

Calendar Year: 2003-2004

Faculty: Arts & Science/Education

The Department of Chemistry and Biochemistry

The Department of Chemistry and Biochemistry (<http://www.uleth.ca/chm/>) offers students the opportunity to obtain a Bachelor of Science (B.Sc.) degree with a major in Chemistry. This is a broadly based program that exposes students to the important subdivisions of organic, inorganic, analytical and physical chemistry along with an optional exposure to biochemistry.

The Faculty members in the Department of Chemistry and Biochemistry are involved in research in the areas of organic, inorganic, theoretical and physical chemistry and biochemistry. Students have two avenues by which they can become involved in this research. The first is the Independent Study course option in which a student receives course credit for carrying out a research project under the supervision of a Faculty member. Although the research project can take many forms, in the Department of Chemistry and Biochemistry it generally involves a small experimental project that is related to a Faculty member's own research. The Independent Study is completed with a report.

The second avenue for research involvement is as a research assistant to a Faculty member, primarily during the summertime. Research assistantships provide a modest salary and may be funded from a variety of sources including the Natural Sciences and Engineering Research Council of Canada (NSERC). The assistantships are generally open to students in a Chemistry or Biochemistry program who have completed at least one year of study and are awarded primarily on the basis of academic merit. One of the major factors considered during award competitions is a student's proven ability to handle a full load of academic courses. Therefore, students interested in research assistantships or future professional or graduate school training are strongly advised to take a full course load whenever possible. In many instances a student's contribution to a Faculty member's research program leads to inclusion of the student as a co-author when the results are published in a research journal.

Choosing an Education Major

The Faculty of Education offers 11 different majors that correspond to teaching subjects in Alberta schools. Admission is based on those majors, and you will be competing with other students in your major to gain entry to the Faculty. After you are admitted to the Faculty, you will work closely with a Faculty member in your major, particularly in Professional Semester II when student teachers work primarily in their subject area.

How do you choose an education major? Generally, students consider their favourite subject areas in which they did well at school. Your education major will be closely related to the major in your other degree, so you will also want to consider the areas of interest and expertise that you have developed in the university courses taken

so far. For many students, this is an easy decision — but if you are uncertain, try taking the introductory courses in several areas. Advisors are also excellent resources to help you explore your options.

You are encouraged to consider in your pre-Combined Degrees program the type of courses and background that will prepare you for teaching in a variety of situations. Many students find that their early objective to teach only at the elementary level or at the secondary school level is later modified or sometimes completely changed. It is therefore wise to select courses that will prepare you not only with breadth and richness for the classroom but may also provide the basis for the development of a teaching minor.

Chemistry/Science Education

Bachelor of Science/Bachelor of Education

Program Planning Guide



The
University of
Lethbridge

This program guide is designed to help you plan your degree program. The information should help you keep track of your progress in your major, electives and all your degree requirements. Please remember that this is only a guide and not a graduation check. Students are responsible for the accuracy of their own programs. The guide should be used in conjunction with the University of Lethbridge Calendar, which is the final authority on all questions regarding program requirements and academic regulations.

Current and past Program Planning Guides are available on the UofL website at: http://www.uleth.ca/reg/ro_quick_links.html

Name: _____ ID: _____ E-Mail: _____

Advisor: _____ Date: _____ Calendar Year: 2003-2004

REQUIREMENTS FOR THE CHEMISTRY/SCIENCE EDUCATION MAJOR

The Program

The B.Sc./B.Ed. combined degrees with a major in Chemistry/Science Education require a minimum of 50 courses, including 30 in Arts and Science and 20 in Education. A minimum of 12-14 courses (10 courses in Chemistry or Biochemistry and two to four cognates) is required in the Chemistry major. A maximum of 17 courses in Chemistry (including Biochemistry) is allowed.

Transfer Credit

Remember that you may use both University of Lethbridge credit and credit transferred from another college or university to meet degree and major requirements. Transfer credit may be either specified or unspecified. Specified credit is indicated on your transcript by the subject name and the specific number of the course, e.g., Chemistry 1000, 2600, etc. Unspecified credit (1XXX, 2XXX, etc.) is indicated by the subject name and level of the course in parentheses, e.g., Chemistry (1000 level), Chemistry (2000 level), etc.

Unspecified course credit means that the University of Lethbridge does not offer the same course you transferred in, but we recognize it and treat it as a regular course. An unspecified course would count as one of your maximum of 17 from one department, but it could not meet a specific course requirement. For example, if Chemistry 2810 is required in your program, you could not use Chemistry (2000 level) to fulfill that requirement.

How do I use the guide?

When you have met one of the requirements, place a check mark beside it. When all the requirements are checked, you should have completed the major.

List A - Specified Chemistry Courses

The following Chemistry courses must be taken:

- _____ 1. Chemistry 1000 - Atoms, Molecules and Chemical Reactions
- _____ 2. Chemistry 2000 - Chemical Equilibrium and Electrochemistry
- _____ 3. Chemistry 2410 - Introduction to Analytical Chemistry
- _____ 4. Chemistry 2500 - Organic Chemistry I
- _____ 5. Chemistry 2600 - Organic Chemistry II
- _____ 6. Chemistry 2710 - Chemical Kinetics
- _____ 7. Chemistry 2720 - Physical Chemistry I
- _____ 8. Chemistry 2810 - Introduction to Inorganic Chemistry

List B - Elective Chemistry (or Biochemistry) Courses

- _____ 9-10. Choose TWO courses from this list to complete the requirement of a minimum of 10 courses in Chemistry (or Biochemistry):
 - _____ Biochemistry 3010 - Biochemistry I
 - _____ Biochemistry 3020 - Biochemistry II
 - _____ Chemistry 3410 - Instrumental Methods of Analysis
 - _____ Chemistry 3420 - Electroanalytical Chemistry
 - _____ Chemistry 3510 - Practical Spectroscopy

- _____ Chemistry 3710 - Physical Chemistry II
- _____ Chemistry 3730 - Quantum Principles and Spectroscopy
- _____ Chemistry 3810 - Chemistry of the Main Group Elements
- _____ Chemistry 3820 - Chemistry of the Transition Elements

List C - Required Cognates in Mathematics and Physics

The following courses must also be taken:

- _____ 11. Mathematics 1560 - Calculus I
- _____ 12. Physics 1000 - Introduction to Physics I

Students who intend to include Chemistry 3730 in their programs must take:

- _____ 13. Mathematics 2560 - Calculus II
- _____ 14. Physics 2000 - Introduction to Physics II

Note: Physics 2000 is highly recommended for all students in the B.Sc./B.Ed. program whose major is Chemistry.

The major in Chemistry for the Combined Degrees program is not accredited by the Canadian Society for Chemistry nor is it normally sufficient, in the absence of further study in the field, for pursuing graduate studies in Chemistry at a Canadian university.

Co-operative Education in the Sciences

A Co-op option, requiring three work terms, is available. Students interested in the Co-operative Education/Internship program should contact the Coordinator of Co-operative Education in the Career Resources Centre (B610; tel. 403-382-7154) for further information.

ADVICE FROM THE DEPARTMENT

The Combined Degrees Major in Chemistry

It is important to recognize that the 10 Chemistry courses that are listed on page 2 of this guide are only the minimum number of Chemistry courses required for a Combined Degrees major in Chemistry from the University of Lethbridge. For the purpose of teaching Chemistry in high school the Combined Degrees major is adequate; however, for graduate studies in Chemistry, for example, this major is inadequate to meet the entrance standards of most graduate schools. Thus, should you change your career goals you should be aware that it might be necessary to take an increased number of Chemistry courses.

If you decide that you want to major in Chemistry then you should discuss the matter with a Faculty member from the Department of Chemistry and Biochemistry who can advise you how best to structure your program to meet your particular needs.

Course Sequencing and Prerequisites for the Chemistry Major

Chemistry courses are organized in sequences and must be taken in the proper order. In addition, several of the 3000-level courses are offered only in alternate years. As a result, careful planning of the program for the major in Chemistry is required in order to be in position to take courses when they are offered. Consequently, students who intend to pursue a degree program with a major in Chemistry are advised to seek help in planning their programs from the Departmental Advisor or from any Faculty member in the Chemistry and Biochemistry Department in an early stage of their studies.

Obtaining Further Advice

Because all students have individual needs and circumstances, every Chemistry student is strongly encouraged to obtain further advice from the Department. Arrangements for obtaining such advice may be made through the Department Secretary. Students are also welcome to directly approach the Department Chair or any other Chemistry and Biochemistry Faculty member.

ADVICE FROM THE FACULTY OF EDUCATION

Students may complete an Education minor and/or specialization in addition to the major. The Faculty of Education offers 19 minors and specializations in Special/Inclusive Education and Technology in Education. A minor consists of five non-Education courses and one curriculum and instruction Education course. Students may use the same courses to fulfill minor and General Liberal Education requirements. The specializations consist of four courses and corresponding Professional Semester III focus. Completing a minor and/or a specialization allows students to develop expertise in a second area of teaching and be more versatile and marketable as a graduating teacher. For more information on the Education specialization and the minor, see the **2003-2004 University of Lethbridge Calendar, Part 13 - Combined Degrees, Section 3.e. and f., p. 206 and pp. 206-211** respectively.

SAMPLE COURSE SEQUENCING PLAN

B.Sc./B.Ed. - CHEMISTRY/SCIENCE EDUCATION

Shown below is a sample sequence of courses for your degree. If you follow this plan, you should be able to graduate in five years, provided you complete five courses per semester. This is just one example of how you could complete your major and degree requirements; you may find that a different sequence works as well as this one.

TERMS USED

GLER course: A course that could count toward the General Liberal Education Requirement. You may use courses in your major towards this 12-course requirement. See the 2003-2004 University of Lethbridge Calendar, Part 4 - Academic Regulations (pp.71-74) for complete information.

Elective: A course that you may choose freely from all those available and applicable to your program. Use courses inside or outside your major, bearing in mind any restrictions that may apply (e.g., a maximum of 17 courses from any one department).

Cognate: A course from a related discipline deemed to complement the chosen area of study and to encompass knowledge and skills essential to that area.

YEAR ONE	FALL	SPRING
	Chemistry 1000 Mathematics 1560 (required cognate) Physics 1000 (required cognate) GLER course GLER course	Chemistry 2000 Mathematics 2560* or Science elective Physics 2000* (recommended) GLER course GLER course
YEAR TWO	FALL	SPRING
	Chemistry 2410 Chemistry 2500 Chemistry 2720 Education 2500** GLER course	Chemistry 2600 Chemistry 2710 Chemistry 2810 GLER course GLER course
YEAR THREE	FALL	SPRING
	Professional Semester I	List B course (3000 level) Elective 3000/4000 level Elective 3000/4000 level Elective 3000/4000 level Elective
YEAR FOUR	FALL	SPRING
	List B course (3000 level) Elective 3000/4000 level Elective 3000/4000 level Elective 3000/4000 level GLER course	Professional Semester II
YEAR FIVE	FALL	SPRING
	Professional Semester III	Education Foundation course Education elective Education elective Education elective Elective 3000/4000 level

Students with an Elementary Education focus will reverse these two semesters and complete PS III in the Spring.

* Students who intend to include Chemistry 3730 in their program must take Mathematics 2560 and Physics 2000.

** Education 2500 may also be taken in Spring and Summer Semester.

Note: Students are strongly advised to consult with the Department of Chemistry and Biochemistry regarding the sequence of the above courses.

