

BSc Program in Chemistry for the Medical Sciences

Purpose. To serve the needs of students who have a strong **interest** in chemistry, but who ultimately plan on entering **professional programs** in the medical sciences – pharmacy, medical school, dentistry, veterinary medicine, etc.

Features of the Program. Chemistry **Majors** and **Honours** students take a chemistry-intensive program (particularly in the 2nd year). In comparison, students in the **ChemMedSci** program take a selection of chemistry courses balanced with additional courses from other departments that are useful preparation for medically-oriented professional programs.

As well as providing a solid grounding in Chemistry, this program allows students to take all the required / recommended courses for entry to the professional program of their choice.

Program Requirements

1st Year

CHEM 101, 102
 MATH 100, 101
 3 units of 1st year Physics
 BIOL 184, 186
 1.5 units of 1st year English
 1 elective

2nd Year

CHEM 231, 232
 CHEM 213 **plus one of 212, 222 or 245**
 BIOL 225
 STAT 255 or 260
Plus 2 courses drawn from Pool A
 2 electives

3rd and 4th Year

CHEM 337, 437
 BIOC 300A, 300B
One more of CHEM 212, 222 or 245
 1.5 units of CHEM 3xx labs

3 additional CHEM 3xx / 4xx lecture courses
2 courses drawn from Pool B
2 additional courses drawn from Pool A
 7 electives*

**note that 21 units of 300 / 400 level units are required for graduation.*

Pool A

| | | | |
|----------|---------------------------|-------------|-------------------------------|
| ANTH 250 | – Biological Anthropology | EPHE 241 | – Human Systemic Physiology |
| BIOL 230 | – Genetics | EPHE 242 | – Human Cellular Physiology |
| ENGL 303 | – Copy Editing | MICR 200A/B | – Microbiology |
| EPHE 141 | – Human Anatomy | PHIL 331 | – Biomedical Ethics |
| EPHE 155 | – Nutrition | PSYC 251 | – Biopsychology: Mind & Brain |

Pool B

| | | | |
|-------------|----------------------------|----------|--------------------------------|
| ANTH 352 | – Human Osteology | MEDS 301 | – Introduction to Pharmacology |
| BCMB 301A/B | – Biochemistry Lab | MEDS 325 | – Geriatric Pharmacology |
| BIOL 432 | – Molecular Endocrinology | MEDS 410 | – Neuroanatomy |
| BIOL 436 | – Molecular Genetics | MICR 303 | – Immunology |
| BIOL 439 | – Molecular Epidemiology | MICR 402 | – Virology |
| BIOL 447 | – Ion Channels and Disease | STAT 355 | – Medical Statistics |

Questions? Email the program director, Dr. Jeremy Wulff: wulff@uvic.ca.

Frequently Asked Questions

1. Is this a pre-med program?

No. A pre-med program is a non-specializing educational track offered by some US schools that allows students to take all the medical school requirements (biology, organic chemistry, physics, etc.) in their first two years, then write the MCAT. The ChemMedSci program is a chemistry BSc that is distinct from our traditional Majors offering, in that the course offerings are structured to allow students to take pre-reqs (and other desired/recommended courses) for professional programs in the medical sciences, while still building a strong competency in the various sub-disciplines of chemistry.

2. How is this program different from the regular Chemistry Majors/Honours stream?

Chemistry is a very diverse field. Some aspects of chemistry are very close to physics or math, while other areas are closer to biology. Our traditional Majors and Honours programs are intended to build expertise in all the sub-disciplines of chemistry. This is great for students looking to go on in chemistry (i.e. those heading to grad school, or to a career working in chemistry) but the sheer number of required courses (especially at the 2nd and 3rd year levels) can make it difficult for students who see a BSc in chemistry as a stepping-stone to other fields (particularly those heading to medical-type professional programs) to get the other courses they want and still graduate in a timely fashion. This new program provides a better option for students who *like chemistry*, but who want to have more learning and training options available.

3. What happens if I don't get into the professional school of my choice?

You'll still have a very strong **chemistry degree** – albeit one with a somewhat different focus than our traditional Majors program – and will be very employable in a number of industries that hire chemists. These include the pharmaceutical and food science industries, the brewing industry, environmental monitoring and consulting, clinical trials monitoring, the printing and polymer industries, and a range of analytical jobs. Graduates of this program will be particularly suited to the growing health monitoring industry, while the breadth of the program will leave graduates well-suited to create their own careers in any number of emerging fields.

4. Is this program a route to graduate school in chemistry?

Yes, but not as good as our traditional **Majors** or **Honours** Chemistry programs. Depending on the optional courses that you choose during the program, you'd be likely to receive entry to most chemistry graduate programs in Canada (particularly if you're interested in chemical biology) but the expanded chemistry requirements that come with an honours degree will ultimately serve you better if you really decide to focus on a career in chemistry. Fortunately, we've engineered the ChemMedSci program to make transfer into a Chemistry Honours (or Biochemistry Honours, for that matter) relatively easy.

5. Can I do co-op while in this program?

Absolutely. UVic Chemistry and Physics were the originators of co-op in Western Canada, and we've continued to be very strong proponents of value of co-op in an undergraduate degree. Students in the ChemMedSci program are probably not going to be interested in the "full" 4-workterm co-op option available to Chemistry Majors, but would likely benefit from the new "workstudy" option currently being promoted by UVic's central co-op office. This does not require a separate Major declaration.

6. What other experiential learning opportunities are available?

In addition to our support of co-op, UVic Chemistry has been a pioneer in introducing research experience at an earlier level in the undergraduate curriculum. Our Chem298 and Chem398 courses ("Research Experience") provide opportunities for 2nd and 3rd year students to work in a research lab a few hours per week. Students have a chance to learn what research is all about, and to interact closely with both graduate students and faculty members. These courses have been very successful, and frequently lead to students taking Chem399 (for-credit Research Experience) and Chem499 (4th year Honours thesis). **ChemMedSci Majors are eligible to take Chem298, Chem398 and Chem399 courses as electives.** Our department has many active research projects on the medicinal end of the chemistry spectrum, and many of these will be of interest to the ChemMedSci population.

7. What are the requirements for entry into the program?

The requirements are currently the same as for entry into any BSc program in the Faculty of Science.

8. Do I need to maintain a minimum GPA to stay in the program?

Currently there is no minimum GPA for students enrolled in the ChemMedSci program. Having said that, students are advised to remember that many professional programs (particularly Medicine, Veterinary Medicine and Optometry) are very competitive, and that a high GPA (>8.0 in many cases) may be required for entry.

9. I'll be taking chemistry courses alongside Chemistry Majors, and non-chemistry courses (Biochem, EPHE, etc.) alongside Majors from those disciplines. Will I be at a disadvantage?

Probably not. Our data indicate that **most** students now take non-traditional paths to a degree – it's not uncommon for students to take >1 year between "paired" courses, nor is it rare for students to hop between different majors. In contrast to the academic environment of 20 years ago, **every student** now approaches **every course** from a unique perspective, with a unique set of background skills. Given today's rapidly evolving employment market, this increased diversity of experience is in many ways a positive transformation. We've tried to engineer this program in such a way that pre-requisites for each required or suggested course are met, while arranging the schedule in such a way as to encourage students to take courses in a sensible sequence.