

# Chemical Engineering

2017/2018

## 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

## Pre- and Co-requisites

The department will verify that students meet the pre- and co-requisite requirements for CHE courses after the *add/drop date*, i.e., after the last day for adding **Fall Term, Winter Term** and **Full-year Courses**. If a student does not meet the pre- and co-requisite requirements then he/she will be removed from the respective course.

## Email Communications

When communicating via email with, for example, a professor or the Department Office, then:

- Write the email in a professional language;
- Complete the "Subject" line;
- Address the recipient properly;
- State the purpose for the email clearly;
- Included your student number in the email signature; and
- Send the email from your UNB email account.

## Academic advising

The following advising procedure has been established:

- Email Ms. Sylvia Demerson to request an advising appointment;
- Follow the *Email Communications* format as outlined above;
- Advising meetings will be conducted in the CHE Office (D39), unless otherwise stated;
- Arrive on time for the meeting;
- If you cannot come to the meeting then let Ms. Demerson know 24 hours ahead of the meeting;
- Come prepared to the meeting, e.g. if you are looking for a revised course schedule then bring a draft version with you to the meeting

## Co-op Forms, Off Campus Study Permit, UNB Online (CEL) Online Form

- *All Forms*: Complete the respective form and leave it with Ms. Demerson in the CHE Office (D-39);
- *All Forms*: Once the form/request has been reviewed/signed off by the department then the office will forward the form to the respective person/department at UNB;
- *All Forms*: If a request has been denied then the department will inform you;
- *Off Campus Study Permit*: Do not take a course at another college or university without having received permission from UNB (the form must be signed by the CHE department);

**Scholarships**

Do not forget to apply for Scholarships through your eServices (learn more about it at:

<http://www.unb.ca/scholarships/continuing/index.html>,

<http://www.unb.ca/scholarships/transfer/index.html>)

**Services for Students Guide**

People, programs, and services are available at UNB to help you to succeed as a student. A listing of services (academic appeals, money matters, health services, etc.) for students can be found here:

<http://www.unb.ca/fredericton/studentservices/academics/servicesforstudentsguide.html>



# Technical Electives

**Technical Electives are scheduled as follows for 2017-2018:**

## **Fall 2017**

**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 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 5714                      Electrochemical Engineering                      3 ch (3C)**

Electrochemical flux equations. Reversible cells. Energy producing cells. Energy consuming cells. Corrosion. Applications to include discussion of primary and secondary batteries, electrolytic processes, corrosion suppression.

**CHE 5933                      Biorefining: Principles, Processes and Products                      3 ch (3C)**

This course discusses various bio-refining processes, placing emphasis on fundamental process chemistry and biology in the conversion of biomass to engineered products. Pathways for the use of wood resources are described in detail; exemplary processes, such as gasification, pyrolysis, pre-extraction and bio-diesel production are discussed. Industrial fermentation, including sugar fermentation to produce ethanol, will be explored. The modeling concept for integrated pulp manufacturing and bio-refining will also be discussed. Pre-requisite: CHEM 1982/1987, CHEM 2401 and a minimum of 80 credit hours.

**CHE 5432                      Wastewater Treatment & Pollution Control                      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 2018**

**CHE 5254                      Polymer Reaction Eng.                      3 ch (3C)**

Basic Polymer concepts. Polymer structural characteristics and properties. Mechanisms, kinetics and reactors for polymerization. Polymer rheology and transport processes. Processing applications and the effects of processing on polymer properties. Prerequisites: CHE 2501, CHE 2703, Math 3503. Co-requisite: CHE 3304 or equivalent

**CHE 5413                      Air Pollution Control                      3 ch (3C)**

Sources of air pollution; modeling atmospheric dispersions; pollution control in combustion; particulate control methods; control of gaseous emissions; industrial odour control; indoor/in-plant air quality. Corequisite: CHE 4341.

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. Prerequisite: CHEM 1982/1987 or equivalent, plus 100 ch of degree credit. Restricted to science and engineering students.

**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, ENV5, 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](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 1014) 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**

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☐ **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 2013	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.

\*\*\*Students will be permitted to replace “one” course from the list above if no course is available or being offered/available to complete the option. Department approval is required.

## 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.

Students will be permitted to replace "one" course from the list above if no course is available or being offered/available to complete the option. Department approval is required.





# 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](http://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!*



Taylor 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 Gambro Dyalisatoren GMBH in Germany



## 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	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	Co-op
Year 3	September	Study Term 5	Study Term 5	Study Term 5
	January	Study Term 6	Coop	Study Term 6
	May	Coop	Coop	Coop
Year 4	September	Study Term 7	Coop	Coop
	January	Study Term 8	Study Term 6	Coop
	May	Graduation	Coop	Coop
Year 5	September		Study Term 7	Study Term 7
	January		Study Term 8	Study Term 8
	May		Graduation	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	Coop
	January	Study Term 8	Coop
	May	Graduation	Coop
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 2001: Creativity, Innovation and Value Creation	
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):

\* Note: TME 2001 or TME 3346 may be selected as your business or other course

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](http://www.unb.ca/tme), or contact the TME office in H 225

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

[http://www.unb.ca/fredericton/engineering/tme/\\_resources/pdf/admission\\_application.pdf](http://www.unb.ca/fredericton/engineering/tme/_resources/pdf/admission_application.pdf)

# RECOMMENDED 4-YEAR PROGRAM FOR STUDENTS ENTERING IN 2017

## Mondays, Wednesdays & Fridays

Time	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	Term 7	Term 8
8:30 AM	CS 1003	CHEM 1982	CHE 2012	MATH 3503		CHE 3324		
9:00 AM								
9:30 AM	MATH 1503		CHEM 2401	CHE 2004	CHE 3123	STAT 2593		
10:00 AM								
10:30 AM	PHYS 1081	ECE 1813	CHE 2003	CHE 2703	CHE 3332		CHE 4101	CHE 4601
11:00 AM								
11:30 AM	MATH 1003	MATH 1013	MATH 2513	CHE 2525	CHE 3304	CHE 3505	CHE 4341	NTE or TE
12:00 PM								
12:30 PM		CHE 1001 (W)	BIOL 1001	CHE 2301	NTE or TE	CHE 3418	NTE or TE	NTE or TE
1:00 PM								
1:30 PM	ENGG 1003 (M,W)	ENGG 1082			CHEM 3621	NTE or TE		
2:00 PM	ENGG1001							
2:30 PM							CHE 4225 (W)	CHE 4225 (W)
3:00 PM		ENGG 1082 (M)			CHEM 3886 (M)			
3:30 PM	ENGG 1003 (M)	CHEM 1987 (W)		CHE 2412 (W or F)	{alternative second section in evening}			
4:00 PM								
4:30 PM								
5:00 PM								
5:30 PM								
6:00 PM				CHE 2412 (W)				
6:30 PM		NTE						
7:00 PM								

## Advising Information

Fall Term

## Tuesdays

8:30 AM								
9:00 AM	CS 1003	ECE 1813	CHE 2501	MATH 3503				
9:30 AM								
10:00 AM				CHE 2301			CHE 4101	
10:30 AM						CHE3505	CHE 4341	
11:00 AM								
11:30 AM	ENGG 1015		MATH 2513	CHE 2703		CHE 3324		
12:00 PM								
12:30 PM		NTE	NTE					
1:00 PM								
1:30 PM				CHE 2412				
2:00 PM								
2:30 PM								
3:00 PM	PHYS 1081	ECE 1813			CHE 3424 {alternative M or W or Th}	CHE 3434 {alternative M or W or Th}		CHEM 4886 {alternative F}
3:30 PM								
4:00 PM								
4:30 PM								
5:00 PM								
5:30 PM							CHE 4225	CHE 4225
6:00 PM								
6:30 PM								ENGG 4013
7:00 PM								

Winter Term

## Thursdays

8:30 AM	MATH 1003	MATH 1013	CHE 2501		CHE 3424	CHE 3434		CHE 4601
9:00 AM								
9:30 AM					CHE 3304			
10:00 AM								
10:30 AM								
11:00 AM								
11:30 AM				CHE 2004		NTE or TE		
12:00 PM								
12:30 PM		NTE	CHE 2012					
1:00 PM								
1:30 PM				CHE 2525			CHE 4404	CHE 4404
2:00 PM								
2:30 PM								
3:00 PM	ENGG 1015		CHE 2506 {alternative T or W or F}			CHEM 3897		
3:30 PM								
4:00 PM								
4:30 PM								
5:00 PM								
5:30 PM							CHE 4225	CHE 4225
6:00 PM								
6:30 PM								ENGG 4013
7:00 PM								

Summer Term

### Notes:

1. A minimum of 12 ch of Complementary Studies electives (NTE) is required
2. A minimum of 12 ch of technical electives (TE) is required
3. Schedule NTEs and TEs to meet your workload requirements
4. Courses may shift to a different time slot within a term or to a different term
5. M: Monday, T: Tuesday, W: Wednesday, Th: Thursday, F: Friday
6. This schedule may change, e.g. the times when courses are being offered

## Chemical Engineering (UNBSJ)

Name:

Date:

Student #:

Term	Courses	Course Name	Cr.hrs.	Passed
1	APSC1013	Mechanics I	5	
	CS1003	Introduction to Computer Programming	4	
	ENGG1001	Engineering Practice Lecture Series	0	
	ENGG1003	Eng Technical Communications	4	
	ENGG1015	Intro to Eng Dsgn and Prob Solving	2	
	MATH1003	Introduction to Calculus I	3	
	MATH1503	Introduction to Linear Algebra	3	
2	APSC1023	Mechanics II	5	
	CHE2003	Fundamentals I - Mass Balances	3	
	CHEM1872	General Physical and Inorganic Chemistry	3	
	CHEM1877	General Physical and Inorganic Chem Lab	2	
	ECE 1813	Electricity and Magnetism	4	
	MATH1013	Introduction to Calculus II	3	
3	BIOL1105	Biology I	3	
	CHE2004	Fundamentals II - Mass & Energy Balances	4	
	CHE2501	General Materials Science	3	
	CHE2506	Materials Science Lab	1	
	CHEM2421	Organic Chemistry I	3	
	MATH2513	Multivariable Calculus for Engineers	4	
	STAT2593	Probability and Statistics for Engineers	3	
4	CHE2302	Transport Phenomena	4	
	CHE2412	Chemical Engineering Laboratory I	3	
	CHE2525	Fundamentals of Chemical Processes Design	4	
	MATH3503	Differential Equations for Engineers	3	
	ME3413	Thermodynamics I	3	
	ME 3513	Fluid Mechanics	4	



**Degree Audit Form Chemical Eng.  
Students Entering in 2017/2018**

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, ENVS, ENR, IDS, RCLP, ARTS, WLCS		
ChE 4601	4								
CHE TE					NTE Other	3			
CHE TE					Notes:          Biomedical or Energy Conversion Option				
CHE TE									
CHE TE									
Chem 1982/1987	5								
Chem 2401	3								
Chem 3621	3								
Chem 3886	2								
Chem 3897	1								
Chem 4886	2								

## 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
Felipe Chibante	452-6266	Room 204 (Bld. 2)	chibante@unb.ca
Frank Collins	452-6063	E230F	fcollins@unb.ca
William Cook	452-6318	E230C	wcook@unb.ca
Michel Couturier	453-4690	GD126	cout@unb.ca
Mladen Eić	453-4689	D32B	meic@unb.ca
Francis Lang	453-3556	E230B	francis.lang@unb.ca
Brian Lowry	453-4691	C119	bjl@unb.ca
Jamie Miles	458-7308	D106	jamie.miles@unb.ca
Yonghao Ni, Chair	452-6066	D39	yonghao@unb.ca
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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>1<sup>st</sup> and 2<sup>nd</sup> Year and Transfer Students</i>
Brian Lowry	<i>3<sup>rd</sup> Year</i>
Kripa Singh	<i>4<sup>th</sup> and 5<sup>th</sup> Year</i>

To Schedule an appointment with your advisor please contact  
Sylvia Demerson [sdemerso@unb.ca](mailto:sdemerso@unb.ca) to schedule an appointment

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