Queen's Chemistry

Chemistry Plans and 2nd Year CHEM Courses

Degree Programs

B.Sc.(Honours) Chemistry:

- Specialization (SSP): CHEM-P-BSH 90 of 120 course units specified
- Major: CHEM-M-BSH 72 of 120 course units specified

Other Chemistry Degree Programs

- B.Sc. Chemistry/Minor (Science): CHEM-G-BSC, CHEM-Z
  48 of 90 units specified
- B.A. Chemistry/Minor (Arts): CHEM-G-BA, CHEM-Y
  30 course units in CHEM + 6 supporting units

B.Sc.(Honours) Environmental Chemistry:

ECHM-P-BSH 102 of 120 course units specified

CHEM Major & CHEM Specialization

PLAN	CHEM Major	CHEM Specialization
Specified units	72 units	90 units
Electives	48 units or combination of a minor and electives	30 units
Total units	120 units	120 units

1ST YEAR

- CHEM 112/6.0
- 3.0 units from MATH 110/6.0, MATH 111/6.0, MATH 112/3.0
- One of: PHYS 104/6.0, PHYS 106/6.0, PHYS 117/6.0
- One of: MATH 120/6.0, MATH 121/6.0 or (MATH 123/3.0 and MATH 124/3.0)
- 9.0 units of electives (and/or minor for CHEM Major)

Frequency Asked Questions

Q. What if I haven't taken 1st year Physics?

A. You can take it in your 2nd year or take the online PHYS 118 during the summer.

Q. What if I haven't taken either or both required 1st year MATH courses?

A. You can take the courses in 2nd year or take the online Calculus (Math 121/6.0) in the summer (May -July)

CHEM Major & CHEM Specialization

2ND YEAR

- CHEM 211/3.0, CHEM 212/3.0, CHEM 213/3.0 (Fall term)
- CHEM 221/3.0, CHEM 222/3.0, CHEM 223/3.0 (Winter term)
- 12.0 units of electives (and/or minor for CHEM Major)

3rd YEAR

- CHEM 311/3.0, CHEM 312/3.0, and CHEM 313/3.0 (Fall term)
- CHEM 321/3.0, CHEM 322/3.0, and CHEM 323/3.0 (Winter term)
- CHEM 397/6.0
- 6.0 units of electives (and/or minor for CHEM Major)

4th YEAR

CHEM Major

- 3.0 units of CHEM at the 4th year level*
- CHEM 497/6.0
- 21.0 units of electives and/or minor

* Students interested in graduate school should take at least 6.0 further units at the 300- and 400-level

CHEM Specialization

- 12.0 units of CHEM at the 400 level or above; CHEM_Subs*
- 9.0 units of CHEM; CHEM_Subs*
- CHEM 497/6.0
- 3.0 units of electives

* Maximum of 12 units of CHEM_Subs (BCHM 218, BCHM at the 300 level or above or PHYS 424)

Environmental Chemistry Specialization

PLAN: 102.0 units plus electives to a total of 120 units.

1st YEAR

- BIOL 111/3.0 or BIOL 103/3.0
- CHEM 112/6.0
- GPHY 101/3.0 and GPHY 102/3.0
- GEOL 104/3.0 or GEOL 107/3.0
- One of: PHYS 104/6.0, PHYS 106/6.0, PHYS 117/6.0
- One of: MATH 120/6.0, MATH 121/6.0 or (MATH 123/3.0 and MATH 124/3.0)

2nd YEAR

- CHEM 211/3.0, CHEM 212/3.0, CHEM 213/3.0 (Fall term)
- CHEM 221/3.0, CHEM 222/3.0, CHEM 223/3.0 (Winter term)
- ENSC 103/3.0 or 203/3.0, GEOL and BIOL courses

Environmental Chemistry Specialization

3rd YEAR

- CHEM 311/3.0, CHEM 312/3.0 (Fall term)
- CHEM 321/3.0 (or ENSCH 471/3.0), CHEM 323/3.0, and CHEM 326/3.0 (Winter term)
- CHEM 397/6.0

4th YEAR

- CHEM 497/6.0
- ENSC 430/6.0 or ENSC 501/6.0

- The plan also includes a number of BIOL, GEOL, and GPHY option courses

Chemistry Minor Plans

B.Sc. Chemistry/Minor (Science): CHEM-G-BSC, CHEM-Z 48 of 90 units specified

B.A. Chemistry/Minor (Arts): CHEM-G-BA, CHEM-Y

30 course units in CHEM + 6 supporting units

- You can combine a CHEM Minor with any Major in the Faculty of Arts and Science, except Biochemistry (too much overlap).
- CHEM Minors with Majors in Physics and Math have some overlap with 100 level PHYS and MATH courses*
- CHEM Minors with Majors in Biology or Life Sciences also have some overlap with CHEM 112 (and CHEM 281/282)*

*Need to take extra course(s) in Minor Plan

Science Minor

48.0 units specified:

- CHEM 112/6.0
- One of: PHYS 104/6.0, PHYS 106/6.0, PHYS 117/6.0
- One of: MATH 120/6.0, MATH 121/6.0 or (MATH 123/3.0 and MATH 124/3.0)
- CHEM 211/3.0, CHEM 212/3.0, CHEM 213/3.0, CHEM 221/3.0, CHEM 222/3.0, CHEM 223/3.0
- 9.0 units of CHEM at the 300 level
- 3.0 units from CHEM 398/3.0, CHEM 399/3.0, CHEM 397 (6.0)

Arts Minor

36.0 units specified:

- CHEM 112/6.0
- One of: MATH 120/6.0, MATH 121/6.0 or (MATH 123/3.0 and MATH 124/3.0)
- 3.0 units of CHEM at the 300 level
- 21.0 units of CHEM

Concurrent Education Students

Chemistry as your **1st Teachable Subject**:

CHEM Major

Chemistry as your **2nd Teachable Subject**:

CHEM Minor (either Science or Arts)

Plan Selection Process

Important date(s)	Step in the plan selection process
May 11-22	Plan selection for Arts and Science and ConEd students entering 2nd year
May 25-29	Departments make decisions on students on their pending lists
June 8	Course timetable available on SOLUS
July 6	Students access the Student Centre to view enrollment appointment times; students may begin loading classes into their shopping cart on SOLUS
July 20	Appointment times issued to all 2nd year students

MAKE SURE YOU REGISTER AT YOUR APPOINTMENT TIME TO GUARANTEE A SPOT IN 2nd YEAR CHEM COURSES !!

2020-2021 Chemistry Plan Thresholds

PLAN	CODE	PROGRAM	AUTOMATIC ACCEPTANCE			PENDING LIST		
			Cum. GPA	CHEM 112	MATH 121*	Cum. GPA	CHEM 112	MATH 121* or 112**
Major	CHEM-M-BSH	B.Sc. (Hons)	2.7	C+	Pass	1.9	C-	Pass
SSP	CHEM-P-BSH	B.Sc. (Hons)	2.7	C+	Pass	1.9	C-	Pass
GEN (Sci)	CHEM-G-BSC	B.Sc.	2.1	C	--------	1.6	C-	--------
Minor (Sci)	CHEM-Z		2.1	C	--------	1.6	C-	--------
GEN (Arts)	CHEM-G-BA	B. A.	2.1	C	--------	1.6	C-	--------
Minor (Arts)	CHEM-Y		2.1	C	--------	1.6	C	--------
SSP	ECHM-P-BSH	B.Sc. (Hons.)	No automatic acceptance		---------	1.9	N/A	N/A

* Or MATH 120 or (MATH 123 and MATH 124)

** Or MATH 110 or MATH 111

Frequency Asked Questions

Q. If I am on the pending list, what are my chances of getting accepted into the CHEM Major or SSP program?

A. In the past several years, we have accepted students with a GPA of 2.0 or higher (minimum requirement for pending list is 1.9).

Q. What if my GPA is less than 1.9, but I am still interested in a CHEM Major or SSP plan?

A. If your GPA is between 1.6 and 1.9, and your CHEM 112 mark is at least C-, you can apply for a CHEM General plan, which will allow you to register for CHEM 2xy courses with the other CHEM Major, SSP, and Minor students.

2nd Year Courses

FALL TERM

- CHEM 211/3.0 Main Group Chemistry
- CHEM 212/3.0 Principles of Chemical Reactivity
- CHEM 213/3.0 Introduction to Chemical Analysis

WINTER TERM

- CHEM 221/3.0 Materials, Solutions, and Interfaces
- CHEM 222/3.0 Methods of Structure Determination
- CHEM 223/3.0 Organic Reactions

CHEM 281/3.0 and 282/3.0 are organic chemistry courses for students in Biology and Life Sciences – **do not register in these courses for a CHEM plan !!!**

3rd Year Courses

Fall term

- CHEM 311/3.0 Mechanistic Organic Chemistry
- CHEM 312/3.0 Transition Metal Chemistry
- CHEM 313/3.0 Quantum Mechanics

Winter term

- CHEM 321/3.0 Instrumental Chemical Analysis
- CHEM 322/3.0 The Chemical Bond: Computation and Spectroscopy
- CHEM 323/3.0 Biological Chemistry
- CHEM 326/3.0 Environmental and Green Chemistry

CHEM 397/6.0 Experimental Chemistry (Fall/Winter)

TOP 5 REASONS to study CHEMISTRY

1 Chemistry opens very broad career options.
2 With extensive experimental training, Chemistry studies are very hands on, and fun!
3 Queen's Chemistry department is a very supportive and nurturing environment; our graduating class is small and close-knit.
4 All Major and Specialization Chemistry students conduct research in 4th year as part of their plan (CHEM 497).
5 Queen's Chemistry graduates are accredited by the Canadian Society for Chemistry.

What will I learn?

A degree in Chemistry can equip you with valuable and versatile skills, such as:

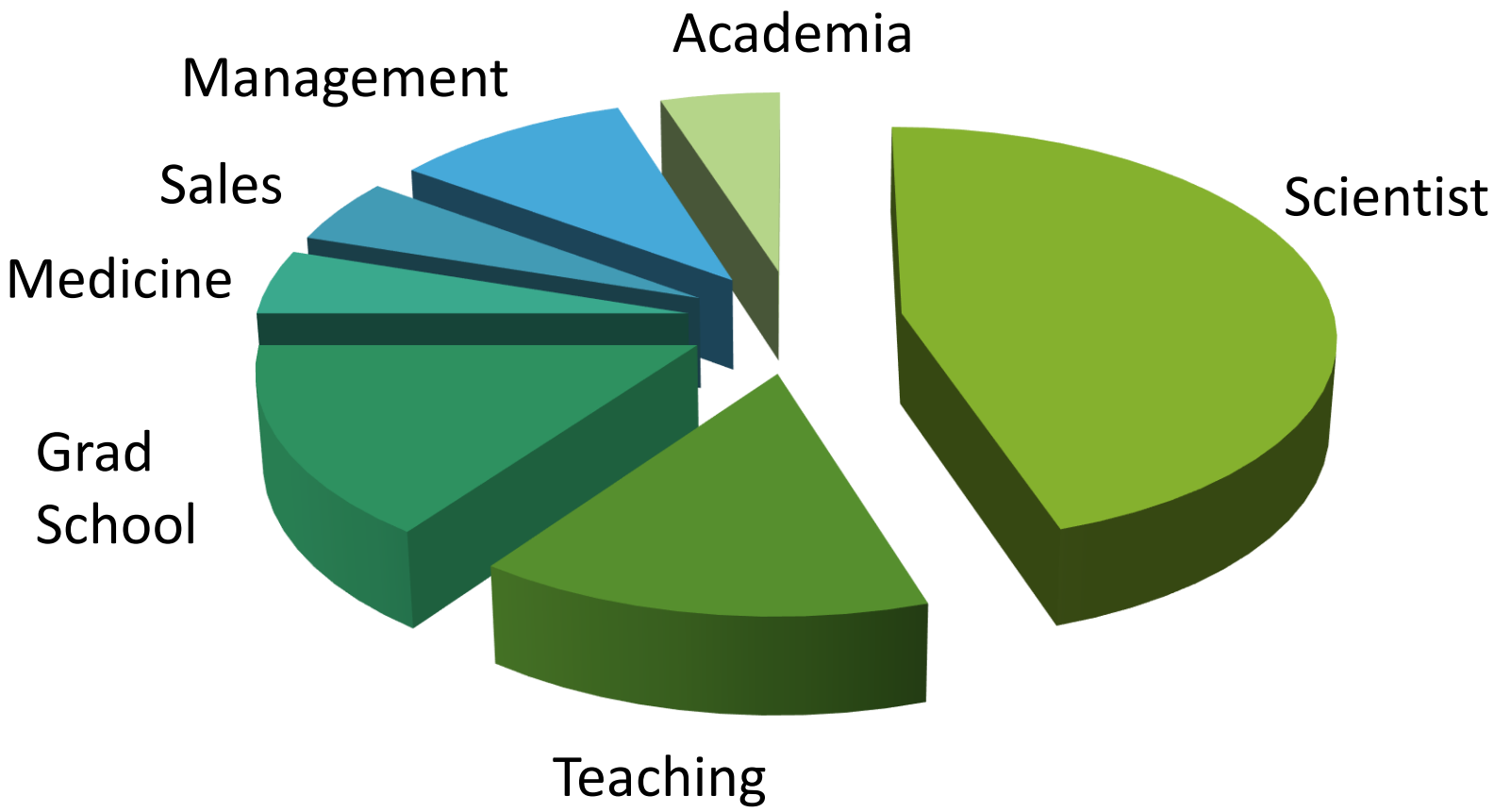
- Academic and technical skills to conduct research, understand scientific journal articles, trouble-shooting, clearly explain and interpret research data
- Organizational skills to compile, organize and maintain accurate records
- Ability to operate laboratory equipment and to employ appropriate scientific lab techniques
- Proficiency in mathematical and logical analysis
- Sensitivity to the health and safety of others - safe handling, storage and disposal of hazardous chemicals
- Written and oral communication skills to prepare and present reports from research ideas and information using current technology
- Observation and decision making skills
- Team working in a multidisciplinary context
- Resource and time management
- Practical and fundamental knowledge of all subdisciplines of chemistry

Where can I go with my degree in Chemistry?

A degree in Chemistry can take your career in many directions. Many students choose to continue their academic inquiry with M.Sc./Ph.D. studies. Our students are equipped with a strong foundation for careers in:

- Environmental research
- Forensic science
- Environmental sustainability
- Materials science
- Patent law
- Pharmaceuticals
- Pharmacy
- Public health
- Quality control
- Sustainability design

What do the graduates of Chemistry programs do with their degrees?



Undergraduate Research Opportunities in Chemistry

CHEM 497 - all Major and Specialization students complete a research project in a faculty member's lab and present their results in a poster (December) and an oral presentation of their written thesis (April).

Undergraduate Research Opportunities in Chemistry

- SWEP (Student Work Experience Program) –
  - several faculty each year have SWEP projects that employ summer students
- NSERC USRA (Undergraduate Student Research Awards)
  - awarded to students to carry out summer research work in the Department
- Volunteering in Labs

Professional Internship

B.Sc. (Hons., Chemistry) with Professional Internship

The Professional Internship in the Faculty of Arts and Science (QUIP) is the combination of any Major (or Specialization) with a paid internship (12 or 16 month duration) between 3rd and 4th year.

Chemistry leads the Faculty in numbers of interns placed.

- arranged through Career Services (QUIP)
- remain a registered student
- usually start May (16 month) or September (12 month) after 3rd year
- register in the Internship program in Fall term of 3rd year (Career Services workshops) and in INTN 301-305 Professional Internship I-V (different components of 12 and 16 month internships)

Accelerated Master's Program

A "program" introduced last year in Chemistry is the Accelerated Master's Program:

Allows students to complete a M.Sc. Degree in a shorter length of time by:

- Counting graduate courses taken during their 4th year both as electives in their undergraduate program and as courses required in their M.Sc. Program
- Using their CHEM 497 research project (and possibly work done as a 3rd year summer student) as a foundation for their Master's research work

Rather than starting a M.Sc. in September after graduating and taking 2 years to complete the M.Sc. degree, students can start in May after graduation and take as few as 4 terms to complete their M.Sc. degree.

Need more information about Chemistry Programs?

Contact:

- Diane Beauchemin, Chair of Undergraduate Studies in Chemistry, ugchair@chem.queensu.ca
- Meredith Richards, Chemistry Undergraduate Assistant, ugadm@chem.queensu.ca

See:

https://www.chem.queensu.ca/undergraduate

Plan Selection:

https://www.queensu.ca/artsci/undergrad-students/plan-selection