 2
	May	Summer School / Travel Study	Summer School / Travel Study
Year 2	September	Study Term 3	Study Term 3
	January	Study Term 4	Study Term 4
	May	Summer School / Travel Study	Summer School / Travel Study
Year 3	September	Study Term 5	Study Term 5
	January	Study Term 6	Study Term 6
	May	Summer School / Travel Study	Summer School / Travel Study
Year 4	September	Study Term 7	Exchange
	January	Study Term 8	Exchange
	May	Graduation	Exchange
Year 5	September		Study Term 7
	January		Study Term 8
	May		Graduation

Diploma in Technology Management and Entrepreneurship (DTME) for Chemical Engineering Students

The Department STRONGLY recommends students obtain business-related education through the complimentary studies stream and pursue a Diploma in Technology Management and Entrepreneurship (DTME) which is offered by the J. Herbert Smith Centre in the Faculty of Engineering. By planning ahead, and with careful selection of courses, you can complete this diploma concurrently with your degree while only taking one additional course. And there is no additional cost for this program!

The diploma requires completion of five courses, up to four of which can be shared with your degree. To most easily meet the requirements of your degree and the DTME concurrently:

1) Select one of the following as your humanities course:

HIST 3925: Technology and Society	HIST 3975: History of Life Sciences
POLS 1603: Politics of Globalization	SOCI 2533: Information Society
SOCI 2534: Technology and Social Change	

2) Select one of the following as your non-language course:

ADM 1213: Financial Accounting	ADM 1313: Principles of Marketing
ADM 2513: Organizational Behaviour	ADM 2815: Human Resource Management
ADM 3123: Business Law I	ADM 3155: International Business
ADM 3713: Management Information Systems	ADM 4326: Customer Satisfaction and Loyalty
ADM 4615: Operations Management I	HIST 3925: Technology and Society
HIST 3975: History of Life Sciences	IDS 2001: Intro. to International Development Studies
POLS 1603: Politics of Globalization	RCLP 2001: Practicing Leadership in Community Projects
TME 3346: Marketing of Technological Goods and Services	

3) Select your business course from the list below (prerequisite: completion of 80 ch):

4) Select your 'other' course from the list below (prerequisite: completion of 80 ch):

5) Select one additional course from the list below (prerequisite: completion of 80 ch):

TME 3013: Entrepreneurial Finance	TME 3113: Bus. Planning and Strategy in an Entrepreneurial Env.
TME 3213: Quality Management	TME 3313: Managing Engineering and IT Projects
TME 3413: Technological Creativity and Innovation	TME 3423: Technological Risk and Opportunity

For more information, please visit www.unb.ca/tme

You should register for the diploma early by completing the form at

http://www.unb.ca/fredericton/engineering/tme/resources/pdf/admission_application.pdf

Plagiarism



The Department has a zero tolerance policy on plagiarism. Teaching Assistants and instructors will aggressively identify and severely penalize offenders, even for minor infractions.

The minimum penalty for plagiarism is a grade of zero on the work and a notation on your transcript.

Graduation Policy for Chemical Engineering (BScE)



The policy on graduation described in the UNB Calendar is that students must complete the degree as it is defined when they start a program. Unfortunately, this isn't really practical when courses are deleted or changed, so Chemical Engineering uses a modified version of this regulation: the policy is the lesser of the requirements when you start your degree and those when you complete it. If a course is dropped or changed in the program we will always make every attempt to ensure a reasonably fair transition. However, students who fail courses close to a change in requirements may sometimes be required to complete additional credit hours as a result. Following the recommended four-year program is generally the best way to avoid complications due to rule changes.

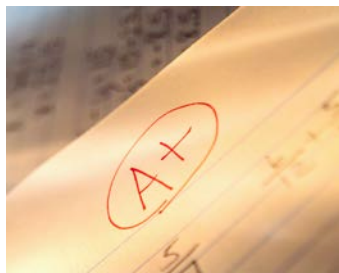
Deferred Exams

You are expected to follow the exam schedule set by the Registrar.

Students who by reason of illness or extenuating circumstances are unable to write final examinations at the specified times may apply to the Registrar for permission to write deferred exams written medical permission is required.

The Department of Chemical Engineering has set deferred examination dates of Thursday, January 5, 2017 and Thursday, May 4, 2017. Students who cannot write on these dates will normally be required to appeal for further deferral via the Registrar's Office.

For full Deferred Examination regulations please refer to University Regulations in the Undergraduate Calendar.





**Degree Audit Form Chemical Eng.
Students Entering in 2016/2017**

Name: _____ Date: _____

UNB ID: _____ email: _____

UNB Course	ch	Course equivalents	Grade(s)	Notes	UNB course	ch	Course Equivalents	Grade(s)	Notes
ChE 1001	1	1 ch CHE TE			Phys 1081	5			
ChE 2003	3				Engg 1082	4			
ChE 2004	3								
ChE 2012	3				CS 1003	4			
ChE 2301	3				EE 1813	4			
ChE 2412	3				Engg 1001	0	Engg 1013		
ChE 2501	3			Engg 1003	4				
ChE 2506	1			Engg 1015	2				
ChE 2525	4			Engg 4013	3				
ChE 2703	3								
ChE 3123	3				Biol 1001	3			
ChE 3304	4				Math 1003	3			
ChE 3324	4				Math 1013	3			
ChE 3332	3				Math 1503	3			
ChE 3418	3				Math 2513	4			
ChE 3424	3				Math 3503	3			
ChE 3434	3								
ChE 3505	4				Stat 2593	3			
ChE 4101	3								
ChE 4225	8				NTE Humanities	3	Anth, Clas, Hist, Phil, Pols, Soci		
ChE 4341	4				NTE Business	3	ADM, TME, Econ		
ChE 4404	3				NTE Non-Lang	3	Hum, Bus, Psyc, RLS, ENV5, ENR, IDS, RCLP, ARTS, WLCS		
ChE 4601	4								
CHE TE					NTE Other	3			
CHE TE									
CHE TE									
CHE TE									
Chem 1982/1987	5								
Chem 2401	3								
Chem 3621	3								
Chem 3886	2								
Chem 3897	1								
Chem 4886	2								

Notes:

Biomedical or Energy Conversion Option

Chemical Engineering Faculty

<u>Name</u>	<u>Office Phone</u>	<u>Room No.</u>	<u>Email</u>
Guida Bendrich	447-3238	E39A	bendrich@unb.ca
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Ying Zheng	447-3329	E39B	yzheng@unb.ca

ChE Office Info

Phone: 453-4520

Fax: 453-3591

Location: D-39 (Head Hall)

Hours: winter - 8:15 - 4:30, summer 7:45 - 4:00 (closed for lunch: noon-1 pm)

Faculty Advisors

Guida Bendrich	<i>1st and 2nd Year and Transfer Students</i>
Brian Lowry	<i>3rd Year</i>
Mladen Eic	<i>4th and 5th Year</i>

Director of Undergraduate Studies (for 2015/2016)

Guida Bendrich
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447-3238

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Sylvia Demerson
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