

## Part 7

# FACULTY OF ARTS AND SCIENCE

1. PHILOSOPHY AND PROGRAMS .....	96	14. BACHELOR OF SCIENCE (B.Sc.) .....	104
a. The Liberal Arts .....	96	a. General Requirements .....	104
b. General Intellectual Background .....	96	b. Major Requirements .....	104
c. Depth of Knowledge .....	96	15. BACHELOR OF ARTS AND SCIENCE (B.A.Sc.) ..	104
d. Programs .....	96	a. General Requirements .....	104
2. ADVISING AND INFORMATION .....	97	b. Major Requirements .....	105
a. Dean of Arts and Science .....	97	16. MAJORS .....	105
b. Academic Advisors .....	97	a. Agricultural Biotechnology .....	105
c. Department Advisors .....	97	b. Agricultural Studies (B.A.) .....	106
3. ADMISSION .....	98	c. Agricultural Studies (B.Sc.) .....	107
a. Bachelor of Arts		d. Anthropology .....	109
Bachelor of Science		e. Applied Statistics .....	109
Bachelor of Arts and Science .....	98	f. Archaeology and Geography	
b. Combined Degrees programs:		(B.A. and B.Sc.) .....	110
B.A./B.Mgt. and B.Sc./B.Mgt. ....	98	g. Art .....	111
c. Combined Degrees programs:		h. Biochemistry .....	112
B.A./B.Ed. and B.Sc./B.Ed. ....	98	i. Biological Sciences .....	112
d. Post-Diploma Bachelor of Arts or		j. Canadian Studies .....	113
Bachelor of Science Programs .....	98	k. Chemistry .....	114
e. Bachelor of Arts, Bachelor of Science, or		l. Computer Science .....	115
Bachelor of Arts and Science After an		m. Computer Science and Geographical	
Approved Degree .....	99	Information Science .....	116
f. Pre-Professional Transfer Program in		n. Dramatic Arts .....	116
Engineering (Engineering Transfer Program)	99	o. Economics .....	117
4. ACADEMIC STANDARDS .....	99	p. English .....	118
a. In Good Standing .....	99	q. Environmental Science .....	119
b. Probation .....	99	r. French .....	120
c. Required Withdrawal - Academic Indices ...	99	s. French/German .....	121
d. Required Withdrawal - Semesters on		t. French/Spanish .....	121
Probation .....	99	u. General Major in the Humanities .....	122
e. Readmission after Required Withdrawal ...	99	v. General Major in the Sciences .....	122
5. INSTITUTIONAL HONOURS .....	100	w. General Major in the Social Sciences .....	123
a. Dean's Honour List .....	100	x. Geography (B.A.) .....	123
b. Standards for Distinction and Great		y. Geography (B.Sc.) .....	124
Distinction .....	100	aa. German .....	125
6. ARTS AND SCIENCE DISCIPLINES .....	100	bb. History .....	126
7. APPLIED STUDIES .....	100	cc. Kinesiology (B.A.) .....	126
8. INDEPENDENT STUDY .....	100	dd. Kinesiology (B.Sc.) .....	127
9. TOPICS COURSES .....	101	ee. Mathematics .....	128
10. CROSS-LISTED COURSES .....	101	ff. Music .....	128
11. UNDERGRADUATE THESIS COURSES		gg. Native American Studies .....	129
('HONOURS THESIS' DESIGNATION) .....	101	hh. Neuroscience .....	130
a. Prerequisites .....	102	ii. Philosophy .....	131
b. Supervisory Committee .....	102	jj. Physics .....	132
c. Initial Approval .....	102	kk. Political Science .....	132
d. Final Assessment .....	102	ll. Psychology (B.A. and B.Sc.) .....	133
e. Eligibility for 'Honours Thesis' Designation.	102	mm. Religious Studies .....	133
12. CO-OPERATIVE EDUCATION/INTERNSHIP		nn. Remote Sensing .....	134
PROGRAMS .....	102	oo. Sociology .....	135
13. BACHELOR OF ARTS (B.A.) .....	103	pp. Urban and Regional Studies .....	135
a. General Requirements .....	103	qq. Women and Gender Studies .....	136
b. Major Requirements .....	103	rr. Double Majors .....	137
		ss. Individual Multidisciplinary Majors .....	137

17. MINORS .....	137	21. B.A. OR B.Sc. AFTER COMPLETION OF A PROFESSIONAL DEGREE .....	141
a. Asian Studies .....	138	22. POST-DIPLOMA DEGREE PROGRAMS .....	142
b. Computer Science .....	138	a. Post-Diploma Bachelor of Arts in Agricultural Studies .....	142
c. Economics .....	138	b. Post-Diploma Bachelor of Science in Agricultural Studies .....	143
d. English .....	138	c. Post-Diploma Bachelor of Science in Computer Science .....	144
e. French .....	139	d. Post-Diploma Bachelor of Science in Environmental Science .....	145
f. German .....	139	e. Post-Diploma Bachelor Science in Geography, with a Concentration in Geographical Information Science .....	145
g. History .....	139	23. PRE-NURSING PATHWAY .....	146
h. Japanese .....	139	24. PRE-PROFESSIONAL TRANSFER PROGRAMS .....	146
i. Linguistics .....	139	a. Dentistry .....	147
j. Mathematics .....	140	b. Pre-Professional Transfer Program in Engineering (Engineering Transfer Program) .....	147
k. Philosophy .....	140	c. Journalism .....	148
l. Physics .....	140	d. Law (Alberta) .....	148
m. Political Science .....	140	e. Law (Calgary) .....	148
n. Religious Studies .....	140	f. Medicine (Alberta) .....	149
o. Spanish .....	140	g. Medicine (Calgary) .....	149
p. Women and Gender Studies .....	140	h. Social Work .....	149
18. CONCENTRATIONS .....	141	i. Veterinary Medicine .....	150
a. Agricultural Business .....	141		
b. Geographical Information Science .....	141		
c. Legal Reasoning .....	141		
19. COMBINED DEGREES .....	141		
20. B.A., B.Sc. OR BASc. AFTER AN APPROVED DEGREE .....	141		
a. General Requirements .....	141		
b. Major Requirements .....	141		

## 1. PHILOSOPHY AND PROGRAMS

The Faculty of Arts and Science offers instruction in the humanities and the natural, social and mathematical sciences. The Faculty of Arts and Science commits itself to the development of well-educated persons in three dimensions of liberal education: the liberal arts, general intellectual background and depth of knowledge, as broadly defined in the sections below:

### a. The Liberal Arts

*Literacy:* the ability to read and interpret texts from diverse media, discourses and genres, and to express oneself in writing.

*Information literacy:* the ability to discern when information is needed, and the ability to find, evaluate and use information effectively.

*Oral expression:* the ability to listen and understand oral messages, and to express oneself effectively in a wide range of interpersonal contexts.

*Numeracy:* the ability to work effectively with quantitative ideas and mathematical relations.

*Critical thinking:* the ability to evaluate reasoning systematically and to argue well in support of deserving ideas.

*Integrative thinking:* the ability to make connections among diverse and superficially unconnected things.

*Problem solving:* the ability to recognize the problematic nature of the world and the ability to address those problems in a rigorous and imaginative way.

### b. General Intellectual Background

*A sense of historical consciousness;* an awareness of events in time and their significance to each other; and the relation of oneself and one's community within them.

A wide-ranging grasp of what the *sciences tell us about the world* in which we live; their methods, limitations, purposes and interactions with the global community and the world.

*Reflection of one's own values* and an openness to change.

An understanding of, and a respect for, the causes and consequences of cultural, group and interpersonal differences.

*A critical understanding and an appreciation of the creative and aesthetic dimensions of life.*

*The ability to comprehend and analyze the many facets of social life.*

*An awareness of the body* and the physical contexts in which we apprehend reality, and the development of well-being.

### c. Depth of Knowledge

A capacity to *comprehend the complexity of ideas* through sequential, developmental learning in a single subject or discipline.

The development of the competency to *do rigorous independent work* in a subject or discipline.

*A critical grasp* of the assumptions, arguments, approaches and controversies that have shaped particular claims and findings within a subject or discipline, and an understanding of the connections among disciplines.

### d. Programs

The Faculty of Arts and Science offers three baccalaureate (i.e. bachelor's) degrees: the Bachelor of Arts (B.A.), the Bachelor of Science (B.Sc.), and the Bachelor of Arts and Science (BASc.).

A baccalaureate degree is an academic degree awarded by a university to a person who has successfully completed undergraduate studies.

The Bachelor of Arts is awarded in recognition of the satisfactory completion of a prescribed set of program requirements. Students must declare a major in a humanities, fine arts, or social science discipline and complete all the requirements for the chosen major and the degree.

The Bachelor of Science is awarded in recognition of the satisfactory completion of a prescribed set of program requirements. Students must declare a major in a science discipline and complete all the requirements for the chosen major and the degree.

The Bachelor of Arts and Science is awarded in recognition of the satisfactory completion of a prescribed set of program requirements. Students must declare two majors, one in a humanities, fine arts, or social science discipline and one in a science discipline, and complete all the requirements for both chosen majors and for the degree.

All undergraduate degree programs in the Faculty of Arts and Science require students to complete the General Liberal Education Requirement (GLER). In some post-diploma programs or for the second degree program students must complete a modified GLER. See **Part 4, Section 10, pp. 83-86** for details.

The Faculty of Arts and Science offers the following programs:

- A 40-course (120.0 credit hour) program leading to the Bachelor of Arts (B.A.). See **Section 12** in this Part.
- A 40-course (120.0 credit hour) program leading to the Bachelor of Science (B.Sc.). See **Section 13** in this Part.
- A 40-course (120.0 credit hour) program leading to the Bachelor of Arts and Science (BASc.). See **Section 14** in this Part.
- A 20-course (60.0 credit hour) post-diploma program in Agricultural Studies leading to the Bachelor of Arts (B.A.). See **Section 21.a** in this Part.
- A 20-course (60.0 credit hour) post-diploma program in Agricultural Studies leading to the Bachelor of Science (B.Sc.). See **Section 21.b** in this Part.
- A 20-course (60.0 credit hour) post-diploma program in Computer Science leading to the Bachelor of Science (B.Sc.). See **Section 21.c** in this Part.
- A 20-course (60.0 credit hour) post-diploma program in Environmental Science leading to the Bachelor of Science (B.Sc.). See **Section 21.d** in this Part.
- A 20-course (60.0 credit hour) post-diploma program in Geography, with a Concentration in Geographical Information Science, leading to the Bachelor of Science (B.Sc.). See **Section 21.e** in this Part.
- A 30-course (90.0 credit hour) program leading to the Bachelor of Arts (B.A.) or Bachelor of Science (B.Sc.) portion of the Bachelor of Arts/ Bachelor of Education (B.A./B.Ed.) or Bachelor of Science/Bachelor of Education (B.Sc./B.Ed.). Neither degree is granted until requirements

for the entire combined degrees program are completed. See **Part 13 - Combined Degrees**.

- A 30-course (90.0 credit hour) program leading to the Bachelor of Arts (B.A.) or Bachelor of Science (B.Sc.) portion of the Bachelor of Arts/ Bachelor of Management (B.A./B.Mgt.) or Bachelor of Science/Bachelor of Management (B.Sc./B.Mgt.). Neither degree is granted until requirements for the entire combined degrees program are completed. See **Part 13 - Combined Degrees**.

Students who hold an undergraduate degree may be eligible to complete a minimum 20-course program leading to the B.A., B.Sc., or BASc. as a second degree. See **Section 19** in this Part.

The 40-course B.A., B.Sc., and BASc. programs can be completed in eight consecutive semesters if students complete five courses (15.0 credit hours) per semester. Students may choose to reduce their course load to accommodate other commitments such as family or employment responsibilities. Students in good standing may take up to six courses (18.0 credit hours) in a semester. Students on academic probation may not register in more than four courses (12.0 credit hours).

## 2. ADVISING AND INFORMATION

Academic advising in Arts and Science takes account of the variety of educational goals for which the Faculty wholly or partly provides and affiliates with other student services in the University.

### a. Dean of Arts and Science

As well as being the administrative head of the Faculty of Arts and Science, the Dean of Arts and Science has direct responsibility for all academic programs and all years of study in Arts and Science. Appeals and issues of interpretation for students in Arts and Science should be directed to the Office of the Dean of Arts and Science.

### b. Academic Advisors

Academic advising for the Faculty of Arts and Science is the responsibility of Academic Advisors, located in the Arts and Science Student Program Services Office, Students' Union Building, Level 0.

Students may consult Academic Advisors for assistance with a variety of academic concerns, including program planning, declaration of majors, General Majors, readmission, applications for Incompletes or Withdrawals with Cause, authorized study at another university, and pre-professional transfer programs.

### c. Department Advisors

Each Arts and Science department and program designates an advisor who knows in detail department courses, prerequisites and course schedules, as well as all aspects of the department's major program. In some departments, the Chair serves as department advisor.

Although the minimum requirements for each major program are fully detailed in this Calendar, students should plan their major programs in consultation with the department advisor in order to ensure meeting their own individual aims. These aims may include graduate school or professional school admission and vocational goals.

However, department advisors have no authority regarding degree, program or major requirements as set out in this Calendar. For information on such matters, students should consult Academic Advisors.

### 3. ADMISSION

#### a. Bachelor of Arts Bachelor of Science Bachelor of Arts and Science

Admission to the Bachelor of Arts (B.A.), Bachelor of Science (B.Sc.), or Bachelor of Arts and Science (B.A.Sc.) programs may be gained by one of the following admission routes:

1. Alberta or other Canadian high school credentials.
2. Transfer from recognized colleges or universities.
3. Adult (Mature) Admission.
4. Credentials from other countries.

The admission policies and procedures set out in **Part 1 - Admissions** of this Calendar apply. See **Part 1, Section 3.a.1 (p. 28)** for general admission requirements. The required admission average is 65%.

Please note that, for the Bachelor of Science with a Major in Environmental Science, enrolment limits may be invoked. Admission is competitive and is based upon academic achievement prior to admission as assessed by the Faculty of Arts and Science, whose decision shall be final.

#### b. Combined Degrees programs: B.A./B.Mgt. and B.Sc./B.Mgt.

See **Part 13 - Combined Degrees, (p. 229)** for additional admission requirements.

#### c. Combined Degrees programs: B.A./B.Ed. and B.Sc./B.Ed.

Students begin the program in the Faculty of Arts and Science and must meet general admission requirements for the B.A. or B.Sc. as outlined in **Part 1 - Admissions, Section 3.a.1 (p. 28)**. Students who have declared their intention of completing the combined degrees and who have not yet been admitted to the Faculty of Education are designated pre-B.A./B.Ed. or pre-B.Sc./B.Ed.

Admission to the combined degrees programs is competitive and typically occurs after two or three years of university study. See **Part 13, Section 3.a** for details.

#### d. Post-Diploma Bachelor of Arts or Bachelor of Science programs

1. Post-Diploma Bachelor of Arts in Agricultural Studies  
Post-Diploma Bachelor of Science in Agricultural Studies

##### a. Admission Requirements

1. Completion of an approved two-year college diploma program in Agriculture with a minimum cumulative grade point average of 2.50, on a 4.00 scale, in the diploma program

OR

2. Subject to the permission of the Dean of Arts and Science, completion of an approved two-year college diploma program in Agriculture with a cumulative grade point average between 2.00 and 2.49, on a 4.00 scale, in the diploma program.

Applicants must follow the procedures outlined for all students in **Part 1 - Admission, Section 8, p. 47**.

2. Post-Diploma Bachelor of Science in Computer Science

##### a. Admission Requirements

1. Completion of an approved two-year college diploma program in Computer Systems Technology or Computer Information Technology with a minimum cumulative grade point average of 2.50, on a 4.00 scale, in the diploma program.

OR

2. Subject to the permission of the Dean of Arts and Science, completion of an approved two-year college diploma program with a cumulative grade point average between 2.00 and 2.49, on a 4.00 scale, in the diploma program.

Applicants must follow the procedures outlined for all students in **Part 1 - Admission, Section 8, p. 47**.

3. Post-Diploma Bachelor of Science in Environmental Science

##### a. Admission Requirements

1. Completion of an approved two-year college diploma program in Environmental Science or related area with a minimum cumulative grade point average of 2.75, on a 4.00 scale, in the diploma program.

OR

2. Subject to the permission of the Dean of Arts and Science, completion of an approved two-year college diploma in Environmental Science or related area with a cumulative grade point average between 2.00 and 2.74, on a 4.00 scale, in the diploma program plus directly related work experience.

Applicants follow the procedures outlined for all students in **Part 1 - Admission, Section 8, p. 47**. Students with a cumulative grade point average of less than 2.75 must submit proof of directly related work experience.

4. Post-Diploma Bachelor of Science in Geography, with a Concentration in Geographical Information Science

##### a. Admission Requirements

1. Completion of an approved two-year college diploma program in Geography, Geomatics, or Land Resource Information Systems with a minimum cumulative grade point average of 2.50, on a 4.00 scale, in the diploma program.

Applicants follow the procedures outlined for all students in **Part 1 - Admission, Section 8, p. 47** and must also submit an official college transcript.

e. **Bachelor of Arts, Bachelor of Science, or Bachelor of Arts and Science After an Approved Degree**

Admission to the Bachelor of Arts (B.A.), Bachelor of Science (B.Sc.), or Bachelor of Arts and Science (B.A.Sc.) programs after an approved degree may be gained after completion of a baccalaureate degree with 30 or more course equivalents from a recognized institution, Canadian or international. At least ten of the courses (30.0 credit hours) must be Arts and Science courses completed with a minimum grade of 'C'. (See **Part 1 - Admission**)

Other three-year international baccalaureate degrees or applied degrees may be considered a basis for admission to second-degree programs with the prior approval of the Dean.

Students are not eligible to pursue a second degree which is similar to one already completed at a recognized institution. Generally, degrees with identical or closely related majors are considered to be similar. Exceptions may be made at the discretion of the Dean in the case of international students seeking North American credentials. The decision of the Faculty of Arts and Science will be final in these matters.

This program is primarily of interest to degree-holders wishing to pursue an entirely different field of study to enhance or change their career focus and to international students seeking North American credentials.

f. **Pre-Professional Transfer Program in Engineering (Engineering Transfer Program)**

Admission to the pre-professional transfer program in Engineering (Engineering Transfer Program) is competitive. All applicants, including High School, Transfer and Adult (Mature) students must present the following courses:

- Chemistry 30
- English Language Arts 30-1
- Mathematics 30-1 or Pure Mathematics 30
- Mathematics 31
- Physics 30

Typically, an admission average of 75% or higher on these courses is required. Transfer and Adult applicants must also meet the admission requirements identified in Part 1 - Admissions. Students changing programs or seeking transfer credit should seek advice from an Arts and Science Academic Advisor.

4. **ACADEMIC STANDARDS**

For graduation, students must attain a minimum cumulative grade point average of 2.00 on a minimum of 20 courses taken at the University of Lethbridge for credit toward the degree.

a. **In Good Standing**

To be in good standing, a student must maintain the following minimum cumulative grade point average (GPA):

Number of Completed Courses (includes transfer courses)	GPA (U of L)
1-10	1.70
11-20	1.85
21-40	2.00

Students in the post-diploma B.A. in Agricultural Studies, the post-diploma B.Sc. in Agricultural Studies, the post-diploma B.Sc. in Computer Science, the post-diploma B.Sc. in Environmental Science and the post-diploma B.Sc. in Geography with a Concentration in Geographical

Information Science programs will be considered with students who have completed 21 to 40 courses.

b. **Probation**

Students whose cumulative grade point average falls below the levels identified above are considered to be on academic probation. A student on academic probation may not register in more than four courses in a semester.

c. **Required Withdrawal - Academic Indices**

Students whose cumulative grade point average, at the end of the spring semester, falls below the following are required to withdraw from the University:

Number of Completed Courses (includes transfer courses)	GPA (U of L)
6-10	1.50
11-20	1.70
21-30	1.85
31-40	2.00

Students in the post-diploma B.A. in Agricultural Studies, the post-diploma B.Sc. in Agricultural Studies, the post-diploma B.Sc. in Computer Science, the post-diploma B.Sc. in Environmental Science and the post-diploma B.Sc. in Geography with a Concentration in Geographical Information Science programs will be considered with students who have completed 21 to 30 or 31 to 40 courses.

d. **Required Withdrawal - Semesters on Probation**

Students who, at the end of the spring semester, have remained on academic probation for two or more consecutive semesters, are required to withdraw from the University.

**Note:** The legislation, as indicated in c. and d., applies both to students registered in the fall semester who did not continue in the spring semester and to students registered in the spring semester. All students' records are reviewed once per year, at the end of the spring semester.

e. **Readmission after Required Withdrawal**

Students dismissed for academic reasons will not be granted readmission until the lapse of one year. Applicants for readmission after required withdrawal must complete no less than eight transferable courses (24.0 credit hours) with an overall GPA of 2.00 or higher on the University of Lethbridge 4.00 GPA scale to be eligible for readmission. Students required to withdraw twice are not usually eligible for readmission.

*Tabula Rasa* will be granted to all first-degree University of Lethbridge students registered in programs offered by the Faculty of Arts and Science upon readmission after required withdrawal for unsatisfactory academic performance.

*Tabula Rasa* will be granted only once, upon readmission after the first required withdrawal. Credit is retained for all previous courses completed with a grade of 'C-' or above, or 'P', or 'Cr', up to the following limits:

40-course (120.0 credit hours) B.A., B.Sc., and B.A.Sc.	20 ungraded courses
30-course (90.0 credit hours) Combined Degrees B.A. and B.Sc.	15 ungraded courses
20-course (60.0 credit hours) Post-Diploma B.A. and B.Sc.	5 ungraded courses

Although credit is retained, the grades for these courses are not calculated in the GPA. Students readmitted after required withdrawal are readmitted on condition of

academic probation and limited to a maximum of four courses (12.0 credit hours).

Students who have received *Tabula Rasa* and are seeking admission to a Faculty other than Arts and Science are advised to contact that Faculty.

## 5. INSTITUTIONAL HONOURS

### a. Dean's Honour List

Students with outstanding academic performance are recognized on the Dean's Honour List. The list is compiled twice yearly at the end of the fall and spring semesters.

Students completing four or more graded courses in one semester must achieve a grade point average of 3.75 or higher on these courses to qualify.

### b. Standards for Distinction and Great Distinction

Students who have displayed outstanding academic performance during their undergraduate degree programs are awarded their degrees 'With Distinction' or 'With Great Distinction.'

Students with an award GPA of 3.50 to 3.74 are awarded their degree 'With Distinction.' Students with an award GPA of 3.75 or higher are awarded their degree 'With Great Distinction.'

For purposes of awarding degrees 'With Distinction' or 'With Great Distinction,' the Faculty of Arts and Science determines an award GPA by factoring into the University of Lethbridge cumulative GPA, actual grades on transfer courses, and A+ grades as 4.30 grade points.

## 6. ARTS AND SCIENCE DISCIPLINES

A discipline is a branch of knowledge or learning. Disciplines are indicated in the Calendar by distinct course titles and course subject abbreviations. The Faculty of Arts and Science (in conjunction with the Faculty of Fine Arts) offers courses at the undergraduate level in the following disciplines:

Agricultural Biotechnology (AGBT)	History (HIST)
Agricultural Studies (AGST)	Interdisciplinary Studies (IDST)
Anthropology (ANTH)	Japanese (JPNS)
Applied Studies (APST)	Kinesiology (KNES)
Archaeology (ARKY)	Latin (LATI)
Art (ART)*	Liberal Education (LBED)
Art History/Museum Studies (AHMS)*	Library Science (LBSC)
Asian Studies (ASIA)	Linguistics (LING)
Astronomy (ASTR)	Logic (LOGI)
Biochemistry (BCHM)	Mathematics (MATH)
Biology (BIOL)	Modern Languages (MODL)
Blackfoot (BKFT)	Music (MUSI)*
Canadian Studies (CNST)	Music Ensemble Activity (MUSE)*
Chemistry (CHEM)	Native American Studies (NAS)
Computer Science (CPSC)	Neuroscience (NEUR)
Cree (CREE)	New Media (NMED)*
Drama (DRAM)*	Philosophy (PHIL)
Economics (ECON)	Physical Activity (PHAC)

Engineering (ENGG)	Physics (PHYS)
English (ENGL)	Political Science (POLI)
Environmental Science (ENVS)	Psychology (PSYC)
Exercise Science (EXSC)	Religious Studies (RELS)
Fine Arts (FA)*	Remote Sensing (RMST)
French (FREN)	Sociology (SOCL)
Geography (GEOG)	Spanish (SPAN)
Geology (GEOL)	Statistics (STAT)
German (GERM)	Urban and Regional Studies (UBRE)
Greek (GREK)	Women and Gender Studies (WGST)
Hebrew (HEBR)	Writing (WRIT)
Hispanic Studies (HPST)	

**Note:** Disciplines indicated by an asterisk (\*) are offered by the Faculty of Fine Arts. For all degree regulations, disciplines offered by the Faculty of Fine Arts are considered in the same way as Arts and Science disciplines.

## 7. APPLIED STUDIES

Applied Studies courses offer students the opportunity to earn academic credit for employment or volunteer experiences that offer significant learning at a level suitable for the awarding of university credit. During the field placement, students explore their interests and aptitudes, and test and reinforce the theories and principles learned in the classroom.

To be eligible for an Applied Studies course, students must have a minimum cumulative GPA of 2.00 and second-year standing (a minimum of 30.0 credit hours).

Credit is earned in Applied Studies 2000 or 2001 for successful completion of 130 placement hours, an employer evaluation, and written assignments. Additional credit in Applied Studies 2010 or 2011 may be earned by successful completion of a *Learning Plan* and a project or paper exploring a job-related issue within a specific academic context.

Disciplinary Credit involves an employer evaluation, submission of a *Learning Plan* that outlines learning objectives, and an academic project or paper to be graded by a supervising faculty member from within the selected discipline. Disciplinary credit is signified by the series numbers 2980-85, 3980-85, and 4980-85.

To register in Applied Studies courses, students must apply to the Applied Studies Office no later than the deadline published in the Timetable. Application packages may be obtained from the Applied Studies Office (AH154; tel. 403-329-2000).

The Applied Studies Office coordinates Applied Studies for students in all Faculties and majors.

## 8. INDEPENDENT STUDY

An Independent Study is a course for which credit is earned through individual study under the supervision of an instructor. Independent Study may be taken for credit inside or outside of the student's major subject or in an interdisciplinary mode. Some major programs require an Independent Study component. Each Arts and Science program has a limit on the number of Independent Study courses that may be completed for credit. Please refer to the appropriate entry later in this section and **Part 4, Section 2.c, Exceeding Course Limits, p. 70**. Independent Study numbers 2990, 3990 and 4990 indicate the level of advancement.

Independent Study may be elected as early as the second semester or as late as the last, depending upon the capability

of the student for undertaking academic work with a minimum of guidance. Independent Study may take a variety of forms including library research, laboratory research projects or field study. Since Independent Study is intended to expand a student's program beyond the limits of the regular curriculum, it may not be used to duplicate course offerings.

Admission to Independent Study is achieved through consent of the instructor, who agrees to guide the study, and by approval of the Department and the Dean. Enrolment may be for a regular semester or during a summer session. Credit for Independent Study is at the discretion of the Department, upon recommendation of the instructor. Grades are due at the end of the term of registration, as for regular courses. For further information, students should consult the Department or faculty member under whom they wish to pursue an Independent Study.

## 9. TOPICS COURSES

Topics courses (numbered 1850, 2850, 3850, or 4850) may be offered in a discipline. The subject matter of Topics courses varies with each offering, with different offerings indicated by distinct titles. Students may take more than one offering of a Topics course for credit if the offerings are distinct (i.e. if each offering taken has a different title).

Topics courses are offered on an irregular basis and do not appear in Part 14 (Courses) of the Calendar; Topics courses are listed in the current semester Timetable. Contact hours for Topics courses may vary according to the nature of the course and will appear in the Timetable entry.

Prerequisites/corequisites/recommended background for individual offerings will appear in the Timetable entry and will normally specify one or more of the following; level-appropriate courses in the discipline/related disciplines, year of standing, appropriate majors, admission to a University of Lethbridge program, or some other special requirement (e.g. an interview).

## 10. CROSS-LISTED COURSES

There are two types of cross-listed courses, or courses offered by two distinct units, available at the University of Lethbridge: courses cross-listed between two different Faculties, and courses cross-listed between two different disciplines within a Faculty. Cross-listed courses appear in the Calendar and will appear on the student's academic records in the dual form, for example, Economics 2070/Management 2070.

Courses cross-listed between Faculties count within a B.A., B.Sc., or B.A.Sc. program as the Arts and Science discipline. For example, Economics 2070/Management 2070 will be used as Economics 2070 for all regulations and requirements relating to the B.A., B.Sc., and B.A.Sc..

Courses cross-listed between two disciplines offered by the Faculty of Arts and Science count within a B.A., B.Sc., or B.A.Sc. program as either discipline (but not both disciplines). For example, Archaeology 3600/Liberal Education 3600 may count as either Archaeology or Liberal Education for all regulations and requirements relating to the B.A., B.Sc., or B.A.Sc..

## 11. UNDERGRADUATE THESIS COURSES ('HONOURS THESIS' DESIGNATION)

In some disciplines, qualified students in the Bachelor of Arts, Bachelor of Science, or Bachelor of Arts and Science programs may elect to complete an Undergraduate Thesis course (6.0 credit hours) linked to their declared major. Students who complete all requirements and satisfy the academic standards required for the Undergraduate Thesis course for their

declared major are eligible to receive the 'Honours Thesis' designation on their official transcript and degree parchment. Students completing a combined degrees program, post-diploma program, or a B.A., B.Sc., or B.A.Sc. as a second degree may not count the 6.0 credit hour Undergraduate Thesis towards the requirements of their chosen major or degree program, although they are eligible to receive the 'Honours Thesis' designation by completing this course in addition to the minimum requirements for their chosen major and degree program.

Undergraduate Thesis courses are numbered 4995 and are available for Arts and Science majors as indicated below:

<b>Arts and Science major</b>	<b>Undergraduate Thesis course allowed</b>
Agricultural Biotechnology	Agricultural Biotechnology 4995
Agricultural Studies (B.A. or B.Sc.)	Agricultural Studies 4995
Anthropology	Anthropology 4995
Archaeology and Geography (B.A. or B.Sc.)	Archaeology 4995 or Geography 4995
Art	Art 4995 or Art History/ Museum Studies 4995
Biochemistry	Biochemistry 4995
Biological Sciences	Biology 4995
Canadian Studies	Canadian Studies 4995
Chemistry	Chemistry 4995
Computer Science	Computer Science 4995
Computer Science and Geographical Information Science	Computer Science 4995 or Geography 4995
Dramatic Arts	Not available
Economics	Economics 4995
English	English 4995
Environmental Science	Environmental Science 4995
French	French 4995
French/German	French 4995 or German 4995
French/Spanish	French 4995 or Spanish 4995
General Major in the Humanities	Not available
General Major in the Sciences	Not available
General Major in the Social Sciences	Not available
Geography (B.A. or B.Sc.)	Geography 4995
German	German 4995
History	History 4995
Kinesiology (B.A. or B.Sc.)	Kinesiology 4995
Mathematics	Mathematics 4995
Music	Not available
Native American Studies	Native American Studies 4995
Neuroscience	Neuroscience 4995
Philosophy	Philosophy 4995 or Logic 4995
Physics	Physics 4995
Political Science	Political Science 4995
Psychology (B.A. or B.Sc.)	Psychology 4995

Religious Studies	Religious Studies 4995
Remote Sensing	Remote Sensing 4995
Sociology	Sociology 4995
Urban and Regional Studies	Urban and Regional Studies 4995
Women and Gender Studies	Women and Gender Studies 4995

(See **Part 14 - Courses** for details on approved courses.)

**a. Prerequisites**

Prospective 'Honours Thesis' candidates must meet the following prerequisites:

1. Fourth-year standing (a minimum of 90.0 credit hours).
2. A cumulative GPA of 3.30 (or higher if the Department/Unit requires).
3. Any further prerequisite(s) as determined by the Department/Unit. (See **Part 14 - Courses**).

**b. Supervisory Committee**

For each prospective 'Honours Thesis' candidate, a Supervisory Committee will be established. The Supervisory Committee, approved by the Department offering the Undergraduate Thesis course, will consist of the Thesis Supervisor from the Department and a minimum of one other reader, who may be from outside the Department.

**Note:** For majors not housed in a Department, the Supervisory Committee composition shall be proposed by the Program Coordinator, subject to endorsement by the Dean.

**c. Initial Approval**

1. The prospective student must present a *Thesis Proposal* to be approved by the Supervisory Committee prior to registration for the course.
2. The Supervisory Committee will establish at the outset the weighting of the written and oral components of the thesis, as well as the procedure for determining the final grade.
3. Subsequent changes to the approved *Thesis Proposal* must be approved by the Supervisory Committee.
4. The prospective student must submit an unofficial transcript for review by the Supervisory Committee.
5. Admission to the course is achieved through approval of the Supervisory Committee and the Department, or Program Coordinator, endorsed by the Dean whose signature indicates that the necessary resources are available for the project.
6. The student must register for the Undergraduate Thesis course by the last day for course Add/Drop for the given fall/spring semester or summer session.

**d. Final Assessment**

The final assessment for the Undergraduate Thesis is based on two criteria:

1. Written Component
  - a. The Undergraduate Thesis must be a sustained piece of supervised research demonstrating a superior level of academic ability on a matter approved by the Supervisory Committee prior to registration in the course.

- b. The thesis should be of high quality and made publicly available by the Department.

**2. Oral Component**

The student will be required to make a formal oral presentation demonstrating the ability to articulate clearly the nature of the project undertaken, the research methodology and the results of the project. This component is a demonstration of the student's competence in oral communication and not necessarily an oral defence of the thesis, unless so specified by the Department.

**e. Eligibility for 'Honours Thesis' Designation**

Students are eligible to receive the 'Honours Thesis' designation on their official transcript and degree parchment only if they achieve a minimum grade of 'B+' (3.30 or higher) for the Undergraduate Thesis course, and have satisfactorily completed the required oral component. Students who achieve grades between 'D' and 'B', inclusive, and/or do not complete the oral component will retain credit for the equivalent of two courses (6.0 credit hours) but will not be eligible for the 'Honours Thesis' designation.

Students may not repeat an Undergraduate Thesis course and may not complete more than one Undergraduate Thesis course per degree.

Inquiries about the availability of the 'Honours Thesis' option should be directed to the respective Department/Unit. Please refer to **Part 4 - Academic Regulations, Section 2.f. (p. 71)** for more information on the 'Honours Thesis' designation.

**12. CO-OPERATIVE EDUCATION/INTERNSHIP PROGRAMS**

Co-operative Education/Internship Programs are available to students in all majors in the Humanities and Social Sciences in the B.A., Post-Diploma B.A., B.A.Sc., B.A./B.Ed. (including pre-B.A./B.Ed.) and B.A./B.Mgt. degree programs, and are available to students in all Science majors in the B.Sc., Post-Diploma B.Sc., B.A.Sc., B.Sc./B.Ed. (including pre-B.Sc./B.Ed.) and B.Sc./B.Mgt. degree programs.

Co-operative Education/Internship Programs differ from other forms of education in that they formally integrate a student's academic and career studies on campus with relevant and productive work experience in industry, business or government. The Coordinator, the Faculty of Arts and Science, and the employer share in the enrichment of the student's academic program and in the intellectual, personal, and professional development of the student.

Faculty of Arts and Science Co-operative Education Programs are accredited by the Canadian Association for Co-operative Education (CAFCE).

Further information and details concerning admission and requirements may be obtained from the Office of Co-operative Education/Internship Programs (AH154; tel. 403-332-4461; email: [artsci.coop@uleth.ca](mailto:artsci.coop@uleth.ca); website: [www.uleth.ca/artsci/coop](http://www.uleth.ca/artsci/coop)).

**a. Admission**

Students are often able to secure a Co-op placement at the end of their first year. Students are therefore encouraged to contact the Faculty of Arts and Science Co-operative Education Office as soon as possible in their program.

The criteria for admission include:

1. Minimum second-year standing (a minimum of 30.0 credit hours)
2. Grade point average and academic standing
3. Resumé and application form
4. Personal interview
5. Ability to perform in a work setting

Other factors such as labour market conditions, work experience, volunteer experience and extracurricular activities are also considered when selecting participants for the program.

#### b. Requirements

Students may complete between one and six work terms in one or more placements. Co-op work terms are normally four months in length and can begin in January, May or September each year. Co-op internships are usually undertaken by students in the third or fourth year of their program and are usually 12-16 months (i.e. three or four work terms) in duration.

To receive the Co-op designation for the degree students must complete successfully the course, major and degree requirements for the degree program in addition to a minimum of three work terms:

- Arts and Science 3011 - Co-op Work Experience I
- Arts and Science 3012 - Co-op Work Experience II
- Arts and Science 3013 - Co-op Work Experience III

Students may also opt for the maximum of three additional work terms:

- Arts and Science 3014 - Co-op Work Experience IV
- Arts and Science 3015 - Co-op Work Experience V
- Arts and Science 3016 - Co-op Work Experience VI

Students are also required to complete pre-employment preparation training prior to the first work term.

Students must be registered for the entire duration of the work term(s) applied for through the Co-op program, including extensions, and, once registered, are not permitted to withdraw from the work placement without penalty of failure. A grade of 'F' - Fail - will be entered on the transcript for the whole term(s) unless extenuating circumstances warrant granting of a Withdrawal with Cause ('WC'), in accordance with University of Lethbridge policy (see **Part 4, Section 3, p. 68**). Where approval is granted by the Coordinator of Co-operative Education and the Dean of Arts and Science, a 'WC' will be entered on the transcript. Tuition fees will be assessed as per the University's Withdrawal with Cause policy. Students may consult the Co-op student handbook for further information/regulations and should contact the Coordinator of Co-operative Education for assistance with the procedure.

#### c. Continuation in the Programs

Students must acknowledge, accept and abide by the requirements and regulations as outlined in the Calendar and the Co-op student handbook.

#### d. Transfer of Co-op Terms

For the purpose of fulfilling the Arts and Science Co-operative Education requirement of three work term courses to earn the Co-op designation, a maximum of one Co-op work term from another institution with formal co-operative education programs shall be eligible for recognition toward the requirement. To be eligible for recognition, the Co-op work term shall be subject to

special assessment by the Arts and Science Co-operative Education Office. An approved Co-op work term must be registered as a non-academic course on the student's transcript from the sending institution and must have received a passing grade (either a letter grade or 'Pass').

### 13. BACHELOR OF ARTS (B.A.)

#### a. General Requirements

1. Completion of at least 40 courses (120.0 credit hours) with a grade point average of at least 2.00.
2. Completion of the General Liberal Education Requirement (see **Part 4 - Academic Regulations, Section 10, p. 83**).
3. Not more than 12 courses (36.0 credit hours) may be completed at the 1000 level (or lower) for credit towards the degree, excluding Activity courses (labelled PHAC and MUSE).
4. Completion of at least 15 courses (45.0 credit hours) from disciplines offered by the Faculty of Arts and Science or the Faculty of Fine Arts at the 3000/4000 level, excluding Activity courses (labelled PHAC and MUSE).
5. Not more than five Independent Study courses (15.0 credit hours) may be completed for credit towards the degree.
6. Not more than five Disciplinary Credit Applied Studies courses (15.0 credit hours) may be completed for credit towards the degree. Students may, in addition, complete Applied Studies 2000, 2001, 2010, and 2011.
7. Not more than 24 courses (72.0 credit hours) may be completed from any one discipline for credit towards the degree.  
**Note:** *Disciplines are identified by a specific course label (e.g. KNES, ASTR, and HIST are separate disciplines).*
8. Not more than six credit hours in Activity courses (i.e. courses labelled PHAC and MUSE) may be completed for credit towards the degree, except for Kinesiology majors (not more than 15.0 credit hours) and Music majors (not more than 12.0 credit hours).
9. Not more than four courses (12.0 credit hours) from disciplines offered outside the Faculty of Arts and Science or the Faculty of Fine Arts may be completed for credit towards the degree. Courses cross-listed between the Faculty of Arts and Science and another Faculty do not count towards this limit.
10. Residence requirement: at least 20 courses (60.0 credit hours) must be completed at the University of Lethbridge, including the last 10 courses (30.0 credit hours) completed for credit towards the degree.

(See **Part 4, Section 2.c, Exceeding Course Limits, p. 70.**)

#### b. Major Requirements

For the Bachelor of Arts, a major program must be chosen and completed from among the following majors: Agricultural Studies, Anthropology, Archaeology and Geography, Art, Canadian Studies, Dramatic Arts, Economics, English, French, French/German\*, French/Spanish, a General Major in the Humanities, a General

Major in the Social Sciences, Geography, German\*, History, Kinesiology, Music, Native American Studies, Philosophy, Political Science, Psychology, Religious Studies, Sociology, Urban and Regional Studies, Women and Gender Studies, or an individual multidisciplinary major program.

Residence requirement: at least half of the courses required in the major must be completed at the University of Lethbridge.

\*Majors in French/German and German have been suspended (see p. 121 and p. 125)

#### 14. BACHELOR OF SCIENCE (B.Sc.)

##### a. General Requirements

1. Completion of at least 40 courses (120.0 credit hours) with a grade point average of at least 2.00.
2. Completion of the General Liberal Education Requirement (see **Part 4 - Academic Regulations, Section 10, p. 83**).
3. Not more than 12 courses (36.0 credit hours) may be completed at the 1000 level (or lower) for credit towards the degree, excluding Activity courses (labelled PHAC and MUSE).
4. Completion of at least 15 courses (45.0 credit hours) from disciplines offered by the Faculty of Arts and Science or the Faculty of Fine Arts at the 3000/4000 level, excluding Activity courses (labelled PHAC and MUSE).
5. Not more than five Independent Study courses (15.0 credit hours) may be completed for credit towards the degree.
6. Not more than five Disciplinary Credit Applied Studies courses (15.0 credit hours) may be completed for credit towards the degree. Students may, in addition, complete Applied Studies 2000, 2001, 2010, and 2011.
7. Not more than 24 courses (72.0 credit hours) may be completed from any one discipline for credit towards the degree.  
**Note:** *Disciplines are identified by a specific course label (e.g. KNES, ASTR, and HIST are separate disciplines).*
8. Not more than six credit hours in Activity courses (i.e. courses labelled PHAC and MUSE) may be completed for credit towards the degree, except for Kinesiology majors (not more than 15.0 credit hours) and Music majors (not more than 12.0 credit hours).
9. Not more than four courses (12.0 credit hours) from disciplines offered outside the Faculty of Arts and Science or the Faculty of Fine Arts may be completed for credit towards the degree. Courses cross-listed between the Faculty of Arts and Science and another Faculty do not count towards this limit.
10. Residence requirement: at least 20 courses (60.0 credit hours) must be completed at the University of Lethbridge, including the last 10 courses (30.0 credit hours) completed for credit towards the degree.

(See **Part 4, Section 2.c, Exceeding Course Limits, p. 70**.)

##### b. Major Requirements

For the Bachelor of Science, a major program must be chosen and completed from among the following majors: Agricultural Biotechnology, Agricultural Studies, Applied Statistics, Archaeology and Geography, Biochemistry, Biological Sciences, Chemistry, Computer Science, Computer Science and Geographical Information Science, Environmental Science, a General Major in the Sciences, Geography, Kinesiology, Mathematics, Neuroscience, Physics, Psychology, Remote Sensing, or an individual multidisciplinary major program.

Residence requirement: at least half of the courses required in the major must be completed at the University of Lethbridge.

#### 15. BACHELOR OF ARTS AND SCIENCE (BASc.)

##### a. General Requirements

1. Completion of at least 40 courses (120.0 credit hours) with a grade point average of at least 2.00.
2. Completion of the General Liberal Education Requirement (see **Part 4 - Academic Regulations, Section 10, p. 83**).
3. Not more than 12 courses (36.0 credit hours) may be completed at the 1000 level (or lower) for credit towards the degree, excluding Activity courses (labelled PHAC and MUSE).
4. Completion of at least 15 courses (45.0 credit hours) from disciplines offered by the Faculty of Arts and Science or the Faculty of Fine Arts at the 3000/4000 level, excluding Activity courses (labelled PHAC and MUSE).
5. Not more than five Independent Study courses (15.0 credit hours) may be completed for credit towards the degree.
6. Not more than five Disciplinary Credit Applied Studies courses (15.0 credit hours) may be completed for credit towards the degree. Students may, in addition, complete Applied Studies 2000, 2001, 2010, and 2011.
7. Not more than 24 courses (72.0 credit hours) may be completed from any one discipline for credit towards the degree.  
**Note:** *Disciplines are identified by a specific course label (e.g. KNES, ASTR, and HIST are separate disciplines).*
8. Not more than six credit hours in Activity courses (i.e. courses labelled PHAC and MUSE) may be completed for credit towards the degree, except for Kinesiology majors (not more than 15.0 credit hours) and Music majors (not more than 12.0 credit hours).
9. Not more than four courses (12.0 credit hours) from disciplines offered outside the Faculty of Arts and Science or the Faculty of Fine Arts may be completed for credit towards the degree. Courses cross-listed between the Faculty of Arts and Science and another Faculty do not count towards this limit.
10. Residence requirement: at least 20 courses (60.0 credit hours) must be completed at the University of Lethbridge, including the last 10 courses (30.0 credit hours) completed for credit towards the degree.

(See **Part 4, Section 2.c, Exceeding Course Limits, p. 70**.)

## b. Major Requirements

For the Bachelor of Arts and Science, students must complete two majors: an Arts major chosen from the list of eligible majors below, and a Science major chosen from the list of eligible majors below.

### *Eligible Arts Majors*

Anthropology	History
Art	Kinesiology
Dramatic Arts	Music
Economics	Native American Studies
English	Philosophy
French	Political Science
French/German*	Psychology
French/Spanish	Religious Studies
Geography	Sociology
German*	Women and Gender Studies

### *Eligible Science Majors*

Biological Sciences	Kinesiology
Chemistry	Mathematics
Computer Science	Physics
Geography	Psychology

\*Majors in French/German and German have been suspended (see p. 121 and p. 125)

**Note:** Majors in Geography, Kinesiology, and Psychology may be used as either the Arts major or the Science major but not both.

General majors, Individual Multidisciplinary majors, and established majors in Agricultural Biotechnology, Agricultural Studies, Applied Statistics, Archaeology and Geography, Biochemistry, Canadian Studies, Computer Science and Geographical Information Science, Neuroscience, Remote Sensing, and Urban and Regional Studies are not eligible for the BASc.

Students must complete the minimum course requirements for both majors. Students may not double count courses in fulfilling requirements for their two majors.

In some cases, depending on the choice of majors, more than 40 courses (120.0 credit hours) may be required to satisfy all degree and major requirements.

Residence requirement: at least half of the courses required in each major must be completed at the University of Lethbridge.

## 16. MAJORS

The section on majors lists all majors available for the various degree programs offered by the Faculty of Arts and Science. Majors are listed alphabetically, and each entry provides pertinent information about the major and outlines the requirements. Further details may be obtained from Department Chairs, Program Coordinators, Academic Advising, or the Arts and Science Dean or Dean's designate. Each entry also provides a web address for each program.

### a. Agricultural Biotechnology

Departments: Biological Sciences, Chemistry and Biochemistry, and Economics.

The major in Agricultural Biotechnology provides background for a diverse range of activities such as graduate study in the life sciences and career development within the agricultural industry; the

program is often taken as a means of completing pre-professional requirements leading to a veterinary degree. Please refer to the program website ([www.uleth.ca/artsci/agricultural-biotechnology](http://www.uleth.ca/artsci/agricultural-biotechnology)) for more information.

### Required courses:

Agricultural Studies 1000 - The Evolution of Agriculture  
Biochemistry 2000 - Introductory Biochemistry  
Biology 1010 - Cellular Basis of Life  
Biology 1020 - Diversity of Life  
Biology 2000 - Principles of Genetics  
Biology 2200 - Principles of Ecology  
Biology 3000 - Gene Expression and Regulation  
Biology 3105 - Signal Transduction  
Biology 3210 - Experimental Methods in Molecular and Cellular Biology  
Biology 3300 - Evolution  
Biology 3400 - Principles of Microbiology  
Biology 4100 - Advances in Agricultural Biotechnology  
Chemistry 1000 - General Chemistry I  
Chemistry 2000 - General Chemistry II  
Chemistry 2500 - Organic Chemistry I  
Chemistry 2600 - Organic Chemistry II  
Economics 1010 - Introduction to Microeconomics  
Economics 3300 - Agricultural Policy I

### One of:

Biology 3005 - Genome Maintenance  
Biology 3115 - Principles of Cell Growth

### One of:

Biology 3420 - Animal Physiology  
Biology 3460 - Plant Physiology

### One of:

Economics 2150 - Economics of Agricultural Issues  
Economics 2350 - Economics of Agricultural Markets I

### One of:

Mathematics 1410 - Elementary Linear Algebra  
Mathematics 1560 - Calculus I

### One of:

Physics 1000 - Introduction to Physics I  
Physics 1050 - Introduction to Biophysics

### Recommended courses:

Neuroscience 2600 - Brain and Behaviour  
Neuroscience 3600 - Fundamental Neurobiology  
Statistics 1770 - Introduction to Probability and Statistics

### Notes

Students are advised to complete both Biology 3005 and Biology 3115 as part of their Agricultural Biotechnology major (only one of these is required).

A student who successfully completes this degree program and major may apply to the Alberta Institute of Agrologists (AIA) to be registered as a Professional Agrologist within Alberta. Students should contact the Coordinator of Agricultural Biotechnology early in the program for further information.

See also:

- Pre-Professional Transfer Programs
- Bachelor of Science - Biological Sciences
- Bachelor of Science - Biochemistry
- Bachelor of Science - Environmental Science

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/agbt\\_bsc](http://www.uleth.ca/ross/sequencing-plans/agbt_bsc) for a suggested sequencing plan for the Agricultural Biotechnology major in the B.Sc. program.

### Concentration: Agricultural Business (Optional)

Agricultural Biotechnology majors in the B.Sc. degree program may declare a Concentration in Agricultural Business.

#### Required courses:

Management 2020 - Marketing  
Management 2100 - Introductory Accounting

#### Three of:

Economics 3030 - Managerial Economics  
Economics 3080/Management 3780 - Principles of Industrial Organization I  
Management 3010 - Management Law  
Political Science 2210 - Canadian Politics and Government  
<sup>1</sup> Political Science 3420/Management 3050 - Human Resource Management

#### Notes

<sup>1</sup> Has prerequisites: One of Management 2030 or one 2000-level Political Science course (3.0 credit hours), and one of Writing 1000 or a university English course (3.0 credit hours).

For students who complete all requirements, the Concentration in Agricultural Business will be acknowledged on the official transcript.

#### **Agricultural Biotechnology (B.Sc.)**

**Number of courses required for the major . . . . . 23**

*(Independent Study - Optional; may not be counted in required courses for major)*

#### **Concentration: Agricultural Business (optional)**

**Number of courses required for concentration . . . . . 5**

**Total number of courses required for major and concentration . . . . . 28**

### b. Agricultural Studies (B.A.)

Department: Economics

Agricultural Studies is a broad multidisciplinary program encompassing a purposeful blend of the physical sciences, economics, and other social sciences. The aim of the program is to improve the understanding and practice of activities that transform natural capital, plants, and animals to satisfy myriad human wants. The curriculum enables aspiring agriculturalists to explore and learn about the physical and economic interrelationships between agricultural production, marketing and trade, nutrient management, water, grazing, rangeland, and riparian management. The program provides the foundation for a wide variety of career alternatives related to primary production, input supply services including banking, commodity marketing and processing, and agri-food retailing.

Please refer to the program website ([www.uleth.ca/artsci/agricultural-studies](http://www.uleth.ca/artsci/agricultural-studies)) for more information.

#### Required core (10 courses):

Agricultural Studies 1000 - The Evolution of Agriculture

Agricultural Studies 3300 - Modelling of Agricultural Systems

Agricultural Studies 4000 - Seminar in Agricultural Issues

Agricultural Studies 4300 - Advanced Modelling of Agricultural Systems

Biology 1020 - Diversity of Life

Economics 1010 - Introduction to Microeconomics

Geography 1200 - Introduction to Human Geography

Statistics 1770 - Introduction to Probability and Statistics

#### One of:

Philosophy 2001 - Introduction to Ethics

Philosophy 2236 - Environmental Philosophy

#### One of:

Anthropology 1000 - The Anthropological Perspective

Political Science 1000 - Introduction to Political Science

Sociology 1000 - Introduction to Sociology

#### Subfield requirements (10 courses):

Eight courses (24.0 credit hours) from either subfield list 1. or 2. below

Two courses (6.0 credit hours) from the other subfield list below

Four of the subfield courses (12.0 credit hours) must be at the 3000/4000 level

Students choosing Agricultural Economics as their eight-course subfield must complete the Quantitative Methods requirement: Economics 2900. Students choosing Rural Sociology and Development as their eight-course subfield must complete the Research Methodology requirement: Sociology 2100.

#### 1. Agricultural Economics

Economics 1012 - Introduction to Macroeconomics

Economics 2150 - Economics of Agricultural Issues

Economics 2350 - Economics of Agricultural Markets I

Economics 2750 - Quantitative Methods in Economics

Economics 3010 - Intermediate Microeconomic Theory

Economics 3030 - Managerial Economics

Economics 3220 - Environmental Economics

Economics 3300 - Agricultural Policy I

Economics 3350 - Economics of Agricultural Markets II

Economics 4300 - Agricultural Policy II

#### Quantitative Methods Requirement:

Economics 2900 - Economics and Business Statistics

#### 2. Rural Sociology and Development

<sup>1</sup> Anthropology 4500 - Anthropological Methods (Series) (Ethnographic Methods)

Economics 2150 - Economics of Agricultural Issues

Economics 3300 - Agricultural Policy I

Economics 3800 - Economic Development

Economics 4300 - Agricultural Policy II

Geography 1000 - Introduction to Physical Geography

Geography 2210 - Spatial Organization of Economic Activity

Geography 2700 - Geographical Data and Analysis

Geography 3210 - Agricultural Geography

Geography 4200 - Project in Agricultural Geography

Political Science 2210 - Canadian Politics and Government

Political Science 3260 - Canadian Public Policy

Political Science 3400 - Public Administration  
 Sociology 3110 - Survey Research  
 Sociology 3120 - Qualitative Research Methods

**Research Methodology Requirement:**  
 Sociology 2100 - Research Methodology

**Technical Studies Semester (5 courses)**

Students are required to complete a semester of study at an approved college. The Technical Studies semester counts as the equivalent of 15.0 credit hours at the University of Lethbridge (i.e., three unspecified 2000-level and two unspecified 3000-level Agricultural Studies courses).

The Technical Studies semester should be taken after at least 20 university courses have been completed and prior to registration in the final 10 courses for the degree. Students must have the college course selection approved by the Coordinator of Agricultural Studies. Further details are available from the Coordinator.

**Notes**

<sup>1</sup> Prerequisite required: Anthropology 3000.

Courses which appear in both subfield lists may be counted in only one of the subfields. Students choosing Agricultural Economics as their eight-course subfield must choose two courses from the Rural Sociology and Development subfield which are not Economics courses.

Applied Studies, Independent Studies and Topics courses may be counted toward the subfield requirements provided:

1. They are clearly related to one of the subfields; and,
2. They are approved by the Coordinator of Agricultural Studies.

Students may not receive credit for courses at the University of Lethbridge for which close equivalents have been taken at the college, and vice versa. Students must ensure that their course selection has been approved by the Coordinator of Agricultural Studies.

Students wishing to pursue graduate studies in Agricultural Economics should also include Economics 3012, Economics 4010, Economics 4012, and Mathematics 1560 in their programs.

A student who successfully completes this major may apply to the Alberta Institute of Agrologists (AIA) to be registered as a Professional Agrologist within Alberta. Students should contact the Coordinator of Agricultural Studies early in the program for further information.

See also:

- Post-Diploma Bachelor of Arts - Agricultural Studies
- Bachelor of Science - Agricultural Studies

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/agst\\_ba](http://www.uleth.ca/ross/sequencing-plans/agst_ba) for a suggested sequencing plan for the Agricultural Studies major in the B.A. program.

**Concentration: Agricultural Business (Optional)**

Agricultural Studies majors in the B.A. degree program may declare a Concentration in Agricultural Business.

**Required courses:**

Management 2020 - Marketing  
 Management 2100 - Introductory Accounting

**Three of:**

Economics 3030 - Managerial Economics  
 Economics 3080/Management 3780 - Principles of Industrial Organization I  
 Management 3010 - Management Law  
 Political Science 2210 - Canadian Politics and Government  
<sup>1</sup> Political Science 3420/Management 3050 - Human Resource Management

**Notes**

<sup>1</sup> Has prerequisites: One of Management 2030 or one 2000-level Political Science course (3.0 credit hours), and one of Writing 1000 or a university English course (3.0 credit hours).

Students may not double count courses required for the Concentration in Agricultural Business in fulfilling requirements for subfields of the Major in Agricultural Studies. In such cases, students must select another option from the subfield list.

For students who complete all requirements, the Concentration in Agricultural Business will be acknowledged on the official transcript.

**Agricultural Studies (B.A.)**

**Number of courses required for the major ..... 20**

*(Independent Study - Optional; may not be counted in required courses for major)*

**Concentration: Agricultural Business (optional)**

**Number of courses required for concentration ..... 5**

**Total number of courses required for major and concentration ..... 25**

**All students must also complete the Technical Studies Semester (5 courses).**

**c. Agricultural Studies (B.Sc.)**

Departments: Biological Sciences, Chemistry and Biochemistry, and Economics

Agricultural Studies is a broad multidisciplinary program encompassing the physical sciences, economics and other social sciences. The aim of the program is to improve the understanding and practice of activities that transform natural capital, plants and animals to satisfy myriad human wants. The curriculum enables aspiring agriculturalists to explore and learn about the physical and economic interrelationships between agricultural production, marketing and trade, nutrient management, water, grazing, rangeland and riparian management. The program provides the foundation for a wide variety of career alternatives related to primary production, input supply services including banking, commodity marketing and processing, and agri-food retailing.

Please refer to the program website ([www.uleth.ca/artsci/agricultural-studies](http://www.uleth.ca/artsci/agricultural-studies)) for more information.

**Required core (12 courses):**

Agricultural Studies 1000 - The Evolution of Agriculture  
 Agricultural Studies 3300 - Modelling of Agricultural Systems  
 Agricultural Studies 4000 - Seminar in Agricultural Issues  
 Agricultural Studies 4300 - Advanced Modelling of Agricultural Systems

Biology 1010 - Cellular Basis of Life  
 Biology 1020 - Diversity of Life  
 Biology 2000 - Principles of Genetics  
 Chemistry 1110 - Chemistry for Life Sciences I  
 Economics 1010 - Introduction to Microeconomics  
 Geography 1000 - Introduction to Physical Geography  
 Statistics 1770 - Introduction to Probability and Statistics

**One of:**

Computer Science 1620 - Fundamentals of Programming I  
 Mathematics 1560 - Calculus I  
 Physics 1050 - Introduction to Biophysics

**Subfield requirements (8 courses):**

Six courses (18.0 credit hours) from either subfield list 1. or 2. below

Two courses (6.0 credit hours) from the other subfield list below

Four of the subfield courses (12.0 credit hours) must be at the 3000/4000 level

**1. Biological Sciences**

Biology 2200 - Principles of Ecology  
 Biology 3000 - Gene Expression and Regulation  
 Biology 3105 - Signal Transduction  
<sup>1</sup>Biology 3310 - Developmental Biology  
 Biology 3400 - Principles of Microbiology  
 Biology 3420 - Animal Physiology  
 Biology 3460 - Plant Physiology  
 Biology 3505 - Freshwater Biology  
 Biology 3520 - Invertebrate Zoology  
 Biology 3530 - Vertebrate Zoology  
 Biology 3560 - Integrative Plant Biology  
 Biology 3610 - Prairie Conservation  
 Biology 3700 - Ecosystem and Community Ecology  
 Biology 4100 - Advances in Agricultural Biotechnology  
 Biology 4110 - Advances in Genetics, Molecular and Cellular Biology  
<sup>2</sup>Biology 4170 - Plant Biotechnology  
 Biology 4560 - Plant Development  
 Chemistry 2120 - Chemistry for Life Sciences II  
 Environmental Science 2000 - Fundamentals of Environmental Science

**2. Geography**

Environmental Science 2000 - Fundamentals of Environmental Science  
 Geography 2030 - Geomorphology  
 Geography 2300 - Weather and Climate  
 Geography 2700 - Geographical Data and Analysis  
 Geography 2735 - Introduction to Geographical Information Science  
 Geography 3075 - Environmental Resources Management  
 Geography 3080 - Soils  
 Geography 3210 - Agricultural Geography  
 Geography 3400 - Hydrology I  
 Geography 3700 - Cartography  
 Geography 3720 - Remote Sensing  
 Geography 3740 - Geographical Information Systems  
 Geography 4060 - Agricultural Soil Management  
 Geography 4065 - Irrigation Science  
 Geography 4200 - Project in Agricultural Geography  
 Geography 4400 - Hydrology II  
 Geography 4415 - Integrated Watershed Management

Geography 4725 - Advanced Remote Sensing  
 Geography 4740 - Advanced Geographical Information Systems  
 Geology 2060 - Physical Geology

**Technical Studies Semester (5 courses)**

Students are required to complete a semester of study at an approved college. The Technical Studies semester counts as the equivalent of 15.0 credit hours at the University of Lethbridge (i.e., three unspecified 2000-level and two unspecified 3000-level Agricultural Studies courses).

The Technical Studies semester should be taken after at least 20 university courses have been completed and prior to registration in the final 10 courses for the degree.

Students must have the college course selection approved by the Coordinator of Agricultural Studies. Further details are available from the Coordinator.

**Notes**

<sup>1</sup> Prerequisite required: Biochemistry 2000.

<sup>2</sup> Prerequisite required: Biology 3210.

Applied Studies, Independent Studies and Topics courses may be counted toward the subfield requirements provided:

1. They are clearly related to one of the subfields; and,
2. They are approved by the Coordinator of Agricultural Studies.

Students may not receive credit for courses at the University of Lethbridge for which close equivalents have been taken at the college, and vice versa. Students must ensure that their course selection has been approved by the Coordinator of Agricultural Studies.

Students wishing to pursue the Concentration in Geographical Information Science must complete Geography 2735 among the eight courses required in the Geography subfield.

A student who successfully completes this major may apply to the Alberta Institute of Agrologists (AIA) to be registered as a Professional Agrologist within Alberta. Students should contact the Coordinator of Agricultural Studies early in the program for further information.

See also:

- Post-Diploma Bachelor of Science - Agricultural Studies
- Bachelor of Arts - Agricultural Studies

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/agst\\_bsc](http://www.uleth.ca/ross/sequencing-plans/agst_bsc) for a suggested sequencing plan for the Agricultural Studies major in the B.Sc. program.

**Concentration: Agricultural Business (Optional)**

Agricultural Studies majors in the B.Sc. degree program may declare a Concentration in Agricultural Business.

**Required courses:**

Management 2020 - Marketing  
 Management 2100 - Introductory Accounting

**Three of:**

Economics 3030 - Managerial Economics  
 Economics 3080/Management 3780 - Principles of Industrial Organization I  
 Management 3010 - Management Law

Political Science 2210 - Canadian Politics and Government  
 1 Political Science 3420/Management 3050 - Human Resource Management

**Notes**

<sup>1</sup> Has prerequisites: One of Management 2030 or one 2000-level Political Science course (3.0 credit hours), and one of Writing 1000 or a university English course (3.0 credit hours).

For students who complete all requirements, the Concentration in Agricultural Business will be acknowledged on the official transcript.

**Concentration: Geographical Information Science (Optional)**

Agricultural Studies majors in the B.Sc. degree program may declare a Concentration in Geographical Information Science.

**Required courses:**

- Computer Science 1620 - Fundamentals of Programming I
- Geography 3720 - Remote Sensing
- Geography 3740 - Geographical Information Systems
- Geography 4725 - Advanced Remote Sensing
- Geography 4740 - Advanced Geographical Information Systems

**Notes**

Students may not double count courses required for the Concentration in Geographical Information Science in fulfilling requirements for the major. In such cases, students must select another option.

For students who complete all the requirements, the Concentration in Geographical Information Science will be acknowledged on the official transcript.

<b>Agricultural Studies (B.Sc.)</b>	
<b>Number of courses required for the major .....</b>	<b>20</b>
<i>(Independent Study - Optional; may be counted in required courses for major)</i>	
<b>Concentration: Agricultural Business (optional)</b>	
<b>Number of courses required for concentration .....</b>	<b>5</b>
<b>Concentration: Geographical Information Science (optional)</b>	
<b>Number of courses required for concentration .....</b>	<b>5</b>
<b>Total number of courses required for major and both concentrations .....</b>	<b>30</b>
<b>All students must also complete the Technical Studies Semester (5 courses).</b>	

**d. Anthropology**

Department: Anthropology

Anthropology is the academic study of the diversity of human life in local settings, whether in the past or present. The particulars of any local life, society or culture, however, are not isolated from global influence. Contemporary anthropology examines the material, social and cultural conditions of human behaviour and life from this locally global perspective. Traditionally, long-

term ethnographic and archaeological fieldwork in other societies has been the hallmark of the anthropological study of the human condition, but anthropologists are also cultural critics considering issues of race, gender, power, space and government in their own societies as well. The anthropological perspective makes significant contributions to fields as diverse as health, education, international development, religion, policy, urban studies, indigenous studies, economics and politics.

Please refer to the program website ([www.uleth.ca/artsci/anthropology](http://www.uleth.ca/artsci/anthropology)) for more information.

**Required courses:**

- Anthropology 1000 - The Anthropological Perspective
- Anthropology 2010 - Theory I: Historical Foundations of Anthropological Thought
- Anthropology 2210 - Cultures of the World (Series)
- Anthropology 3000 - Theory II: Contemporary Anthropological Theory

**One of:**

- Anthropology 2410 - Anthropological Archaeology
- Anthropology 2510 - Language, Culture, and Communication

Three additional courses (9.0 credit hours) in Anthropology at the 2000 level or above, excluding Anthropology 2990, 3990, and 4990 (Independent Study)

Two additional courses (6.0 credit hours) in Anthropology at the 3000/4000 level, excluding Anthropology 3980 (Applied Studies) and Anthropology 3990 (Independent Study)

Three courses (9.0 credit hours) in Anthropology at the 4000 level, excluding Anthropology 4980 (Applied Studies), Anthropology 4990 (Independent Study), and Anthropology 4995 (Undergraduate Thesis)

**Notes**

See also:

- Bachelor of Arts/Bachelor of Education - Anthropology/Social Studies Education
- Bachelor of Arts/Bachelor of Management - Anthropology

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/anth\\_ba](http://www.uleth.ca/ross/sequencing-plans/anth_ba) for a suggested sequencing plan for the Anthropology major in the B.A. program.

<b>Anthropology (B.A.)</b>	
<b>Number of courses required for the major .....</b>	<b>13</b>
<i>(Independent Study - Optional; may not be counted in required courses for major)</i>	

**e. Applied Statistics**

Departments: Mathematics and Computer Science, Economics, Geography, and Psychology

Statistics is the study of the collection, organization, analysis, interpretation and presentation of data. Application of statistical techniques is an essential part of decision making and study in a wide range of disciplines such as astronomy, biology, education, economics, geography, engineering, genetics, marketing, medicine, psychology, public health and sports, among many.

Please refer to the program website ([www.uleth.ca/artsci/math-computer-science](http://www.uleth.ca/artsci/math-computer-science)) for more information.

**Required courses:**

- Computer Science 1620 - Fundamentals of Programming I
- Mathematics 1410 - Elementary Linear Algebra
- Mathematics 1560 - Calculus I
- Mathematics 2560 - Calculus II
- Statistics 1770 - Introduction to Probability and Statistics
- Statistics 2200 - Survey Design and Analysis
- Statistics 3500 - Mathematical Probability
- Statistics 3510 - Mathematical Statistics
- Statistics 3700 - Design and Analysis of Experiments
- Statistics 4990 - Independent Study

**One of:**

- Statistics 2780 - Statistical Inference
- Economics 2900 - Economics and Business Statistics

**Required Concentration:**

For the Major in Applied Statistics, all students must complete one of the following Concentrations:

**1. Concentration in Economics**

- Economics 1010 - Introduction to Microeconomics
- Economics 1012 - Introduction to Macroeconomics
- Economics 2750 - Quantitative Methods in Economics
- Economics 3010 - Intermediate Microeconomic Theory
- Economics 3012 - Intermediate Macroeconomic Theory
- Economics 3950 - Econometrics I
- Economics 4960 - Econometrics II

One additional course (3.0 credit hours) in Economics at the 3000/4000 level

Two additional courses (6.0 credit hours) in Economics at the 4000 level

**2. Concentration in Geography**

- Geography 1000 - Introduction to Physical Geography
- Geography 1200 - Introduction to Human Geography
- Geography 2210 - Spatial Organization of Economic Activity
- Geography 2700 - Geographical Data and Analysis
- Geography 2735 - Introduction to Geographical Information Science
- Geography 3235 - Quantitative Models for Geographic Analysis
- Geography 4730 - Spatial Statistics

**One of:**

- Geography 2030 - Geomorphology
- Geography 2300 - Weather and Climate

**One of:**

- Geography 3740 - Geographical Information Systems
- Geography 3750 - GIS Applications in Human Geography

One additional course (3.0 credit hours) in Geography at the 3000/4000 level

**3. Concentration in Psychology**

- Psychology 1000 - Basic Concepts of Psychology
- Psychology 2030 - Methods and Statistics
- Psychology 3400 - Advanced Research Design and Data Analysis

**Four of:**

- Neuroscience 2600 - Brain and Behaviour
- Psychology 2110 - Introduction to Child Development
- Psychology 2320 - Cognition and Perception: Thinking and Seeing
- Psychology 2330 - Learning and Cognition
- Psychology 2505 - Abnormal Psychology
- Psychology 2700 - Behaviour and Evolution
- Psychology 2800 - Social Psychology
- Psychology 2820 - Culture, Evolution, and Human Social Life
- Psychology 2840 - Comparative Sexuality

Two additional courses (6.0 credit hours) in Psychology or Neuroscience at the 3000/4000 level

One course (3.0 credit hours) in Psychology at the 4000 level

For students who complete all requirements for the Major in Applied Statistics with one of the above concentrations, the concentration will be acknowledged on the official transcript.

**Notes**

It is strongly recommended that a student attain a grade of 'C' or higher in any course used to satisfy prerequisites for courses in Computer Science, Mathematics, and Statistics.

See also:

- Bachelor of Science - Mathematics

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/asta\\_bsc](http://www.uleth.ca/ross/sequencing-plans/asta_bsc) for a suggested sequencing plan for the Applied Statistics major in the B.Sc. program.

<p><b>Applied Statistics (B.Sc.)</b></p> <p><b>Number of courses required for the major and concentration ..... 21</b></p> <p><i>(Independent Study - Required in major)</i></p>
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**f. Archaeology and Geography (B.A. or B.Sc.)**

Department: Geography

Archaeology is the study of the human past based on cultural remains viewed in their spatial context. Archaeological research is often pursued using spatial and environmental models developed within the field of Geography. The major in Archaeology and Geography allows students to combine theoretical and methodological approaches, in tandem with advanced studies of particular cultures through conventional lecture courses and field work.

Please refer to the program website ([www.uleth.ca/artsci/archaeology](http://www.uleth.ca/artsci/archaeology)) for more information.

**Required courses:**

- Anthropology 1000 - The Anthropological Perspective
- Archaeology 1000 - Introduction to Archaeology
- Archaeology 3300 - Archaeological Field Work (Series)
- Archaeology 3700 - Geoarchaeology and Landscape Analysis
- Geography 1000 - Introduction to Physical Geography
- Geography 1200 - Introduction to Human Geography
- Geography 2030 - Geomorphology
- Geography 2700 - Geographical Data and Analysis

Geography 2735 - Introduction to Geographical Information Science

**Two of:**

Archaeology 3720 - Archaeological Materials Analysis

Geography 3720 - Remote Sensing

Geography 3740 - Geographical Information Systems

Geology 2060 - Physical Geology

One course (3.0 credit hours) in a language other than English

One course (3.0 credit hours) in Archaeology at the 4000 level

Four additional courses (12.0 credit hours) in Archaeology at the 3000/4000 level

Four additional courses (12.0 credit hours) in Geography, and/or Geology and/or Anthropology at the 3000/4000 level

**Notes**

Students wishing to complete the Concentration in Geographical Information Science must choose Geography 3720 and Geography 3740, which are prerequisites for the required 4000-level courses in the concentration.

See also:

- Bachelor of Arts or Bachelor of Science - Geography

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/arky\\_geog\\_ba\\_bsc](http://www.uleth.ca/ross/sequencing-plans/arky_geog_ba_bsc) for a suggested sequencing plan for the Archaeology and Geography major in the B.A. or B.Sc. program.

**Concentration: Geographical Information Science (Optional)**

Majors in Archaeology and Geography may declare a Concentration in Geographical Information Science.

**Required courses:**

Computer Science 1620 - Fundamentals of Programming I

Geography 4725 - Advanced Remote Sensing

Geography 4740 - Advanced Geographical Information Systems

**Two of:**

<sup>1</sup>Geography 4400 - Hydrology II OR Geography 4415 - Integrated Watershed Management OR Geography 4750 - Glacial Processes, Measurements, and Models

Geography 4700 - Advanced Computer Mapping

Geography 4710 - Remote Sensing Field Techniques

Geography 4730 - Spatial Statistics

Geography 4751 - Project in Spatial Modelling

Geography 4753 - Seminar in Remote Sensing

**Notes**

<sup>1</sup> Prerequisite required: Geography 3400.

Students may not double count courses required for the Concentration in Geographical Information Science in fulfilling requirements for the Major in Archaeology and Geography.

For students who complete all requirements, the Concentration in Geographical Information Science will be acknowledged on the official transcript.

**Archaeology and Geography (B.A. or B.Sc.)**

Number of courses required for the major ..... 21  
(Independent Study - Optional; may be counted in required courses for major)

**Concentration: Geographical Information Science (optional)**

Number of courses required for concentration ..... 5

Total number of courses required for major and concentration ..... 26

**g. Art**

Department: Art (Faculty of Fine Arts)

The major in Art is a broad, general program of study. Students complete required courses in both studio art and art history/museum studies as well as electives chosen from either or both areas. Studio instruction is available in drawing, painting, sculpture, photo-arts, printmaking, computer art, video, installation art, performance art and audio art. Art History/Museum Studies courses are available in all periods and genres of western art including First Nations' and Canadian Art history.

Please refer to the program website ([www.uleth.ca/artsci/art](http://www.uleth.ca/artsci/art)) for more information.

**Required courses:**

Art 2031 - Foundation Studio (Drawing and Image)

Art 2032 - Foundation Studio (Object and Space)

Art 3010 - Drawing (Principles and Practices)

Art History/Museum Studies 1000 - Introduction to Art

Art History/Museum Studies 2001 - Contemporary Art Practices and Theories

Art History/Museum Studies 2225 - Western Art from Prehistory to the French Revolution

**One of:**

Art 3261 - Art NOW

Art 3262 - Art NOW

**One of:**

Art History/Museum Studies 2900 - Introduction to Museum Studies

Art History/Museum Studies 3200 - 19th-Century Art History

Art History/Museum Studies 3215 - 20th-Century Art History to 1945

Art History/Museum Studies 3240 - Canadian Art History to 1940

**One of:**

Art History/Museum Studies 3151 - Art History (Series)

Art History/Museum Studies 3220 - Art: 1945 to 1970

Art History/Museum Studies 3245 - Canadian Art History: 1940 to the Present

Art History/Museum Studies 3250 - Northwest Coast Art

Art History/Museum Studies 3270 - Issues in Contemporary Art and Theory

Art History/Museum Studies 3850 - Topics Course

Art History/Museum Studies 3900 - Critical Issues in Museum Studies

Art History/Museum Studies 4000 - Museum Studies Internship

Art History/Museum Studies 4150 - Art History (Series)

Four additional courses (12.0 credit hours) in Art or Art History/Museum Studies

### Notes

A student proceeding beyond these minimum requirements may choose to focus on Art Studio or Art History/Museum Studies courses.

See also:

- Bachelor of Fine Arts - Art
- Bachelor of Arts/Bachelor of Education - Art/Art Education
- Bachelor of Fine Arts - Art/Bachelor of Education - Art/Art Education
- Bachelor of Arts/Bachelor of Management - Art

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/art\\_ba](http://www.uleth.ca/ross/sequencing-plans/art_ba) for a suggested sequencing plan for the Art major in the B.A. program.

#### Art (B.A.)

Number of courses required for the major ..... 13

*(Independent Study - Optional; may not be counted in required courses for major)*

### h. Biochemistry

Departments: Biological Sciences, and Chemistry and Biochemistry

Biochemistry is the study of all living systems at the molecular level. It looks at the chemical and physical basis of life and how these microcosms interact with their environments. The Biochemistry program will help students develop a strong background in the basic sciences and extensive laboratory skills. Thereby, the Biochemistry program provides background for a diverse range of careers in the life sciences, including professional programs such as medicine and veterinary medicine.

Please refer to the program website ([www.uleth.ca/artsci/biochemistry](http://www.uleth.ca/artsci/biochemistry)) for more information.

#### Required courses:

Biochemistry 2000 - Introductory Biochemistry  
Biochemistry 3100 - Proteins, Enzymes and Nucleic Acids  
Biochemistry 3300 - Bioenergetics and Metabolism  
Biology 1010 - Cellular Basis of Life  
Biology 1020 - Diversity of Life  
Biology 2000 - Principles of Genetics  
Biology 3000 - Gene Expression and Regulation  
Biology 3105 - Signal Transduction  
Biology 3210 - Experimental Methods in Molecular and Cellular Biology  
Biology 3400 - Principles of Microbiology  
Chemistry 1000 - General Chemistry I  
Chemistry 2000 - General Chemistry II  
Chemistry 2410 - Analytical Chemistry I  
Chemistry 2500 - Organic Chemistry I  
Chemistry 2600 - Organic Chemistry II  
Chemistry 2740 - Physical Chemistry  
Mathematics 1560 - Calculus I  
Mathematics 2560 - Calculus II  
Physics 2000 - Introduction to Physics II

#### Two of:

Biology 3005 - Genome Maintenance  
Biology 3115 - Principles of Cell Growth  
Biology 3310 - Developmental Biology  
Biology 3420 - Animal Physiology  
Biology 3460 - Plant Physiology  
Chemistry 3410 - Analytical Chemistry II  
<sup>1</sup>Chemistry 3730 - Advanced Physical Chemistry  
Chemistry 3830 - Inorganic Chemistry I  
Chemistry 3840 - Inorganic Chemistry II

#### One of:

Physics 1000 - Introduction to Physics I (recommended)  
Physics 1050 - Introduction to Biophysics  
<sup>2</sup>Engineering 2060 - Engineering Mechanics

Two courses (6.0 credit hours) in Biochemistry or Biology at the 4000 level

#### Notes

<sup>1</sup> Prerequisite required: Mathematics 1410.

<sup>2</sup> Prerequisites required: Engineering 2000 and Mathematics 1560.

Students should choose appropriate 3000-level Biology or Chemistry courses to meet prerequisites for 4000-level courses in Biochemistry and/or Biology.

It is strongly recommended that students who are planning to pursue graduate studies in Biochemistry consider the Undergraduate Thesis option during the final two semesters of their fourth year. Students interested in this option should consult potential supervisors at an early stage to discuss their background preparation.

See also:

- Bachelor of Science - Biological Sciences
- Bachelor of Science - Chemistry

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/bchm\\_bsc](http://www.uleth.ca/ross/sequencing-plans/bchm_bsc) for a suggested sequencing plan for the Biochemistry major in the B.Sc. program.

#### Biochemistry (B.Sc.)

Number of courses required for the major ..... 24

*(Independent Study - Optional; may not be counted in required courses for major)*

### i. Biological Sciences

Department: Biological Sciences

The Biological Sciences delve into the world of living organisms—from microbes, to human beings, to entire ecosystems—on, under, and above the earth. Exploring the nature of life leads biologists out into the world to study how organisms interact with their environment, how they function, and how they evolved. The curriculum provides basic studies in molecular and cellular biology, organismal biology and ecology and evolutionary biology during a student's first two years, with subsequent opportunities for specialization. Advanced courses also offer opportunities for independent laboratory or field research projects in the three areas. The program provides background for a diverse range of careers in the life sciences, and a gateway to professional programs such as medicine and veterinary medicine.

Please refer to the program website ([www.uleth.ca/artsci/biological-sciences](http://www.uleth.ca/artsci/biological-sciences)) for more information.

**Required courses:**

Biochemistry 2000 - Introductory Biochemistry  
Biology 1010 - Cellular Basis of Life  
Biology 1020 - Diversity of Life  
Biology 2000 - Principles of Genetics  
Biology 2200 - Principles of Ecology  
Biology 3300 - Evolution  
Biology 4500 - Seminars in Biological Sciences  
Chemistry 1000 - General Chemistry I  
Chemistry 2000 - General Chemistry II  
Chemistry 2500 - Organic Chemistry I  
Chemistry 2600 - Organic Chemistry II

**One of:**

Mathematics 1410 - Elementary Linear Algebra  
Mathematics 1560 - Calculus I

**One of:**

Physics 1000 - Introduction to Physics I  
Physics 1050 - Introduction to Biophysics  
(preferred)

**One of:**

One course (3.0 credit hours) in English at the 1000 level or higher

Writing 1000 - Introduction to Academic Writing

<sup>1</sup>Six courses (18.0 credit hours) at the 3000/4000 level, including two from each of the following subfield lists; one of the six courses must be at the 4000 level:

**List 1 - Cellular and Molecular Biology**

Biology 3000 - Gene Expression and Regulation  
Biology 3005 - Genome Maintenance  
Biology 3105 - Signal Transduction  
Biology 3115 - Principles of Cell Growth  
Biology 3210 - Experimental Methods in Molecular and Cellular Biology  
Biology 4100 - Advances in Agricultural Biotechnology  
Biology 4110 - Advances in Genetics, Molecular and Cellular Biology  
Biology 4130 - Genomics and Biotechnology  
Biology 4140 - RNA Biology  
Biology 4170 - Plant Biotechnology  
Biology 4200 - Techniques in Molecular Biology  
Biology 4230 - Molecular and Cellular Biology of Cancer

**List 2 - Organismal Biology**

Biology 3310 - Developmental Biology  
Biology 3400 - Principles of Microbiology  
Biology 3420 - Animal Physiology  
Biology 3460 - Plant Physiology  
Biology 3505 - Freshwater Biology  
Biology 3520 - Invertebrate Zoology  
Biology 3530 - Vertebrate Zoology  
Biology 3560 - Integrative Plant Biology  
Biology 4420 - Environmental Physiology  
Biology 4440 - Toxicology  
Biology 4560 - Plant Development

**List 3 - Ecology and Evolutionary Biology**

Biology 3605 - Conservation Biology  
<sup>2</sup>Biology 3610 - Prairie Conservation  
Biology 3630 - Field Biology  
Biology 3700 - Ecosystem and Community Ecology  
Biology 3710 - Population Biology  
Biology 3800 - Aquatic Ecosystems  
Biology 4700 - Molecular Ecology

Biology 4710 - Evolutionary and Ecological Modelling  
Biology 4740 - Behavioural Ecology  
Biology 4800 - Biology of Parasitism

**Recommended course:**

Statistics 1770 - Introduction to Probability and Statistics

**Notes**

<sup>1</sup>Topics courses (Biology 3850 and 4850) may be assigned to one of the Biological Sciences lists at the time of scheduling. Please refer to the current semester timetable.

<sup>2</sup>Prerequisite required: Environmental Science 2000.

Independent Studies courses, Applied Studies courses, and the Undergraduate Thesis may not be counted as part of the minimum requirements for the major; however, they are strongly encouraged for students taking courses beyond this minimum.

See also:

- Bachelor of Science/Bachelor of Education - Biological Sciences/Science Education
- Bachelor of Science/Bachelor of Management - Biological Sciences

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/biol\\_bsc](http://www.uleth.ca/ross/sequencing-plans/biol_bsc) for a suggested sequencing plan for the Biological Sciences major in the B.Sc. program.

**Biological Sciences (B.Sc.)**

Number of courses required for the major ..... 20

*(Independent Study - Optional; may not be counted in required courses for major)*

**j. Canadian Studies**

The Canadian Studies major is for students wishing to deepen their understanding of Canada. The major comprises a core of courses that provide a foundation for more focused and advanced study. Beyond the core, students choose from amongst several interdisciplinary thematic areas. Many Canadian Studies graduates work in business, as teachers, in government at all levels; others have gone on to study for advanced degrees in law and public administration.

Please refer to the program website ([www.uleth.ca/artsci/canadian-studies](http://www.uleth.ca/artsci/canadian-studies)) for more information.

**Required core (8-12 courses):**

A minimum of eight courses (24.0 credit hours) and a maximum of 12 courses (36.0 credit hours) from the following list:

English 2000 - Survey of Canadian Literature

**Two of:**

French 1000 - Beginners' French I  
French 1100 - Beginners' French II  
French 1500 - Intermediate Language I  
French 2000 - Intermediate Language II  
French 2001 - Intermediate Language for Immersion Graduates  
French 2200 - Culture and Civilization I  
French 2250 - French Immersion  
French 2300 - Introduction to Modern Literature and Literary Analysis

**Two of:**

Economics 2170 - Economic History of Canada  
 History 2710 - Canada to 1867  
 History 2720 - Canada Since 1867

**Three of:**

Geography 2600 - Canada  
 Native American Studies 2100 - Aboriginal Peoples and Law  
 Native American Studies 2400 - Traditional Aboriginal Political Economy  
 Native American Studies 2500 - Canadian Indian History  
 Native American Studies 2800 - Native American Politics  
 Political Science 2210 - Canadian Politics and Government  
 Sociology 2010 - Canadian Society  
 Sociology 2410 - Sociology of Gender

**Independent Study (1 course)**

One Independent Study course (3.0 credit hours) in Canadian Studies at the 3000/4000 level

**Options (7-11 courses):**

A minimum of seven courses (21.0 credit hours) and a maximum of 11 courses (33.0 credit hours) from the following 3000/4000-level courses:

Art History/Museum Studies 3240 - Canadian Art History to 1940  
 Art History/Museum Studies 3245 - Canadian Art History: 1940 to the Present  
 Economics 3210 - Natural Resource Economics  
 Economics 4300 - Agricultural Policy II  
 English 3001 - Canadian Poetry  
 English 3002 - Contemporary Canadian Drama  
 English 3810 - Contemporary Canadian Literature  
 English 4000 - Seminars in Canadian and Post-Colonial Literature (Series)  
 French 3001 - Advanced Language I  
 French 3200 - Culture and Civilization II (Series)  
 French 3500 - Survey of French or French-Canadian Literature (Series)  
 French 3600 - Literary Genres (Series)  
 French 4001 - Advanced Language II  
 French 4002 - Advanced Studies in Language (Series)  
 French 4600 - Seminar in Literature (Series)  
 History 3703 - History of Western Canada  
 History 3707 - Canada Since 1939  
 History 3708 - History of Atlantic Canada  
 History 4070 - Seminars in Canadian History (Series)  
 Native American Studies 3300 - Canadian Indian Art History and Theory  
 Native American Studies 3400 - Contemporary Aboriginal Political Economy  
 Native American Studies 3500 - History of Prairie Indian Treaties  
 Native American Studies 3700 - Native American Health  
 Native American Studies 4200 - Law and Aboriginal Development in Canada  
 Native American Studies 4400 - Indians and the Criminal Justice System  
 Native American Studies 4700 - The Métis  
 Political Science 3120 - Canadian Foreign Policy  
 Political Science 3221 - The Politics of Canadian Federalism  
 Political Science 3230 - Provincial Government and Politics

Political Science 3241 - Canadian Constitutional Law I: Federalism and First Nations  
 Political Science 3242 - Canadian Constitutional Law II: The Charter  
 Political Science 3243 - Courts, Law, and Politics in Canada  
 Political Science 3250 - Alberta Politics and Government  
 Political Science 3260 - Canadian Public Policy  
 Political Science 3280 - Canadian Political Behaviour  
 Political Science 3400 - Public Administration

**Notes**

Selected Topics courses, Applied Studies, Independent Studies, and offerings in the English 4000, French 3200, French 3500, French 3600, French 4002, and French 4600 Series may be counted toward the Options courses in the major provided (1) they are clearly related to Canadian Studies and (2) they are approved by the Coordinator of Canadian Studies.

Many of the Options courses require prerequisites, thus students should choose courses with this in mind.

The required Independent Study course should involve more than one discipline and must be approved by the Coordinator of Canadian Studies.

See also:

- Bachelor of Arts/Bachelor of Education - Canadian Studies/Social Studies Education
- Bachelor of Arts/Bachelor of Management - Canadian Studies

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/cnst\\_ba](http://www.uleth.ca/ross/sequencing-plans/cnst_ba) for a suggested sequencing plan for the Canadian Studies major in the B.A. program.

<b>Canadian Studies (B.A.)</b>	
<b>Number of courses required for the major .....</b>	<b>20</b>
<i>(Independent Study - Required in major)</i>	

**k. Chemistry**

Department: Chemistry and Biochemistry

Chemistry is the central science of matter, dealing with the 118 known elements from which everything is made. It studies the transformations and properties of all substances - natural and synthetic. Chemistry students develop a strong background in theory and practice and acquire extensive laboratory skills. Chemistry is an experimental science, and students are strongly encouraged to perform original research in partial fulfillment of the degree requirements. The Major in Chemistry leads to professional certification (P.Chem.), and graduates are prepared for careers in industry or the public sector. The degree is also suitable for advanced study in chemistry and can be used to prepare for other professional programs (Medicine, Dentistry and Veterinary Medicine).

Please refer to the program website ([www.uleth.ca/artsci/chemistry-biochemistry](http://www.uleth.ca/artsci/chemistry-biochemistry)) for more information.

**Required courses:**

Biochemistry 2000 - Introductory Biochemistry  
 Biology 1010 - Cellular Basis of Life  
 Chemistry 1000 - General Chemistry I  
 Chemistry 2000 - General Chemistry II  
 Chemistry 2410 - Analytical Chemistry I

Chemistry 2500 - Organic Chemistry I  
 Chemistry 2600 - Organic Chemistry II  
 Chemistry 2740 - Physical Chemistry  
 Chemistry 3250 - Contemporary Chemistry  
 Chemistry 3410 - Analytical Chemistry II  
 Chemistry 3730 - Advanced Physical Chemistry  
 Chemistry 3830 - Inorganic Chemistry I  
 Chemistry 3840 - Inorganic Chemistry II  
 Mathematics 1410 - Elementary Linear Algebra  
 Mathematics 1560 - Calculus I  
 Mathematics 2560 - Calculus II  
 Physics 2000 - Introduction to Physics II

**One of:**

- Physics 1000 - Introduction to Physics I (recommended)
- Physics 1050 - Introduction to Biophysics
- <sup>1</sup>Engineering 2060 - Engineering Mechanics

Two offerings (6.0 credit hours) of Chemistry 4000 - Advanced Chemistry (Series)

Four additional courses (12.0 credit hours) in Chemistry or Biochemistry chosen from the following list:

- Additional offerings of Chemistry 4000 - Advanced Chemistry (Series)
- Biochemistry 3100 - Proteins, Enzymes and Nucleic Acids
- Biochemistry 3300 - Bioenergetics and Metabolism
- Chemistry 3990 - Independent Study
- Chemistry 4990 - Independent Study
- Chemistry 4995 - Undergraduate Thesis (6.0 credit hours)

**Notes**

<sup>1</sup> Has prerequisites: *Engineering 2000 and Mathematics 1560.*

At least two offerings of Chemistry 4000 - Advanced Chemistry (Series) must be completed. The content, as identified by the title, must be different in the two offerings. These courses are usually offered each semester and offerings will normally not be repeated within a two-year cycle.

This program has been accredited by the Canadian Society for Chemistry (CSC), which is the national organization representing chemists, and is acceptable for membership in the Association of the Chemical Profession of Alberta (ACPA). Students who complete a B.Sc. degree with the major in Chemistry outlined above will have a degree accredited by the CSC.

Those who plan to pursue graduate studies in Chemistry should take more than the minimum of 18 courses in Chemistry or Biochemistry and should obtain advice on their program from the Department. Students can get credit for participating in original research as part of their studies, especially if preparing for advanced chemistry degrees.

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. Students at an early stage of their studies are advised to seek help in planning their programs from the Department Advisor or from any faculty member in the Department of Chemistry and Biochemistry.

See also:

- Bachelor of Science - Biochemistry
- Bachelor of Science/Bachelor of Education - Chemistry/Science Education
- Bachelor of Science/Bachelor of Management - Chemistry

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/chem\\_bsc](http://www.uleth.ca/ross/sequencing-plans/chem_bsc) for a suggested sequencing plan for the Chemistry major in the B.Sc. program.

**Chemistry (B.Sc.)**  
**Number of courses required for the major ..... 24**  
*(Independent Study - Optional; may be counted in required courses for major)*

**I. Computer Science**

Department: Mathematics and Computer Science  
 Computer Science is the study of algorithms and data structures and their applications in designing new and efficient solutions to industrial, technological, environmental or social problems. The program is designed to enable students to gain both theoretical knowledge and practical experience, and includes access to state-of-the-art hardware and software.

Please refer to the program website ([www.uleth.ca/artsci/math-computer-science](http://www.uleth.ca/artsci/math-computer-science)) for more information.

**Required courses:**

- Computer Science 1620 - Fundamentals of Programming I
- Computer Science 1820 - Discrete Structures
- Computer Science 2610 - Introduction to Digital Systems
- Computer Science 2620 - Fundamentals of Programming II
- Computer Science 2720 - Practical Software Development
- Computer Science 3615 - Computer Architecture
- Computer Science 3620 - Data Structures and Algorithms
- Computer Science 3740 - Programming Languages
- Mathematics 2000 - Mathematical Concepts

**One of:**

- Mathematics 1410 - Elementary Linear Algebra
- Mathematics 1510 - Calculus for Management and Social Sciences
- Mathematics 1560 - Calculus I
- Statistics 1770 - Introduction to Probability and Statistics

<sup>1</sup> Six additional courses (18.0 credit hours) in Computer Science at the 3000/4000 level

Two courses (6.0 credit hours) in Computer Science at the 4000 level, excluding Computer Science 4850 (Topics), Computer Science 4980 (Applied Studies), and Computer Science 4990 (Independent Study)

**Notes**

<sup>1</sup> One of the six additional 3000/4000-level courses may be replaced by a course from the following list:

- Physics 3900 - Intermediate Experimental Physics (Series) (Digital Electronics)
- Any 3000/4000-level Mathematics course

It is strongly recommended that Computer Science majors include additional Mathematics courses in their program. Students intending to take Physics 3900 should plan carefully to include the appropriate Mathematics and Physics prerequisites in their programs.

Some senior courses are scheduled for alternate years. Since these courses are frequently sequential and dependent upon adequate preparation, students are

urged to seek advice before the end of their third semester in planning a major and selecting courses. It is strongly recommended that a student attain a grade of 'C' or higher in any course used to satisfy prerequisites for courses in Computer Science and Mathematics.

See also:

- Bachelor of Science - Computer Science and Geographical Information Science
- Bachelor of Science/Bachelor of Management - Computer Science
- Bachelor of Science - Mathematics

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/cpsc\\_bsc](http://www.uleth.ca/ross/sequencing-plans/cpsc_bsc) for a suggested sequencing plan for the Computer Science major in the B.Sc. program.

**Computer Science (B.Sc.)**  
**Number of courses required for the major ..... 18**  
*(Independent Study - Optional; may be counted in required courses for major)*

### m. Computer Science and Geographical Information Science

Departments: Geography, and Mathematics and Computer Science

Geographical Information Science (GIS) involves the use and analysis of digital maps, databases, models and mobile applications, as well as navigation and spatial integration tools. Major GIS application areas include remote sensing, geographical information systems, computer graphics, image processing and mapping and spatial modelling. These rely on advanced computer science algorithms and software development, platform integration, hardware design and operating system principles. The major provides applied training coupled with a solid theoretical and developmental foundation. Graduates have the choice of a wide range of employment opportunities that involve applications, development, or both.

Please refer to the program website ([www.uleth.ca/artsci/gis](http://www.uleth.ca/artsci/gis)) for more information.

#### Required courses:

- Computer Science 1620 - Fundamentals of Programming I
- Computer Science 1820 - Discrete Structures
- Computer Science 2620 - Fundamentals of Programming II
- Computer Science 2720 - Practical Software Development
- Computer Science 3620 - Data Structures and Algorithms
- Computer Science 3660 - Introduction to Database Systems
- Computer Science 3710 - Computer Graphics
- Computer Science 4660 - Database Management Systems
- Geography 1000 - Introduction to Physical Geography
- Geography 1200 - Introduction to Human Geography
- Geography 2700 - Geographical Data and Analysis
- Geography 2735 - Introduction to Geographical Information Science
- Geography 3720 - Remote Sensing
- Geography 3740 - Geographical Information Systems
- Geography 4725 - Advanced Remote Sensing
- Geography 4740 - Advanced Geographical Information Systems

#### One of:

- Geography 4400 - Hydrology II
- Geography 4415 - Integrated Watershed Management
- Geography 4700 - Advanced Computer Mapping
- Geography 4710 - Remote Sensing Field Techniques
- Geography 4750 - Glacial Processes, Measurements, and Models
- Geography 4751 - Project in Spatial Modelling
- Geography 4753 - Seminar in Remote Sensing

#### Four of:

- Any of the courses listed above but not already selected as required courses
- Computer Science 2610 - Introduction to Digital Systems
- Computer Science 3720 - Introduction to Software Engineering
- <sup>1</sup> Computer Science 3740 - Programming Languages
- Computer Science 3750 - Artificial Intelligence
- Computer Science 3770 - Human-Computer Interaction
- Computer Science 3780 - Data Communications and Networking
- Geography 2030 - Geomorphology
- Geography 2300 - Weather and Climate
- Geography 3400 - Hydrology I
- Geography 3700 - Cartography
- Geography 3710 - Field Techniques in the Earth Sciences
- Geography 3750 - GIS Applications in Human Geography
- Geography 4730 - Spatial Statistics
- <sup>2</sup> Statistics 2780 - Statistical Inference

One course (3.0 credit hours) in Computer Science at the 4000 level, excluding Computer Science 4850 (Topics), Computer Science 4980 (Applied Studies), and Computer Science 4990 (Independent Study)

#### Notes

<sup>1</sup> Prerequisite required: Mathematics 2000.

<sup>2</sup> Prerequisite required: Statistics 1770.

See also:

- Bachelor of Science - Computer Science
- Bachelor of Science - Geography

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/cpsc\\_gis\\_bsc](http://www.uleth.ca/ross/sequencing-plans/cpsc_gis_bsc) for a suggested sequencing plan for the Computer Science and Geographical Information Science major in the B.Sc. program.

**Computer Science and Geographical Information Science (B.Sc.)**  
**Number of courses required for the major ..... 22**  
*(Independent Study - Optional; may not be counted in required courses for major)*

### n. Dramatic Arts

Department: Theatre and Dramatic Arts (Faculty of Fine Arts)

The major in Dramatic Arts is a broad, general program of study. Students complete required courses in various aspects of the Dramatic Arts including theory and history as well as performance-based and technically-based courses. Beyond the required courses, students will

choose electives based on their specific interests in the Dramatic Arts.

Please refer to the program website ([www.uleth.ca/artsci/drama](http://www.uleth.ca/artsci/drama)) for more information.

**Required courses:**

- Drama 1000 - Introduction to Dramatic Arts
- Drama 2010 - Performance Fundamentals
- Drama 2100 - Play Reading and Analysis
- Drama 2120 - History and Development of Theatre I
- Drama 2130 - History and Development of Theatre II
- Drama 2810 - Introduction to Stagecraft
- Drama 3130 - Canadian Theatre

**One of:**

- Drama 2310 - Acting: Fundamentals
- Drama 2340 - Movement Studies: Fundamentals
- Drama 2510 - Theatre for Young Audiences I
- Drama 2710 - Improvisation and Dramatic Process

**One of:**

- Drama 2611 - Technical Theatre Portfolio I
- Drama 2825 - Introduction to Design for Theatre

**Two of:**

- Drama 3030 - Introduction to Film Studies
- Drama 3100 - Theatre in Performance
- Drama 3150 - Theatre Studies Series
- Drama 3870 - History of Costume
- Drama 4211 - Theories of Theatre

**One of:**

- English 3201 - Elizabethan and Jacobean Drama
- English 3602 - Shakespeare
- English 3620 - Modern Drama
- English 3660 - Contemporary Drama

Two additional courses (6.0 credit hours) in Drama at the 3000/4000 level

One additional course (3.0 credit hours) in Drama

**Notes**

It is recommended that students consider completing additional English courses from the Dramatic Literature series.

See also:

- Bachelor of Fine Arts - Dramatic Arts
- Bachelor of Arts/Bachelor of Education - Dramatic Arts/Drama Education
- Bachelor of Fine Arts - Dramatic Arts/ Bachelor of Education - Dramatic Arts/Drama Education
- Bachelor of Arts/Bachelor of Management - Dramatic Arts

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/dram\\_ba](http://www.uleth.ca/ross/sequencing-plans/dram_ba) for a suggested sequencing plan for the Dramatic Arts major in the B.A. program.

**Dramatic Arts (B.A.)**

Number of courses required for the major ..... 15

*(Independent Study - Optional; may be counted in required courses for major)*

**o. Economics**

Department: Economics

Economics is the study of the allocation of scarce resources by societies to meet individual and social wants. The major includes a number of courses in microeconomics and macroeconomics. These provide the theoretical framework within which contemporary issues, such as pollution, non-renewable natural resources, free trade, agricultural subsidies, interest rates, government deficits, unemployment, inflation, poverty and third world development can be analyzed and appropriate policies can be recommended.

Please refer to the program website ([www.uleth.ca/artsci/economics](http://www.uleth.ca/artsci/economics)) for more information.

**Required courses:**

- Economics 1010 - Introduction to Microeconomics
  - Economics 1012 - Introduction to Macroeconomics
  - Economics 2750 - Quantitative Methods in Economics
  - Economics 2900 - Economics and Business Statistics
  - Economics 3010 - Intermediate Microeconomic Theory
  - Economics 3012 - Intermediate Macroeconomic Theory
  - Economics 3950 - Econometrics I
  - Statistics 1770 - Introduction to Probability and Statistics
- Three courses (9.0 credit hours) in Economics at the 4000 level

Three additional courses (9.0 credit hours) in Economics

**Notes**

Please note that credit will not be granted for both Economics 2900 and Statistics 2780.

It is recommended that Economics majors include courses in Mathematics, especially courses in Calculus, as part of their overall programs.

It is also strongly recommended that students who are considering graduate studies in Economics include in their programs as many 4000-level courses as possible, and in particular the following courses:

- Economics 4010 - Advanced Microeconomic Theory
- Economics 4012 - Advanced Macroeconomic Theory
- Economics 4150 - Mathematical Economics

See also:

- Bachelor of Arts/Bachelor of Education - Economics/Social Studies Education
- Bachelor of Arts/Bachelor of Management - Economics

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/econ\\_ba](http://www.uleth.ca/ross/sequencing-plans/econ_ba) for a suggested sequencing plan for the Economics major in the B.A. program.

**Economics (B.A.)**

Number of courses required for the major ..... 14

*(Independent Study - Optional; may be counted in required courses for major)*

**p. English**

Department: English

English is the study of the properties and powers of the English language and literature as the fundamental means by which we communicate our values, ideals and vision. Courses in the fundamentals of the three main literary genres of poetry, prose and drama prepare students for the close study of major works and periods of literature from the British, American, Canadian and Post-Colonial traditions. In addition, the curriculum includes a variety of special courses in rhetoric, the history of language, literary theory, gender, children's literature and creative writing. At the senior level, courses concentrate on specific topics such as particular authors and are conducted in small seminar classes which stimulate open and intensive discussion between students and instructor.

Please refer to the program website ([www.uleth.ca/artsci/english](http://www.uleth.ca/artsci/english)) for more information.

**Required courses:**

English 1900 - Introduction to Language and Literature

**Two of (Literary Surveys):**

- English 2000 - Survey of Canadian Literature
- English 2400 - Survey of English Literature I
- English 2450 - Survey of English Literature II
- English 2500 - Survey of American Literature I
- English 2550 - Survey of American Literature II
- English 2610 - Survey of Children's Literature
- English 2700 - Surveys of Literature (Series)

**Two of (Genres, Approaches and Themes):**

- English 2100 - Poetry
- English 2200 - Drama
- English 2300 - Prose Fiction
- English 2720 - Approaches to Literature (Series)
- English 2800 - Rhetoric
- English 2810 - Grammar

Six courses (18.0 credit hours) in English at the 3000/4000 level chosen from the subfield lists below

Two courses (6.0 credit hours) in English at the 4000 level chosen from the subfield lists below

For the above 3000/4000-level requirements, students must draw courses from at least five of the following subfield lists:

1. Theory, Language and Creative Writing
  - English 3010 - Literary Theory
  - English 3060 - Gender and Literature
  - English 3070 - Theorizing Children's Literature
  - English 3800 - Creative Writing
  - English 3901 - History of the English Language
  - English 4800 - Advanced Creative Writing
  - Any offering in the English 3700, English 4400, or English 4600 Series with an emphasis on Literary Theory, Language or Creative Writing
2. Old and Middle English
  - English 3401 - Medieval Literature
  - English 3450 - Old English
  - English 3601 - Chaucer
  - Any offering in the English 3700, English 4400, or English 4600 Series with an emphasis on Old or Middle English Literature
3. Renaissance
  - English 3201 - Elizabethan and Jacobean Drama

English 3402 - 16th-Century Literature

English 3410 - 17th-Century Literature

English 3602 - Shakespeare

Any offering in the English 3700, English 4400, or English 4600 Series with an emphasis on Renaissance Literature

4. Eighteenth Century and Romantic

English 3301 - Rise of the Novel

English 3310 - Restoration and 18th-Century Literature

English 3350 - Romanticism

Any offering in the English 3700, English 4400, or English 4600 Series with an emphasis on Eighteenth-Century or Romantic Literature

5. Nineteenth Century

English 3302 - 19th-Century British Novel

English 3500 - Victorian Literature

English 3550 - American Renaissance

Any offering in the English 3700, English 4400, or English 4600 Series with an emphasis on Nineteenth-Century Literature

6. Twentieth Century and Contemporary

English 3610 - Modernism

English 3620 - Modern Drama

English 3630 - Modern Novel

English 3650 - Contemporary Literature

English 3660 - Contemporary Drama

English 3670 - Nobel Laureates: Contemporary Poets

Any offering in the English 3700, English 4400, or English 4600 Series with an emphasis on Twentieth-Century or Contemporary Literature

7. Canadian and Post-Colonial

English 3001 - Canadian Poetry

English 3002 - Contemporary Canadian Drama

English 3008 - Canadian Literature, 1867 - 1914

English 3810 - Contemporary Canadian Literature

English 3860 - Post-Colonial Literature

English 4000 - Seminars in Canadian and Post-Colonial Literature (Series)

Any offering in the English 3700, English 4400, or English 4600 Series with an emphasis on Canadian or Post-Colonial Literature

**Notes**

Independent Study courses, Applied Studies courses, and courses not listed under the seven subfields are not counted as part of the 13-course minimum for the major; they are strongly encouraged for students taking courses beyond this minimum, however.

Fourth-year English majors are especially encouraged to become involved in seminars and Independent Studies at the 4000 level. Suggestions for unique and imaginative projects and approaches to fourth-year studies are welcomed by the Department.

See also:

- Bachelor of Arts/Bachelor of Education - English/English Language Arts Education
- Bachelor of Arts/Bachelor of Management - English

## Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/engl\\_ba](http://www.uleth.ca/ross/sequencing-plans/engl_ba) for a suggested sequencing plan for the English major in the B.A. program.

### English (B.A.)

Number of courses required for the major ..... 13

*(Independent Study - Optional; may not be counted in required courses for major)*

#### q. Environmental Science

Departments: Biological Sciences and Geography

Environmental Science focuses on understanding the Earth's natural systems and how we, as humans, interact with them. Environmental scientists study the impact of these interactions on the biosphere, hydrosphere, lithosphere and atmosphere using an interdisciplinary approach. They provide us with the information we need to address some of the most pressing issues facing humanity today—like climate change. The Environmental Science program will provide students with the natural and physical science background needed to understand a multitude of environmental systems, as well as the broad perspective required to appreciate the role of humanity in global environmental change.

Please refer to the program website ([www.uleth.ca/artsci/environmental-science](http://www.uleth.ca/artsci/environmental-science)) for more information.

#### Required courses:

Biology 1010 - Cellular Basis of Life  
Biology 1020 - Diversity of Life  
Biology 2000 - Principles of Genetics  
Biology 2200 - Principles of Ecology  
Biology 3300 - Evolution  
Chemistry 1000 - General Chemistry I  
Chemistry 2000 - General Chemistry II  
Environmental Science 2000 - Fundamentals of Environmental Science  
Environmental Science 4000 - Selected Studies in Environmental Science II (Series)  
Geography 1000 - Introduction to Physical Geography  
Geography 2030 - Geomorphology  
Geography 2300 - Weather and Climate  
Geography 2700 - Geographical Data and Analysis  
Geography 2735 - Introduction to Geographical Information Science

#### Three of:

Geography 2090 - Biogeography  
Geography 3035 - Fluvial Geomorphology  
Geography 3060 - Glaciology and Glacial Geomorphology  
Geography 3080 - Soils  
Geography 3300 - Microclimatology  
Geography 3400 - Hydrology I  
Geography 3720 - Remote Sensing  
Geography 3740 - Geographical Information Systems

<sup>1</sup> Geography 3780 - Field Research in Geography  
Geography 4400 - Hydrology II  
Geography 4415 - Integrated Watershed Management  
Geography 4730 - Spatial Statistics  
Geography 4750 - Glacial Processes, Measurements, and Models  
Geology 2060 - Physical Geology

#### One of:

Chemistry 2410 - Analytical Chemistry I  
Chemistry 2500 - Organic Chemistry I

#### Two of:

Mathematics 1410 - Elementary Linear Algebra  
Mathematics 1560 - Calculus I  
Statistics 1770 - Introduction to Probability and Statistics

#### One of:

Biology 3630 - Field Biology  
Geography 3710 - Field Techniques in the Earth Sciences  
Geography 3792 - Field Excursion in Physical Geography (Series)  
<sup>2</sup> An approved field course

Three courses (9.0 credit hours) from Biology List 2 (Organismal Biology) and List 3 (Ecology and Evolutionary Biology) of which two must be lab-based (see **Section 16.i., p. 112**, for Biology lists). Some Topics courses in Biology may also qualify.

<sup>3</sup> One Independent Study or Applied Study at the 3000/4000 level in Environmental Science

#### Technical Studies Semester (5 courses)

Students are required to complete a semester of study at Lethbridge College, consisting of five courses from the College's Environmental Science program. The Technical Studies semester counts as the equivalent of 15.0 credit hours at the University of Lethbridge (three unspecified 2000-level and two unspecified 3000-level Environmental Science courses).

The Technical Studies semester should be taken after at least 20 university courses have been completed and prior to registration in the final 10 courses for the degree. Students must have the college course selection approved by the Coordinator of Environmental Science. Further details are available from the Coordinator.

#### Notes

<sup>1</sup> Prerequisite required: Geography 1200.

<sup>2</sup> Must be approved by the Coordinator of Environmental Science. An approved external field course offered by a Field Station may be counted among the final 10 courses taken for credit toward the B.Sc. degree.

<sup>3</sup> Must be approved by the Coordinator of Environmental Science.

Students may not receive credit for courses at the University of Lethbridge for which close equivalents have been taken at Lethbridge College, and vice versa. Students must ensure that their course selection has been approved by the Coordinator of Environmental Science. Students should consider including an introductory Physics course (Physics 1050 - Introduction to Biophysics is recommended) as an elective in their degree program. Many other courses offered by the Faculty of Arts and Science complement an Environmental Science focus. Consult the Coordinator of Environmental Science for further information.

See also:

- Bachelor of Science - Biological Sciences
- Bachelor of Science - Geography

#### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/envs\\_bsc](http://www.uleth.ca/ross/sequencing-plans/envs_bsc) for a suggested sequencing plan for the Environmental Science major in the B.Sc. program.

**Concentration: Geographical Information Science (Optional)**

Environmental Science majors in the B.Sc. degree program may declare a Concentration in Geographical Information Science.

**Required courses:**

- Computer Science 1620 - Fundamentals of Programming I
- Geography 3720 - Remote Sensing
- Geography 3740 - Geographical Information Systems
- Geography 4725 - Advanced Remote Sensing
- Geography 4740 - Advanced Geographical Information Systems

**Notes**

Students may not double count courses required for the Concentration in Geographical Information Science in fulfilling requirements for the Major in Environmental Science.

For students who complete all the requirements, the Concentration in Geographical Information Science will be acknowledged on the official transcript.

<b>Environmental Science (B.Sc.)</b>	
<b>Number of courses required for the major .....</b>	<b>25</b>
<i>(Independent or Applied Study - Required in major)</i>	
<b>Concentration: Geographical Information Science (optional)</b>	
<b>Number of courses required for concentration .....</b>	<b>5</b>
<b>Total number of courses required for major and concentration .....</b>	<b>30</b>
<b>All students must also complete the Technical Studies Semester (5 courses).</b>	

**r. French**

Department: Modern Languages

French is the study - *in French* - of the language, literature and culture of the francophone world. Upper-level students may choose to focus on language and linguistics, language and literature, or language and culture. In the course of their studies, students are encouraged to take French courses at a francophone university in Canada or abroad.

Please refer to the program website ([www.uleth.ca/artsci/modern-languages](http://www.uleth.ca/artsci/modern-languages)) for more information.

**Required courses:**

**One of the following pairs (a. or b.):**

- a. Non-Immersion Pair**  
(for students who have completed French 30, French 31, or equivalent)

French 1500 - Intermediate Language I
French 2000 - Intermediate Language II

**OR**

- b. Immersion Pair**

(for students who have completed French Language Arts 30, Français 30, or equivalent)

French 2001 - Intermediate Language for Immersion Graduates
One additional course in French

- French 2300 - Introduction to Modern Literature and Literary Analysis
- French 3001 - Advanced Language I
- French 3100 - Survey of Pre-Revolutionary French Literature

**One of:**

- French 4001 - Advanced Language II
- French 4002 - Advanced Studies in Language (Series)

Three additional courses (9.0 credit hours) in French at the 3000/4000 level

One additional course (3.0 credit hours) in French at the 4000 level

Five additional courses (15.0 credit hours) in French

**Notes**

Students registering in introductory language courses must complete the *Student Information Form* to determine whether they are registered in the appropriate course. Students may be asked to write the Student Placement Test. Advanced placement may be granted to students who have acquired language skills outside of a formal academic environment. Please refer to [www.uleth.ca/artsci/modern-languages/departement-modern-languages-placement-policy](http://www.uleth.ca/artsci/modern-languages/departement-modern-languages-placement-policy) for more information.

Students who have not completed French 30 or French 31 (or equivalent) should begin their program with French 1000 and/or French 1100 depending on placement test results. These courses will count among the five additional courses in French.

It is recommended that students majoring in French complete the French Visiting Student Program. Please refer to [www.uleth.ca/artsci/modern-languages/visiting-student-programs-vsp](http://www.uleth.ca/artsci/modern-languages/visiting-student-programs-vsp) for information on the Visiting Student Program.

French 2250 will not count toward the minimum 15 courses required for this major.

It is strongly recommended that a student attain a grade of 'C' or higher in any course used to satisfy prerequisites for courses in French. For more information see an Academic Advisor in the Student Program Services Office.

See also:

- Bachelor of Arts - French/German
- Bachelor of Arts - French/Spanish
- Bachelor of Arts/Bachelor of Education - Modern Languages Education
- Bachelor of Arts/Bachelor of Management - Modern Languages majors

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/fren\\_ba](http://www.uleth.ca/ross/sequencing-plans/fren_ba) for a suggested sequencing plan for the French major in the B.A. program.

### French (B.A.)

Number of courses required for the major ..... 15

*(Independent Study - Optional; may be counted in required courses for major)*

#### s. French/German

**Note:** Admission to the Major in French/German for the B.A. and B.A.Sc. has been suspended, beginning May 1, 2013 (i.e. for the 2013/2014 academic year and thereafter, until further notice).

Department: Modern Languages

The French/German major combines a core of French courses with a slightly smaller number of German courses. Students majoring in French and German will study the language, literature and culture of both the francophone and German-speaking worlds in their respective languages. Upper-level French students may choose to focus on language and linguistics, language and literature, or language and culture. In the course of their studies, students are encouraged to take university classes in francophone Canada or abroad in countries where French or German are national languages.

Please refer to the program website ([www.uleth.ca/artsci/modern-languages](http://www.uleth.ca/artsci/modern-languages)) for more information.

#### Required courses:

Eight courses (24.0 credit hours) in French

Six courses (18.0 credit hours) in German

Linguistics 2300 - Introduction to Linguistics I: Phonetics and Phonology

Linguistics 2600 - Introduction to Linguistics II: Morphology, Syntax and Semantics

Five of the above courses (15.0 credit hours) must be at the 3000/4000 level

#### Notes

All students registering in 1000-, 1100-, and 1500-level language courses must write the Department of Modern Languages Placement Test to determine whether they are registered in the appropriate course. Advanced placement may be granted to students who have acquired French or German language skills outside of a formal academic environment. Please refer to [www.uleth.ca/artsci/modern-languages/department-modern-languages-placement-policy](http://www.uleth.ca/artsci/modern-languages/department-modern-languages-placement-policy) for more information.

It is recommended that students majoring in French/German complete either the French or German Visiting Student Program. Please refer to [www.uleth.ca/artsci/modern-languages/visiting-student-programs-vsp](http://www.uleth.ca/artsci/modern-languages/visiting-student-programs-vsp) for information on the Visiting Student Program.

It is strongly recommended that a student attain a grade of 'C' or higher in any course used to satisfy prerequisites for courses in French and German. For more information see an Academic Advisor in the Student Program Services Office.

See also:

- Bachelor of Arts - French
- Bachelor of Arts - German
- Bachelor of Arts/Bachelor of Education - Modern Languages Education
- Bachelor of Arts/Bachelor of Management - Modern Languages majors

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/fren\\_germ\\_ba](http://www.uleth.ca/ross/sequencing-plans/fren_germ_ba) for a suggested sequencing plan for the French/German major in the B.A. program.

### French/German (B.A.)

Number of courses required for the major ..... 16

*(Independent Study - Optional; may be counted in required courses for major)*

#### t. French/Spanish

Department: Modern Languages

The French/Spanish major combines a core of French courses with an equal number of courses in Spanish. Students majoring in French and Spanish will study the language, literature and culture of both the francophone and Spanish worlds in their respective languages. Upper-level French students may choose to focus on language and linguistics, language and literature, or language and culture. Upper-level Spanish students will study the language and literature of Spain and Latin America. In the course of their studies, students are encouraged to take university classes in francophone Canada or abroad in countries where French and Spanish are national languages.

Please refer to the program website ([www.uleth.ca/artsci/modern-languages](http://www.uleth.ca/artsci/modern-languages)) for more information.

#### Required courses:

Eight courses (24.0 credit hours) in French

Eight courses (24.0 credit hours) in Spanish

Five of the above courses (15.0 credit hours) must be at the 3000/4000 level

#### Notes

Students registering in introductory language courses must complete the *Student Information Form* to determine whether they are registered in the appropriate course. Students may be asked to write the Student Placement Test. Advanced placement may be granted to students who have acquired language skills outside of a formal academic environment. Please refer to [www.uleth.ca/artsci/modern-languages/department-modern-languages-placement-policy](http://www.uleth.ca/artsci/modern-languages/department-modern-languages-placement-policy) for more information.

It is recommended that students majoring in French/Spanish complete either the French or Spanish Visiting Student Program. Please refer to [www.uleth.ca/artsci/modern-languages/visiting-student-programs-vsp](http://www.uleth.ca/artsci/modern-languages/visiting-student-programs-vsp) for information on the Visiting Student Program.

It is strongly recommended that a student attain a grade of 'C' or higher in any course used to satisfy prerequisites for courses in French and Spanish. For more information see an Academic Advisor in the Student Program Services Office.

See also:

- Bachelor of Arts - French
- Bachelor of Arts/Bachelor of Education - Modern Languages Education
- Bachelor of Arts/Bachelor of Management - Modern Languages majors

## Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/fren\\_span\\_ba](http://www.uleth.ca/ross/sequencing-plans/fren_span_ba) for a suggested sequencing plan for the French/Spanish major in the B.A. program.

### **French/Spanish (B.A.)**

**Number of courses required for the major ..... 16**

*(Independent Study - Optional; may be counted in required courses for major)*

## u. General Major in the Humanities

The General Major in the Humanities is a broad major that supports an ideal of liberal education.

Please refer to the program website ([www.uleth.ca/artsci/general-majors](http://www.uleth.ca/artsci/general-majors)) for more information.

### **Required courses:**

Five courses (15.0 credit hours) in each of three disciplinary streams chosen from the following list:

- One of Art (including courses in Art History/Museum Studies), Dramatic Arts, or Music
- English - all courses
- One of French, German, Japanese, or Spanish

**Note:** The disciplinary stream in German has been suspended, beginning May 1, 2013. Students may not declare German as a disciplinary stream in the 2013/2014 academic year and thereafter, until further notice.

### Classical Languages

- Greek - all courses
- Hebrew - all courses
- Latin - all courses

### History - all courses

### Linguistics - all courses

Native American Studies - all courses (including courses in Blackfoot and Cree)

Philosophy - all courses designated Humanities

Religious Studies - all courses

Four additional courses (12.0 credit hours) chosen from any of the Humanities disciplinary streams listed above

One course (3.0 credit hours) in a language other than English

Of the 20 courses (60.0 credit hours) required in the major, seven courses (21.0 credit hours) must be at the 3000/4000 level.

### **Notes**

To determine if a given course in a disciplinary stream has a Humanities designation, see List I: Fine Arts and Humanities Courses (**Part 4, p. 84**).

If one of the disciplinary streams selected is a language discipline, students may use a course in a different language or a sixth course in the chosen stream to meet the language requirement.

See also:

- Bachelor of Arts/Bachelor of Education - General Major in the Humanities/English Language Arts Education
- Bachelor of Arts/Bachelor of Management - General Major in the Humanities

## Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/gen\\_hum\\_ba](http://www.uleth.ca/ross/sequencing-plans/gen_hum_ba) for a suggested sequencing plan for the General Major in the Humanities in the B.A. program.

### **General Major in the Humanities (B.A.)**

**Number of courses required for the major ..... 20**

*(Independent Study - Optional; may be counted in required courses for major)*

## v. General Major in the Sciences

The General Major in the Sciences is a broad major that supports an ideal of liberal education.

Please refer to the program website ([www.uleth.ca/artsci/general-majors](http://www.uleth.ca/artsci/general-majors)) for more information.

### **Required courses:**

Five courses (15.0 credit hours) in each of three disciplinary streams chosen from the following list:

- Archaeology - all courses designated Science
- Biological Sciences - all Biology courses
- Chemistry - all courses (including courses in Biochemistry)
- Computer Science - all courses
- Geography - all courses designated Science (including courses in Geology)
- Kinesiology - all courses designated Science (Physical Activity courses may not be included)
- Mathematics - all courses (including courses in Statistics)
- Neuroscience - all courses
- Physics - all courses (including courses in Astronomy and Engineering)
- Psychology - all courses designated Science

Four additional courses (12.0 credit hours) chosen from any of the Science disciplinary streams listed above

### **One of (Science in Human Affairs):**

- Biochemistry 2300 - Elements of Human Nutrition
- Environmental Science 2000 - Fundamentals of Environmental Science
- Philosophy 2233 - Philosophy and the World View of Science: Earth and Life Sciences
- Philosophy 2234 - Philosophy and the World View of Science: Space, Time and Matter
- Philosophy 3402 - Biomedical Ethics
- Physics 2020 - The Physics of Everyday Life

Of the 20 courses (60.0 credit hours) required in the major, seven courses (21.0 credit hours) must be at the 3000/4000 level.

### **Notes**

To determine if a given course in a disciplinary stream has a Science designation, see List III: Science Courses (**Part 4, p. 85**).

Some of the Science in Human Affairs courses have prerequisites which may or may not be included in the major.

See also:

- Bachelor of Science/Bachelor of Education - General Major in the Sciences/Science Education
- Bachelor of Science/Bachelor of Management - General Major in the Sciences

## Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/gen\\_sci\\_bsc](http://www.uleth.ca/ross/sequencing-plans/gen_sci_bsc) for a suggested sequencing plan for the General Major in the Sciences in the B.Sc. program.

**General Major in the Sciences (B.Sc.)**  
**Number of courses required for the major . . . . . 20**

*(Independent Study - Optional; may be counted in required courses for major)*

### w. General Major in the Social Sciences

The General Major in the Social Sciences is a broad major that supports an ideal of liberal education.

Please refer to the program website ([www.uleth.ca/artsci/general-majors](http://www.uleth.ca/artsci/general-majors)) for more information.

#### Required courses:

Five courses (15.0 credit hours) in each of three disciplinary streams chosen from the following list:

- Anthropology - all courses
- Archaeology - all courses designated Social Science
- Economics - all courses designated Social Science
- Geography - all courses designated Social Science (courses in Geology may not be included.)
- History - all courses
- Kinesiology - all courses designated Social Science (Physical Activity courses may not be included)
- Native American Studies - all courses (courses in Blackfoot and Cree may not be included)
- Political Science - all courses designated Social Science
- Psychology - all courses designated Social Science (Psychology 1000 may be included)
- Sociology - all courses
- Women and Gender Studies - all courses

Four additional courses (12.0 credit hours) chosen from any of the Social Sciences disciplinary streams listed above

#### One of (Quantitative Methods):

- Economics 2900 - Economics and Business Statistics
- Geography 2700 - Geographical Data and Analysis
- Psychology 2030 - Methods and Statistics
- Sociology 2130 - Social Statistics I
- Statistics 2780 - Statistical Inference

Of the 20 courses (60.0 credit hours) required in the major, seven courses (21.0 credit hours) must be at the 3000/4000 level.

#### Notes

To determine if a given course in a disciplinary stream has a Social Science designation, see List II: Social Science Courses (**Part 4, p. 85**).

The Quantitative Methods courses have prerequisites which may or may not be included in the major.

See also:

- Bachelor of Arts/Bachelor of Education - General Major in the Social Sciences/Native Education
- Bachelor of Arts/Bachelor of Education - General Major in the Social Sciences/Physical Education
- Bachelor of Arts/Bachelor of Education - General Major in the Social Sciences/Social Studies Education

- Bachelor of Arts/Bachelor of Management - General Major in the Social Sciences

## Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/gen\\_ss\\_ba](http://www.uleth.ca/ross/sequencing-plans/gen_ss_ba) for a suggested sequencing plan for the General Major in the Social Sciences in the B.A. program.

**General Major in the Social Sciences (B.A.)**  
**Number of courses required for the major . . . . . 20**

*(Independent Study - Optional; may be counted in required courses for major)*

### x. Geography (B.A.)

Department: Geography

Geography involves the study of human activities and natural systems with a focus on spatial relationships and the nature of places. The discipline stresses integration and synthesis, so students graduating with a major in Geography possess a firm understanding of environmental stewardship in the context of complex interrelationships between nature and humankind. Geography students also learn many practical skills and techniques essential to a diverse range of employment opportunities.

After completing a set of core foundational courses, students will select additional upper-level courses which focus on human-related systems and phenomena. Students with an interest in geographical techniques such as cartography, geographical information systems (GIS), or remote sensing can pursue those interests either by choosing such courses as options or by completing a specified set of courses to satisfy the Concentration in Geographical Information Science.

Please refer to the program website ([www.uleth.ca/artsci/geography](http://www.uleth.ca/artsci/geography)) for more information.

#### Required courses:

- Archaeology 1000 - Introduction to Archaeology
- Environmental Science 2000 - Fundamentals of Environmental Science
- Geography 1000 - Introduction to Physical Geography
- Geography 1200 - Introduction to Human Geography
- Geography 2030 - Geomorphology
- Geography 2210 - Spatial Organization of Economic Activity
- Geography 2300 - Weather and Climate
- Geography 2700 - Geographical Data and Analysis
- Geography 2735 - Introduction to Geographical Information Science

#### Three of (Geographical Techniques):

- Archaeology 3300 - Archaeological Field Work (Series)
- Geography 3235 - Quantitative Models for Geographic Analysis
- Geography 3700 - Cartography
- Geography 3710 - Field Techniques in the Earth Sciences
- Geography 3720 - Remote Sensing
- Geography 3740 - Geographical Information Systems
- Geography 3750 - GIS Applications in Human Geography
- Geography 3780 - Field Research in Geography
- Geography 4730 - Spatial Statistics

**<sup>1</sup> One of:**

- Computer Science 1000 - Introduction to Computer Science
- Computer Science 1620 - Fundamentals of Programming I

Two additional courses (6.0 credit hours) in Geography, Geology or Archaeology at the 3000/4000 level

One course (3.0 credit hours) in Geography, Geology or Archaeology at the 4000 level

Two non-science courses (6.0 credit hours) at the 1000 level or higher from the offerings in Anthropology, Economics, Native American Studies (excluding Blackfoot and Cree), Political Science, and Sociology

One non-science course (3.0 credit hours) at the 2000 level or higher from the offerings in Anthropology, Economics, Native American Studies (excluding Blackfoot and Cree), Political Science, and Sociology

**Notes**

<sup>1</sup> Students choosing the Concentration in Geographical Information Science must complete Computer Science 1620.

Additional 3000/4000-level Geography courses may be selected from the Geographical Techniques list above.

See also:

- Bachelor of Science - Geography
- Bachelor of Arts or Bachelor of Science - Archaeology and Geography
- Bachelor of Arts/Bachelor of Education - Geography/Social Studies Education
- Bachelor of Arts/Bachelor of Management - Geography

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/geog\\_ba](http://www.uleth.ca/ross/sequencing-plans/geog_ba) for a suggested sequencing plan for the Geography major in the B.A. program.

**Concentration: Geographical Information Science (Optional)**

Geography majors in the B.A. degree program may declare a Concentration in Geographical Information Science.

**Required courses:**

- Geography 3720 - Remote Sensing
- Geography 3740 - Geographical Information Systems
- Geography 4725 - Advanced Remote Sensing
- Geography 4740 - Advanced Geographical Information Systems

**One of:**

- Geography 4400 - Hydrology II
- Geography 4415 - Integrated Watershed Management
- Geography 4700 - Advanced Computer Mapping
- Geography 4710 - Remote Sensing Field Techniques
- Geography 4730 - Spatial Statistics
- Geography 4750 - Glacial Processes, Measurements, and Models
- Geography 4751 - Project in Spatial Modelling
- Geography 4753 - Seminar in Remote Sensing

**Notes**

Students choosing the Concentration in Geographical Information Science must complete Computer Science 1620 as part of the requirements for the Geography major.

Students may not double count courses required for the Concentration in Geographical Information Science in fulfilling requirements for the major in Geography.

For students who complete all requirements, the Concentration in Geographical Information Science will be acknowledged on the official transcript.

Please note that the Concentration in Geographical Information Science is specifically excluded from Combined Degrees programs.

<b>Geography (B.A.)</b>	
<b>Number of courses required for the major .....</b>	<b>19</b>
<i>(Independent Study - Optional; may be counted in required courses for major)</i>	
<b>Concentration: Geographical Information Science (optional)</b>	
<b>Number of courses required for concentration .....</b>	<b>5</b>
<b>Total number of courses required for major and concentration .....</b>	<b>24</b>

**y. Geography (B.Sc.)**

Department: Geography

Geography involves the study of human activities and natural systems with a focus on spatial relationships and the nature of places. The discipline stresses integration and synthesis, so students graduating with a major in Geography possess a firm understanding of environmental stewardship in the context of complex interrelationships between nature and humankind. Geography students also learn many practical skills and techniques essential to a diverse range of employment opportunities.

After completing a set of core foundational courses, students will select additional upper-level courses dealing with physical dimensions of natural systems. Students with an interest in geographical techniques such as cartography, geographical information systems (GIS), or remote sensing can pursue those interests either by choosing such courses as options or by completing a specified set of courses to satisfy the Concentration in Geographical Information Science.

Please refer to the program website ([www.uleth.ca/artsci/geography](http://www.uleth.ca/artsci/geography)) for more information.

**Required courses:**

- Archaeology 1000 - Introduction to Archaeology
- Biology 1020 - Diversity of Life
- Environmental Science 2000 - Fundamentals of Environmental Science
- Geography 1000 - Introduction to Physical Geography
- Geography 1200 - Introduction to Human Geography
- Geography 2030 - Geomorphology
- Geography 2210 - Spatial Organization of Economic Activity
- Geography 2300 - Weather and Climate
- Geography 2700 - Geographical Data and Analysis
- Geography 2735 - Introduction to Geographical Information Science

**One of (Field Course):**

- Archaeology 3300 - Archaeological Field Work (Series)
- Geography 3710 - Field Techniques in the Earth Sciences
- Geography 3780 - Field Research in Geography
- Geography 4710 - Remote Sensing Field Techniques

**Two of (Geographical Techniques):**

- Geography 3235 - Quantitative Models for Geographic Analysis
- Geography 3700 - Cartography
- Geography 3720 - Remote Sensing
- Geography 3740 - Geographical Information Systems
- Geography 3750 - GIS Applications in Human Geography
- Geography 4730 - Spatial Statistics

**Three of (Physical Geography):**

- Geography 2090 - Biogeography
- Geography 3035 - Fluvial Geomorphology
- Geography 3060 - Glaciology and Glacial Geomorphology
- Geography 3075 - Environmental Resources Management
- Geography 3080 - Soils
- Geography 3300 - Microclimatology
- Geography 3400 - Hydrology I
- Geology 2060 - Physical Geology

**Three of:**

- Geography 4060 - Agricultural Soil Management
- Geography 4065 - Irrigation Science
- Geography 4400 - Hydrology II
- Geography 4415 - Integrated Watershed Management
- Geography 4700 - Advanced Computer Mapping
- Geography 4725 - Advanced Remote Sensing
- Geography 4740 - Advanced Geographical Information Systems
- Geography 4750 - Glacial Processes, Measurements, and Models

**One of:**

- Geography 4030 - Advanced Physical Geography (Series)
- Geography 4751 - Project in Spatial Modelling
- Geography 4753 - Seminar in Remote Sensing
- Geography 4900 - History and Theory of Geography

**One of:**

- Chemistry 1000 - General Chemistry I
- Physics 1000 - Introduction to Physics I

**One of:**

- Mathematics 1410 - Elementary Linear Algebra
- Mathematics 1560 - Calculus I
- Statistics 1770 - Introduction to Probability and Statistics

One additional course (3.0 credit hours) at the 2000 level or higher from the offerings in Astronomy, Biochemistry, Biology, Chemistry, Computer Science, Engineering, Mathematics, Statistics, or Physics

**Notes**

See also:

- Bachelor of Arts - Geography
- Bachelor of Arts or Bachelor of Science - Archaeology and Geography

- Bachelor of Science/Bachelor of Education - Geography/Science Education
- Bachelor of Science/Bachelor of Management - Geography

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/geog\\_bsc](http://www.uleth.ca/ross/sequencing-plans/geog_bsc) for a suggested sequencing plan for the Geography major in the B.Sc. program.

**Concentration: Geographical Information Science (Optional)**

Geography majors in the B.Sc. degree program may declare a Concentration in Geographical Information Science.

**Required courses:**

- Computer Science 1620 - Fundamentals of Programming I
- Geography 3720 - Remote Sensing
- Geography 3740 - Geographical Information Systems
- Geography 4725 - Advanced Remote Sensing
- Geography 4740 - Advanced Geographical Information Systems

**Notes**

Students may not double count Geography courses required for the Concentration in Geographical Information Science in fulfilling requirements for the major in Geography.

For students who complete all requirements, the Concentration in Geographical Information Science will be acknowledged on the official transcript.

Please note that the Concentration in Geographical Information Science is specifically excluded from Combined Degrees programs.

<b>Geography (B.Sc.)</b>	
<b>Number of courses required for the major .....</b>	<b>23</b>
<i>(Independent Study - Optional; may be counted in required courses for major)</i>	
<b>Concentration: Geographical Information Science (optional)</b>	
<b>Number of courses required for concentration .....</b>	<b>5</b>
<b>Total number of courses required for major and concentration .....</b>	<b>28</b>

**aa. German**

**Note:** Admission to the Major in German for the B.A. and B.A.Sc. has been suspended, beginning May 1, 2013 (i.e. for the 2013/2014 academic year and thereafter, until further notice).

Department: Modern Languages

German is the study - *in German* - of the language, literature and culture of the German-speaking world. Students majoring in German must spend one or more semesters at a German-speaking university of their choosing.

Please refer to the program website ([www.uleth.ca/artsci/modern-languages](http://www.uleth.ca/artsci/modern-languages)) for more information.

**Required courses:**

- German 2250 - German Immersion

Five courses (15.0 credit hours) in German at the 3000/4000 level

Two courses (6.0 credit hours) in German at the 4000 level

Five additional courses (15.0 credit hours) in German

### Notes

All students registering in 1000-, 1100-, and 1500-level language courses must write the Department of Modern Languages Placement Test to determine whether they are registered in the appropriate course. Advanced placement may be granted to students who have acquired German language skills outside of a formal academic environment. Please refer to [www.uleth.ca/artsci/modern-languages/department-modern-languages-placement-policy](http://www.uleth.ca/artsci/modern-languages/department-modern-languages-placement-policy) for more information.

Linguistics 2300 may replace one of the required five additional courses in German.

Participation in the German Visiting Student Program is compulsory for students majoring in German. Please refer to [www.uleth.ca/artsci/modern-languages/visiting-student-programs-vsp](http://www.uleth.ca/artsci/modern-languages/visiting-student-programs-vsp) for information on the Visiting Student Program.

It is strongly recommended that a student attain a grade of 'C' or higher in any course used to satisfy prerequisites for courses in German. For more information see an Academic Advisor in the Student Program Services Office.

See also:

- Bachelor of Arts - French/German
- Bachelor of Arts/Bachelor of Education - Modern Languages Education
- Bachelor of Arts/Bachelor of Management - Modern Languages majors

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/germ\\_ba](http://www.uleth.ca/ross/sequencing-plans/germ_ba) for a suggested sequencing plan for the German major in the B.A. program.

#### **German (B.A.)**

**Number of courses required for the major ..... 13**

*(Independent Study - Optional; may be counted in required courses for major)*

### bb. History

Department: History

History is a discipline that examines evidence to reconstruct and understand the past. It is our collective memory and our possible future. Encompassing a wide range of human events and historical conditions, History necessarily complements other disciplines in the University. The program offers instruction in aspects of the social, economic, political and cultural histories of societies ranging from ancient Greece to modern-day Japan. Students pursuing a major in History will develop strong skills in critical reading, writing and analysis.

Please refer to the program website ([www.uleth.ca/artsci/history](http://www.uleth.ca/artsci/history)) for more information.

#### Required courses:

History 2222 - History in Practice

#### One of:

History 1000 - Western Civilization  
History 1200 - World History

#### One of:

History 2001 - Main Themes in Ancient History  
History 2100 - Main Themes in Medieval European History

#### One of:

History 2102 - Early Modern Europe - 1500-1750  
History 2150 - The Politics of Europe - 1750-1914

#### One of:

History 2710 - Canada to 1867  
History 2720 - Canada Since 1867

#### Two of:

History 2250 - China in the 19th and 20th Centuries  
History 2290 - Main Themes in East Asian History  
History 2300 - Latin America  
History 2500 - Themes in British Social and Political History  
History 2600 - Main Themes in the History of the United States  
History 2800 - History of Women  
Religious Studies 2500 - Christianity

Four courses (12.0 credit hours) in History at the 3000/4000 level

Two courses (6.0 credit hours) in History at the 4000 level, excluding History 4980 (Applied Studies), History 4990 (Independent Study), and History 4995 (Undergraduate Thesis)

### Notes

The Department strongly advises students intending to pursue graduate studies to take History 4990 (Independent Study) or History 4995 (Undergraduate Thesis). History majors should meet with the Department Advisor once a semester in order to ensure that an appropriate program is being planned.

See also:

- Bachelor of Arts/Bachelor of Education - History/Social Studies Education
- Bachelor of Arts/Bachelor of Management - History

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/hist\\_ba](http://www.uleth.ca/ross/sequencing-plans/hist_ba) for a suggested sequencing plan for the History major in the B.A. program.

#### **History (B.A.)**

**Number of courses required for the major ..... 13**

*(Independent Study - Optional; may be counted in required courses for major)*

### cc. Kinesiology (B.A.)

Department: Kinesiology and Physical Education

Kinesiology is the study of human movement from a multidisciplinary perspective. Students who enrol in the Kinesiology major for the B.A. will take a broad range of theoretical courses in the social science and humanities dimensions of the discipline. Students are also required to complete physical activity courses as part of their program. The Kinesiology major for the B.A. offers students the opportunity to investigate those

psychological, social, cultural, economic and political influences that shape and limit opportunities for activity across the lifespan as well as to study the tremendous potential of sport and leisure activities to bring pleasure and meaning to individuals and community.

Please refer to the program website ([www.uleth.ca/artsci/kinesiology](http://www.uleth.ca/artsci/kinesiology)) for more information.

**Required courses:**

- Kinesiology 1000 - Wellness and Physical Activity
- Kinesiology 2110 - Biophysical Perspectives
- Kinesiology 2130 - Humanities Perspectives
- Kinesiology 2140 - Psychological Perspectives
- Kinesiology 2150 - Sociological Perspectives
- Kinesiology 2160 - Management Perspectives
- Kinesiology 2200 - Research Methodologies
- Kinesiology 2600 - Functional Human Anatomy

Five courses (15.0 credit hours) in Kinesiology at the 3000/4000 level with a Humanities or Social Science designation, excluding Kinesiology 3980 and 4980 (Applied Studies)

Three courses (9.0 credit hours) in Kinesiology at the 4000 level with a Humanities or Social Science designation, excluding Kinesiology 4980 (Applied Studies)

Three courses (9.0 credit hours) in Physical Activity at the 3000 level

**Notes**

To determine if a given course in Kinesiology has a Humanities or Social Science designation, see List I: Fine Arts and Humanities Courses and List II: Social Science Courses (**Part 4, p. 84**).

No more than two Independent Study courses (Kinesiology 3990 or 4990; 6.0 credit hours) may be counted towards the major.

See also:

- Bachelor of Science - Kinesiology
- Bachelor of Arts/Bachelor of Education - Kinesiology/Physical Education
- Bachelor of Arts/Bachelor of Management - Kinesiology

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/knes\\_ba](http://www.uleth.ca/ross/sequencing-plans/knes_ba) for a suggested sequencing plan for the Kinesiology major in the B.A. program.

**Kinesiology (B.A.)**  
**Number of courses required for the major ..... 19**  
*(Independent Study - Optional; may be counted in required courses for major)*

**dd. Kinesiology (B.Sc.)**

Department: Kinesiology and Physical Education

Kinesiology is the study of human movement from a multidisciplinary perspective. Students who enrol in the Kinesiology major for the B.Sc. will take a broad range of theoretical courses in the science dimensions of the discipline. Students are also required to complete physical activity courses as part of their program. The Kinesiology major for the B.Sc. offers students the opportunity to investigate the anatomical, biomechanical, neurological

and physiological characteristics that underlie human movement across the spectrum from basic tasks such as reaching and walking to elite sport performance.

Please refer to the program website ([www.uleth.ca/artsci/kinesiology](http://www.uleth.ca/artsci/kinesiology)) for more information.

**Required courses:**

- Biology 1010 - Cellular Basis of Life
- Chemistry 1110 - Chemistry for Life Sciences I
- Kinesiology 1000 - Wellness and Physical Activity
- Kinesiology 2200 - Research Methodologies
- Kinesiology 2600 - Functional Human Anatomy
- Kinesiology 2610 - Human Physiology
- Kinesiology 2650 - Functional Biomechanics
- Kinesiology 3500 - Nutrition and Physical Activity
- Kinesiology 3610 - Exercise Physiology
- Kinesiology 3630 - Growth, Development and Aging
- Kinesiology 3650 - Biomechanics
- Neuroscience 2600 - Brain and Behaviour
- Physics 1050 - Introduction to Biophysics

**Two of:**

- Kinesiology 2130 - Humanities Perspectives
- Kinesiology 2140 - Psychological Perspectives
- Kinesiology 2150 - Sociological Perspectives
- Kinesiology 2160 - Management Perspectives

Three additional courses (9.0 credit hours) in Kinesiology at the 3000/4000 level with a Science designation, excluding Kinesiology 3980 and 4980 (Applied Studies)

<sup>1</sup> Two courses (6.0 credit hours) in Kinesiology at the 4000 level with a Science designation, excluding Kinesiology 4980 (Applied Studies)

One course (3.0 credit hours) in Mathematics at the 1000 level or higher

One course (3.0 credit hours) in Statistics at the 1000 level or higher

Two courses (6.0 credit hours) in Physical Activity at the 3000 level

**Notes**

<sup>1</sup> *Kinesiology 4900 (Interdisciplinary Research Dialogues) may be used in place of one Kinesiology course at the 4000 level with a Science designation.*

To determine if a given course in Kinesiology has a Science designation, see List III: Science Courses (**Part 4, p. 85**).

No more than two Independent Study courses (Kinesiology 3990 or 4990; 6.0 credit hours) may be counted towards the major.

See also:

- Bachelor of Arts - Kinesiology

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/knes\\_bsc](http://www.uleth.ca/ross/sequencing-plans/knes_bsc) for a suggested sequencing plan for the Kinesiology major in the B.Sc. program.

**Kinesiology (B.Sc.)**  
**Number of courses required for the major ..... 24**  
*(Independent Study - Optional; may be counted in required courses for major)*

## ee. Mathematics

Department: Mathematics and Computer Science  
Mathematics is the study of structure and patterns in numbers and shapes. It is an active research area, providing a language, theories and models to solve complex problems across a wide variety of scientific, industrial and economic sectors. The program offers courses in four main areas: algebra, analysis, number theory and geometry, as well as statistics. Many students opt to combine mathematics with courses in physics, computer science, chemistry, economics, management or other areas of interest.

Please refer to the program website ([www.uleth.ca/artsci/math-computer-science](http://www.uleth.ca/artsci/math-computer-science)) for more information.

### Required courses:

Computer Science 1620 - Fundamentals of Programming I  
Computer Science 2620 - Fundamentals of Programming II  
Mathematics 1410 - Elementary Linear Algebra  
Mathematics 1560 - Calculus I  
Mathematics 2000 - Mathematical Concepts  
Mathematics 2560 - Calculus II  
Mathematics 2570 - Calculus III  
Mathematics 2580 - Calculus IV  
Mathematics 3400 - Group and Ring Theory  
Mathematics 3410 - Linear Algebra  
Mathematics 3500 - Analysis I  
Statistics 1770 - Introduction to Probability and Statistics  
Statistics 3500 - Mathematical Probability

<sup>1</sup> Three additional courses (9.0 credit hours) in Mathematics or Statistics at the 3000/4000 level

Two courses (6.0 credit hours) in Mathematics or Statistics at the 4000 level, excluding Mathematics 4980 and Statistics 4980 (Applied Studies), and Mathematics 4990 and Statistics 4990 (Independent Study)

### Notes

<sup>1</sup> One of the additional 3000/4000-level courses may be replaced by a course from the following list:

Computer Science 3630 - Theoretical Foundations of Computing

Physics 3200 - Mechanics

Students who intend to take Physics 3200 as a course contributing to the Mathematics major should carefully plan their program to include the required prerequisites.

It is strongly recommended that a student attain a grade of 'C' or higher in any course used to satisfy prerequisites for courses in Computer Science, Mathematics, and Statistics.

See also:

- Bachelor of Science/Bachelor of Education - Mathematics/Mathematics Education
- Bachelor of Science/Bachelor of Management - Mathematics
- Bachelor of Science - Computer Science

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/math\\_bsc](http://www.uleth.ca/ross/sequencing-plans/math_bsc) for a suggested sequencing plan for the Mathematics major in the B.Sc. program.

## Mathematics (B.Sc.)

Number of courses required for the major ..... 18

(Independent Study - Optional; may be counted in required courses for major)

## ff. Music

Department: Music (Faculty of Fine Arts)

The major in Music is a broad, general program of study. Students complete a core of required courses and choose one of two streams: Theory/History or General. The Theory/History stream focuses on scholarly and written work without requiring a high level of musical performance skills, although a degree of facility on an instrument is recommended. The General stream ensures a more diverse musical background including theory, history and performance.

The program includes courses within three basic subject areas: music history and literature, theoretical subjects (harmony, analysis, composition and musicianship skills), and applied music instruction (Studio courses, Ensemble Activity courses and conducting). Entrance to Studio courses is dependent upon the results of an audition.

Please refer to the program website ([www.uleth.ca/artsci/music](http://www.uleth.ca/artsci/music)) for more information.

### Required core:

Music 2160 - Theory I

<sup>1</sup> Music 2161 - Musicianship Skills I

Music 2180 - History I: Antiquity to the Mid-Renaissance

Music 2260 - Theory II

<sup>1</sup> Music 2261 - Musicianship Skills II

Music 2280 - History II: Late Renaissance and Baroque

Music 3360 - Theory III

<sup>1</sup> Music 3361 - Musicianship Skills III

Music 3460 - Theory IV

<sup>1</sup> Music 3461 - Musicianship Skills IV

### Required Stream:

Students must also select one of the following streams and complete the additional courses for that particular stream:

#### 1. Theory/History Stream

Music 3380 - History III: Classical Music

Music 3480 - History IV: Romantic Music

Music 3580 - History V: Twentieth-Century Music

Music 3660 - Theory V

#### One of:

Music 3000 - Seminar in Music (Series) with an emphasis in Theory

Music 3606 - Orchestration

Music 4660 - Form and Analysis

#### One of:

Music 3000 - Seminar in Music (Series) with an emphasis in History

Music 3721 - World Music

Music 4060 - History VI: Advanced Study in Music

Music 4721 - Canadian Music

<sup>2</sup> One course (3.0 credit hours) in Music at the 4000 level or, if a 4000-level course has been chosen above, one additional course (3.0 credit hours) in Music, excluding Music 1000, Music 1011, Music 3200, and Music 3261, and including Ensemble Activities

One additional course (3.0 credit hours) in Music, excluding Music 1000, Music 1011, Music 3200, and Music 3261, and including Ensemble Activities

**2. General Stream**

- Music 2148 - Studio I - (Instrument)
- Music 2248 - Studio II - (Instrument)
- Music 3348 - Studio III - (Instrument)
- Music 3448 - Studio IV - (Instrument)

**One of:**

- Music 3380 - History III: Classical Music
- Music 3480 - History IV: Romantic Music

One additional course (3.0 credit hours) in Music, excluding Music 1000, Music 1011, Music 3200, and Music 3261, and including Ensemble Activities

Four Music Ensemble Activity courses (6.0 credit hours)

**Note:** *Music Ensemble Activity participation is determined by the focus of the Music major and must be fulfilled as follows:*

<b>Major Focus</b>	<b>Music Ensemble Activity</b>
Studio wind & percussion	Wind Orchestra
Studio voice	University Singers or Women's Chorus
Studio pianist & guitarist	Music Ensemble Activity 2450, Music Ensemble Activity 2451, and a minimum of two semesters (1.5 credit hours each) of: Contemporary and Electroacoustics Ensemble Jazz Ensemble Percussion Ensemble University Singers Vox Musica Wind Orchestra Women's Chorus
Studio string	Orchestra (or through other approved ensemble or Independent Study by permission of the Department of Music)
Studio composition	Any of: Collaborative Piano/Guitar Contemporary and Electroacoustics Ensemble Jazz Ensemble Percussion Ensemble University Singers Vox Musica Wind Orchestra Women's Chorus (or through Independent Study by permission of the Department of Music)

*Not more than two Music Ensemble Activities may be counted toward the Ensemble participation requirement in a given semester.*

**Notes**

<sup>1</sup> 1.5 credit hours.

<sup>2</sup> *Ensemble Activity courses cannot be used to meet the 4000-level course requirement in the Music (Theory/History) major.*

Each Music Ensemble Activity course counts as one-half course (1.5 credit hours). Students with a major in Music may earn credit for a maximum of eight Music Ensemble Activity courses (12.0 credit hours).

See also:

- Bachelor of Music
- Bachelor of Arts/Bachelor of Education - Music/Music Education
- Bachelor of Music/Bachelor of Education - Music/Music Education
- Bachelor of Arts/Bachelor of Management - Music

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/musi\\_ba\\_hist](http://www.uleth.ca/ross/sequencing-plans/musi_ba_hist) for a suggested sequencing plan for the Music major with a Theory/History Stream in the B.A. program.

See [www.uleth.ca/ross/sequencing-plans/musi\\_ba\\_general](http://www.uleth.ca/ross/sequencing-plans/musi_ba_general) for a suggested sequencing plan for the Music major with a General Stream in the B.A. program.

**Music (B.A.)**

**Number of courses required for the major . . . . . 16 (includes four one-half MUSE courses in General Stream)**

*(Independent Study - Optional; may not be counted in required courses for major)*

**gg. Native American Studies**

Department: Native American Studies

The Native American Studies program was developed and formalized by representatives of Southern Alberta's Native communities and the University of Lethbridge. The major in Native American Studies is multidisciplinary and comprehensive in nature and consists of courses in First Nations' history, art, law, politics, language, literature and contemporary issues, all taught from a First Nations' perspective. It aims to foster the study of these various dynamics of North American Native culture and to further a deeper awareness of First Nations' issues.

Please refer to the program website ([www.uleth.ca/artsci/native-american-studies](http://www.uleth.ca/artsci/native-american-studies)) for more information.

**Required courses:**

Native American Studies 1000 - Introduction to Native American Studies

One course (3.0 credit hours) in Blackfoot or Cree

**One of (Art and Literature):**

Native American Studies 2300 - North American Indian Art History and Theory

Native American Studies 2350 - North American Indian Art Studio

Native American Studies 2600 - Native American Literature

**One of (Culture and History)**

Native American Studies 2000 - Native American Philosophy

Native American Studies 2500 - Canadian Indian History

Native American Studies 2550 - U.S. Indian History

### One of (Law and Politics)

- Native American Studies 2100 - Aboriginal Peoples and Law
- Native American Studies 2150 - Native Rights in the United States
- Native American Studies 2800 - Native American Politics

### One of (Contemporary Issues)

- Native American Studies 2400 - Traditional Aboriginal Political Economy
- Native American Studies 2700 - Native American Women
- Native American Studies 3700 - Native American Health

Three courses (9.0 credit hours) in Native American Studies at the 3000/4000 level

One course (3.0 credit hours) in Native American Studies at the 4000 level

Three additional courses (9.0 credit hours) in Native American Studies, Blackfoot, or Cree

### Notes

See also:

- Bachelor of Arts/Bachelor of Education - Native American Studies/Native Education
- Bachelor of Arts/Bachelor of Management - Native American Studies

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/nas\\_ba](http://www.uleth.ca/ross/sequencing-plans/nas_ba) for a suggested sequencing plan for the Native American Studies major in the B.A. program.

#### **Native American Studies (B.A.)**

**Number of courses required for the major ..... 13**

*(Independent Study - Optional; may be counted in required courses for major)*

### hh. Neuroscience

Department: Neuroscience

The Neuroscience major explores how nervous systems work and requires courses from a range of Departments. These courses investigate the processes by which information is transmitted within cells and between cells, and how particular neural systems produce perceptions, learning, memory and behaviour. Brain and behavioural change during evolution, individual development and pathology are all used to gain insight into how the nervous system functions.

Please refer to the program website ([www.uleth.ca/artsci/neuroscience](http://www.uleth.ca/artsci/neuroscience)) for more information.

#### Required courses:

- Biology 1010 - Cellular Basis of Life
- Biology 1020 - Diversity of Life
- Biology 2000 - Principles of Genetics
- Neuroscience 2600 - Brain and Behaviour
- Neuroscience 3600 - Fundamental Neurobiology
- Psychology 2330 - Learning and Cognition
- Psychology 2700 - Behaviour and Evolution

#### Three of:

- Biochemistry 2000 - Introductory Biochemistry
- Biology 3000 - Gene Expression and Regulation
- Biology 3105 - Signal Transduction

- Biology 3310 - Developmental Biology
- Biology 3400 - Principles of Microbiology
- Neuroscience 3625 - Cellular and Molecular Neurobiology

#### One of:

- Philosophy 2220 - Philosophy of Mind
- Philosophy 2233 - Philosophy and the World View of Science: Earth and Life Sciences
- <sup>1</sup>Philosophy 3270 - Theory of Knowledge
- <sup>1</sup>Philosophy 3402 - Biomedical Ethics

#### One of:

- Physics 1000 - Introduction to Physics I
- Physics 1050 - Introduction to Biophysics

#### One of:

- Neuroscience 4630 - Neuroscience (Series)
- Neuroscience 4980 - Applied Studies
- Neuroscience 4990 - Independent Study
- <sup>2</sup>Neuroscience 4995 - Undergraduate Thesis

#### One of:

- One course (3.0 credit hours) in English at the 1000 level or higher
- Writing 1000 - Introduction to Academic Writing

#### One of:

- Neuroscience 3690 - Introduction to Programming and Statistics in MATLAB
- Psychology 2030 - Methods and Statistics
- Statistics 1770 - Introduction to Probability and Statistics

Two courses (6.0 credit hours) in Neuroscience or Psychology at the 3000/4000 level with a Science designation (see **List III: Science Courses, p. 85**).

#### One of the following groups:

- Biochemistry 2000 - Introductory Biochemistry
- Chemistry 1110 - Chemistry for Life Sciences I
- Chemistry 2120 - Chemistry for Life Sciences II
- Two additional courses (6.0 credit hours) in Biology, Chemistry, Neuroscience, or Psychology at the 3000/4000 level with a Science Designation (See **List III: Science Courses, p. 85**)

**Note:** *Students who choose this grouping may not choose Biochemistry 2000 as part of the "Three of" list above.*

#### OR

- Chemistry 1000 - General Chemistry I
- Chemistry 2000 - General Chemistry II
- Chemistry 2500 - Organic Chemistry I
- Chemistry 2600 - Organic Chemistry II
- One of:**
  - Mathematics 1410 - Elementary Linear Algebra
  - Mathematics 1560 - Calculus I

#### Recommended courses:

- Biology 3005 - Genome Maintenance
- Biology 3115 - Principles of Cell Growth
- Biology 3210 - Experimental Methods in Molecular and Cellular Biology
- Computer Science 1000 - Introduction to Computer Science
- Logic 1000 - Critical Thinking
- Management 2020 - Marketing
- Neuroscience 3705 - Evolution of Brain and Behaviour

## Notes

<sup>1</sup> Prerequisite required: One of Philosophy 1000 or a 2000-level course (3.0 credit hours) in Philosophy.

<sup>2</sup> If Neuroscience 4995 is chosen, the requirement for two additional courses at the 3000/4000 level in Neuroscience or Psychology with a Science designation is reduced to one additional such course.

It is strongly recommended that students who are planning to pursue graduate studies in the Neurosciences consider the Undergraduate Thesis option and include the following courses in their program:

Neuroscience 3605 - Research Methods in Neuroscience  
Psychology 3400 - Advanced Research Design and Data Analysis

See also:

- Bachelor of Science - Psychology

## Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/neur\\_bsc](http://www.uleth.ca/ross/sequencing-plans/neur_bsc) for a suggested sequencing plan for the Neuroscience major in the B.Sc. program.

### Neuroscience (B.Sc.)

Number of courses required for the major ..... 22

*(Independent Study - Optional; may be counted in required courses for major)*

## ii. Philosophy

Department: Philosophy

Philosophy means “love of wisdom.” Philosophers study the deep intellectual problems that underlie or unify other disciplines in the sciences and humanities. Courses in the reality stream inquire into the nature of knowledge, mind and matter, space and time, language and mathematics, religious beliefs, and the basis of science. Courses in the values stream probe the distinction between right and wrong, the nature of beauty, the assumptions behind political theories and current ethical dilemmas. Logic studies the art and science of reasoning. All philosophy and logic courses place strong emphasis on developing the skills of clear writing and sound argumentation, and the ability to see beneath the surface of the apparently obvious.

Please refer to the program website ([www.uleth.ca/artsci/philosophy](http://www.uleth.ca/artsci/philosophy)) for more information.

### Required courses:

#### Two of (Logic):

Logic 1000 - Critical Thinking  
Logic 2003 - Symbolic Logic I  
Logic 3003 - Symbolic Logic II

#### Two of (History of Philosophy):

Philosophy 2010 - Ancient Philosophy  
Philosophy 2030 - 17th-Century Philosophy: Descartes to Leibniz  
Philosophy 3350 - Analytic Philosophy  
Philosophy 3409 - 18th-Century Philosophy: Leibniz to Kant  
Philosophy 3420 - Wittgenstein

#### One of (Philosophy of Values):

Philosophy 2001 - Introduction to Ethics  
Philosophy 3401 - Social and Political Philosophy  
Philosophy 3410 - Advanced Ethics

#### One of (Philosophy of Values):

Philosophy 2150 - Philosophy of Art  
Philosophy 2236 - Environmental Philosophy  
Philosophy 3402 - Biomedical Ethics  
Philosophy 3403 - Philosophy of Love and Sex  
Philosophy 3404 - Philosophy of Law  
Philosophy 3411 - Game Theory in Philosophy  
Philosophy 3413 - Feminist Philosophy  
Philosophy 3450 - Philosophy of War  
Philosophy 3460 - Philosophy of Peace

#### Two of (Philosophy of Reality):

Philosophy 2002 - Belief, Truth, and Paradox  
Philosophy 2210 - Philosophy of Religion  
Philosophy 2220 - Philosophy of Mind  
Philosophy 2233 - Philosophy and the World View of Science: Earth and Life Sciences  
Philosophy 2234 - Philosophy and the World View of Science: Space, Time and Matter  
Philosophy 3260 - Metaphysics  
Philosophy 3270 - Theory of Knowledge  
Philosophy 3280 - Philosophy of Language

One course (3.0 credit hours) in Philosophy or Logic at the 4000 level

Four additional courses (12.0 credit hours) in Philosophy or Logic

## Notes

Students should take courses from as many instructors as possible, since the views of instructors on any given topic may vary significantly. Those intending to go on to graduate or professional schools should get more specific advice, particularly about Independent Study.

See also:

- Bachelor of Arts/Bachelor of Management - Philosophy

## Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/phil\\_ba](http://www.uleth.ca/ross/sequencing-plans/phil_ba) for a suggested sequencing plan for the Philosophy major in the B.A. program.

### Concentration: Legal Reasoning (Optional)

Philosophy majors in the B.A. and BASc. degree programs may declare a Concentration in Legal Reasoning.

### Required courses:

Philosophy 3401 - Social and Political Philosophy  
Philosophy 3404 - Philosophy of Law

#### Two of:

Philosophy 2001 - Introduction to Ethics  
Philosophy 2236 - Environmental Philosophy  
Philosophy 3402 - Biomedical Ethics  
Philosophy 3410 - Advanced Ethics  
Philosophy 3411 - Game Theory in Philosophy  
Philosophy 3413 - Feminist Philosophy  
Philosophy 3450 - Philosophy of War  
Philosophy 3460 - Philosophy of Peace

#### One of:

- Management 3010 - Management Law  
<sup>1</sup> Native American Studies 2100 - Aboriginal Peoples and Law  
<sup>2</sup> Political Science 3241 - Canadian Constitutional Law I: Federalism and First Nations  
<sup>2</sup> Political Science 3242 - Canadian Constitutional Law II: The Charter  
<sup>2</sup> Political Science 3243 - Courts, Law, and Politics in Canada  
<sup>3</sup> Political Science 3245 - Women and the Law

## Notes

<sup>1</sup> Prerequisite Required: Native American Studies 1000.

<sup>2</sup> Prerequisite Required: Political Science 2210.

<sup>3</sup> Prerequisite Required: One of Political Science 1000 or Political Science 2210.

Students may not double count courses required for the Concentration in Legal Reasoning in fulfilling requirements for the major in Philosophy.

For students who complete all requirements, the Concentration in Legal Reasoning will be acknowledged on the official transcript.

### Philosophy (B.A.)

Number of courses required for the major ..... 13

*(Independent Study - Optional; may be counted in required courses for major)*

Concentration: Legal Reasoning (optional)

Number of courses required for concentration ..... 5

Total number of courses required for major and concentration ..... 18

## jj. Physics

Department: Physics and Astronomy

Physics is the study of matter and energy at all scales, from the sub-nuclear to the dimensions of the universe. It is the fundamental science—all other sciences and technologies rely on the principles of physics. Physics involves observing and understanding natural phenomena evident in the world around us: the seasons, the motion of objects, the flight of birds, the night sky and the weather. The curriculum provides a comprehensive Physics major, built on a foundation of courses in the first two years which lead to more advanced and specialized areas in the senior years, preparing students for postgraduate studies, or for careers in academia, industry and the public sector.

Please refer to the program website ([www.uleth.ca/artsci/physics-astronomy](http://www.uleth.ca/artsci/physics-astronomy)) for more information.

### Required courses:

Chemistry 1000 - General Chemistry I  
Computer Science 1620 - Fundamentals of Programming I  
Mathematics 1410 - Elementary Linear Algebra  
Mathematics 1560 - Calculus I  
Mathematics 2560 - Calculus II  
Mathematics 2570 - Calculus III  
Mathematics 2580 - Calculus IV  
Physics 2000 - Introduction to Physics II  
Physics 2120 - Introduction to Physics III  
Physics 2130 - Waves, Optics and Sound  
Physics 2150 - Quantum Mechanics I  
Physics 2800 - Methods in Mathematical Physics  
Physics 2925 - Introduction to Experimental Physics  
Physics 3150 - Quantum Mechanics II  
Physics 3175 - Electricity and Magnetism  
Physics 3200 - Mechanics  
Physics 3400 - Thermal and Statistical Physics  
Physics 3750 - Contemporary Physics  
Physics 3800 - Methods of Theoretical Physics  
Physics 3925 - Experimental Physics  
Physics 4175 - The Electromagnetic Interaction

### One of:

Biology 1010 - Cellular Basis of Life  
Biology 1020 - Diversity of Life

### One of:

Physics 1000 - Introduction to Physics I  
Physics 1050 - Introduction to Biophysics  
<sup>1</sup> Engineering 2060 - Engineering Mechanics

### One of:

Physics 4150 - Quantum Mechanics III  
Physics 4200 - Advanced Mechanics

### <sup>2</sup> Two of:

Physics 3650 - Optics  
Physics 3840 - Introduction to Computational Physics  
Physics 3900 - Intermediate Experimental Physics (Series)  
Physics 4000 - Advanced Studies in Physics (Series)  
Physics 4100 - Nuclear and Particle Physics  
Physics 4250 - Solid State Physics  
Physics 4650 - Physics of Remote Sensing

## Notes

<sup>1</sup> Engineering 2000 and Mathematics 1560 are prerequisites for Engineering 2060.

<sup>2</sup> Offerings in Physics 3850 (Topics) and Physics 4850 (Topics) and either Physics 4150 or Physics 4200 (if not used above) may be used to satisfy this requirement.

Since a number of courses are offered only on alternate years, students are advised to plan carefully to include the desired courses. In all cases, students (especially those planning for advanced studies in Physics) are encouraged to seek advice on their programs from any member of the Department of Physics and Astronomy.

It is recommended that students majoring in Physics include in their program courses in Biology, Chemistry, Computer Science, and Mathematics.

It is strongly recommended that a student attain a grade of 'C' or higher in any course used to satisfy prerequisites for courses in Physics and Mathematics.

See also:

- Bachelor of Science - Remote Sensing
- Bachelor of Science/Bachelor of Education - Physics/Science Education
- Bachelor of Science/Bachelor of Management - Physics

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/phys\\_bsc](http://www.uleth.ca/ross/sequencing-plans/phys_bsc) for a suggested sequencing plan for the Physics major in the B.Sc. program.

### Physics (B.Sc.)

Number of courses required for the major ..... 26

*(Independent Study - Optional; may not be counted in required courses for major)*

## kk. Political Science

Department: Political Science

Political Science is the study of government institutions, political behaviour and political theory. You need no political ambitions to take it. Political Science is both empirical (qualitative and quantitative) and theoretical. Empirically the focus is on Canadian politics (from national to local), comparative politics (of differing

regimes in selected regions of the world), and international relations. Theoretically the focus is on the ideas and visions of justice and the good life that political leaders and citizens aspire to and even stake their lives on. Emphasis is placed throughout on critical reading, writing and analytical skills, encompassing the study of a wide array of materials, including legal, philosophical, literary and historical documents, as well as statistical analysis.

Please refer to the program website ([www.uleth.ca/artsci/political-science](http://www.uleth.ca/artsci/political-science)) for more information.

**Required courses:**

Political Science 1000 - Introduction to Political Science

Political Science 2110 - International Relations

Political Science 2210 - Canadian Politics and Government

Political Science 2310 - Comparative Politics and Government

Political Science 2511 - Introduction to Political Theory

Political Science 2610 - Introductory Research Methods

Five courses (15.0 credit hours) in Political Science at the 3000/4000 level

Two courses (6.0 credit hours) in Political Science at the 4000 level

**Notes**

Political Science 4980 (Applied Studies), Political Science 4990 (Independent Study) and Political Science 4995 (Undergraduate Thesis) may not be included as part of the 13-course minimum for the major; they are strongly encouraged for students taking courses beyond this minimum, however.

See also:

- Bachelor of Arts/Bachelor of Education - Political Science/Social Studies Education
- Bachelor of Arts/Bachelor of Management - Political Science

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/poli\\_ba](http://www.uleth.ca/ross/sequencing-plans/poli_ba) for a suggested sequencing plan for the Political Science major in the B.A. program.

**Political Science (B.A.)**  
**Number of courses required for the major ..... 13**  
*(Independent Study - Optional; may be counted in required courses for major)*

**II. Psychology (B.A. or B.Sc.)**

Department: Psychology

Psychology seeks to understand the causes of behaviour in humans and other animals. Such behaviour can range from the automatic, unconscious, and reflexive sucking and grasping behaviours of infants through largely unconscious behaviours such as finding food and choosing a mate, to sophisticated, conscious behaviours such as medical decision making. Students will investigate the nature of human and animal thought processes as well as the evolutionary, social and cultural factors that frame the development of human capacities. We consider the best preparation, at the undergraduate level, for graduate study in all areas of psychology, whether research or applied, to be a strong and broad background in experimental psychology.

Please refer to the program website ([www.uleth.ca/artsci/psychology](http://www.uleth.ca/artsci/psychology)) for more information.

**Required courses:**

Psychology 1000 - Basic Concepts of Psychology

Psychology 2030 - Methods and Statistics

Four courses (12.0 credit hours) in Psychology or Neuroscience at the 2000 level

Six courses (18.0 credit hours) in Psychology or Neuroscience at the 3000/4000 level

One course (3.0 credit hours) in Psychology at the 4000 level

**Notes**

Students who wish to pursue graduate studies in Psychology should consider the Undergraduate Thesis option and should take Psychology 3400. Students who wish to pursue graduate studies in Neuroscience should, in addition, take Neuroscience 3605, and may wish to consider a major in Neuroscience (see the Neuroscience major earlier in this section).

See also:

- Bachelor of Science - Neuroscience
- Bachelor of Arts/Bachelor of Management - Psychology
- Bachelor of Science/Bachelor of Management - Psychology

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/psyc\\_ba\\_bsc](http://www.uleth.ca/ross/sequencing-plans/psyc_ba_bsc) for a suggested sequencing plan for the Psychology major in the B.A. or B.Sc. program.

**Psychology (B.A. or B.Sc.)**  
**Number of courses required for the major ..... 13**  
*(Independent Study - Optional; may be counted in required courses for major)*

**mm. Religious Studies**

Department: Religious Studies

Religious Studies aims to enhance critical understanding of the phenomenon of religion and the diversity of religious experience and expression from antiquity to the present in both Eastern and Western traditions. This field of study uses a wide range of tools and methods to describe, analyze and understand religion in human experience. Fundamental issues such as belief, texts, worship, ritual, concepts of the divine, the human condition and the historical development of particular religions are examined. The academic study of religion requires a measure of neutrality, whereby no particular religious tradition is privileged. A major in Religious Studies provides a broad-based understanding of the diverse religious world and requires students to study general themes and issues as well as specific traditions from both Eastern and Western religions.

Please refer to the program website ([www.uleth.ca/artsci/religious-studies](http://www.uleth.ca/artsci/religious-studies)) for more information.

**Required courses:**

Religious Studies 1000 - Introduction to World Religions

Religious Studies 2001 - Studying Religion Critically

Religious Studies 4001 - Concepts and Methods in the Study of Religion

**One of (Eastern Religions):**

Religious Studies 2100 - The Hindu Tradition  
 Religious Studies 2200 - The Buddhist Tradition  
 Religious Studies 2300 - East Asian Religions

**One of (Western Religions):**

Religious Studies 2400 - Judaism  
 Religious Studies 2450 - Bible Survey  
 Religious Studies 2500 - Christianity  
 Religious Studies 2600 - Islam

**One of:**

Religious Studies 4000 - Seminars in Religious Studies (Series)  
 Religious Studies 4110 - Seminars in Eastern Religions (Series)  
 Religious Studies 4400 - Seminars in Western Religions (Series)

**<sup>1</sup> One of:**

Anthropology 2550 - Anthropology of Religion  
 Anthropology 3500 - Ritual, Practice, and Performance  
 Archaeology 3171 - Ancient Israel  
 Greek 1200 - Elementary Biblical Greek I  
 Greek 1300 - Elementary Biblical Greek II  
 Hebrew 1000 - Elementary Hebrew I  
 Hebrew 1100 - Elementary Hebrew II  
 History 3007 - Greek and Roman Mythology  
 History 3103 - The Crusades  
 History 3402 - The Reformation  
 Latin 1000 - Elementary Latin I  
 Latin 1100 - Elementary Latin II  
 Native American Studies 2000 - Native American Philosophy  
 Native American Studies 3000 - Native American Philosophy - Advanced  
 Philosophy 2010 - Ancient Philosophy  
 Philosophy 2210 - Philosophy of Religion  
 Philosophy 3260 - Metaphysics  
 Political Science 3510 - Political Thought Before 1500  
 Political Science 3525 - Politics and Religion  
 Sociology 3330 - Sociology of Religion

Two additional courses (6.0 credit hours) in Religious Studies at the 2000 level selected from Eastern Religions or Western Religions

<sup>2</sup> Five additional courses (15.0 credit hours) in Religious Studies at the 3000/4000 level, excluding Religious Studies 3980 and 4980 (Applied Studies), and Religious Studies 4995 (Undergraduate Thesis)

**Notes**

<sup>1</sup> Most courses in this list have prerequisites that are not part of the major.

<sup>2</sup> A maximum of one Independent Study course (3.0 credit hours) may be used to fulfill the 3000/4000-level requirement.

From time to time, Topics courses in other disciplines will address the subject of religion. These will be considered for credit toward a Religious Studies major on an individual basis and must be approved by the Department Chair.

See also:

- Bachelor of Arts/Bachelor of Management - Religious Studies

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/rels\\_ba](http://www.uleth.ca/ross/sequencing-plans/rels_ba) for a suggested sequencing plan for the Religious Studies major in the B.A. program.

<b>Religious Studies (B.A.)</b>	
<b>Number of courses required for the major .....</b>	<b>14</b>
<i>(Independent Study - Optional; may be counted in required courses for major)</i>	

**nn. Remote Sensing**

Departments: Geography, and Physics and Astronomy

Remote Sensing involves the acquisition and analysis of photographs and images from airplanes, satellites and other platforms for obtaining important information about the Earth's land, oceans and atmosphere, as well as other planets and bodies. The Remote Sensing major provides applied training in laboratory and field settings coupled with a solid theoretical and experimental foundation. This is the only remote sensing program of its kind in Canada, therefore graduates have unique qualifications for direct employment in private industry, government, and universities, as well as for entry to advanced graduate-level studies.

Please refer to the program website ([www.uleth.ca/artsci/remote-sensing](http://www.uleth.ca/artsci/remote-sensing)) for more information.

**Required courses:**

Computer Science 1620 - Fundamentals of Programming I  
 Geography 1000 - Introduction to Physical Geography  
 Geography 2030 - Geomorphology  
 Geography 2300 - Weather and Climate  
 Geography 2700 - Geographical Data and Analysis  
 Geography 2735 - Introduction to Geographical Information Science  
 Geography 3720 - Remote Sensing  
 Geography 4725 - Advanced Remote Sensing  
 Mathematics 1410 - Elementary Linear Algebra  
 Mathematics 1560 - Calculus I  
 Mathematics 2560 - Calculus II  
 Mathematics 2570 - Calculus III  
 Mathematics 2580 - Calculus IV  
 Physics 2000 - Introduction to Physics II  
 Physics 2120 - Introduction to Physics III  
 Physics 2130 - Waves, Optics and Sound  
 Physics 2925 - Introduction to Experimental Physics  
 Physics 3650 - Optics  
 Physics 4650 - Physics of Remote Sensing

**One of:**

Geography 4710 - Remote Sensing Field Techniques  
 Geography 4751 - Project in Spatial Modelling  
 Geography 4753 - Seminar in Remote Sensing

**One of:**

Physics 1000 - Introduction to Physics I  
 Physics 1050 - Introduction to Biophysics  
 Engineering 2060 - Engineering Mechanics

**Recommended courses:**

Geography 3710 - Field Techniques in the Earth Sciences  
 Geography 3740 - Geographical Information Systems  
 Any of Geography 4710, Geography 4751, and Geography 4753 not selected in the major  
 Physics 3175 - Electricity and Magnetism  
 Physics 3840 - Introduction to Computational Physics

- <sup>1</sup> Computer Science 3620 - Data Structures and Algorithms
- <sup>2</sup> Computer Science 3710 - Computer Graphics
- <sup>3</sup> Statistics 2780 - Statistical Inference

**Notes**

- <sup>1</sup> Prerequisites required: Computer Science 1820 and Computer Science 2620.
- <sup>2</sup> Prerequisite required: Computer Science 2620.
- <sup>3</sup> Prerequisite required: Statistics 1770.

See also:

- Bachelor of Science - Geography
- Bachelor of Science - Physics

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/rmsn\\_bsc](http://www.uleth.ca/ross/sequencing-plans/rmsn_bsc) for a suggested sequencing plan for the Remote Sensing major in the B.Sc. program.

**Remote Sensing (B.Sc.)**  
**Number of courses required for the major** ..... 21  
*(Independent Study - Optional; may not be counted in required courses for major)*

**oo. Sociology**

Department: Sociology

Sociology provides the conceptual and methodological tools with which to understand society. Its primary goal is to stimulate sociological thinking, which involves the application of imagination and critical analysis to the many facets of social life. Ideally, this encourages not only the development of analytical insight, but also the application of sociology to social problems and issues.

The program provides instruction for both the liberal arts student and the student planning advanced studies or a career related to Sociology. A wide range of courses is offered in sociological theory, methods and topics reflecting a variety of contemporary social issues.

Please refer to the program website ([www.uleth.ca/artsci/sociology](http://www.uleth.ca/artsci/sociology)) for more information.

**Required courses:**

- Sociology 1000 - Introduction to Sociology
- Sociology 2050 - Social Inequality
- Sociology 2100 - Research Methodology
- Sociology 2130 - Social Statistics I
- Sociology 2300 - Committing Sociology
- Sociology 3110 - Survey Research
- Sociology 3120 - Qualitative Research Methods
- Sociology 3130 - Social Statistics II
- Sociology 3210 - Classical Sociological Theory
- Sociology 3220 - Contemporary Sociological Theory

Three additional courses (9.0 credit hours) in Sociology at the 3000/4000 level

Three courses (9.0 credit hours) in Sociology at the 4000 level

**Notes**

See also:

- Bachelor of Arts/Bachelor of Education - Sociology/Social Studies Education
- Bachelor of Arts/Bachelor of Management - Sociology

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/soci\\_ba](http://www.uleth.ca/ross/sequencing-plans/soci_ba) for a suggested sequencing plan for the Sociology major in the B.A. program.

**Sociology (B.A.)**  
**Number of courses required for the major** ..... 16  
*(Independent Study - Optional; may be counted in required courses for major)*

**pp. Urban and Regional Studies**

The major in Urban and Regional Studies includes courses in disciplines that have traditionally focused on cities, such as Anthropology, Economics, Geography, Political Science, Sociology and Statistics. It provides a broad range of conceptual and practical tools for students to understand and play a role in the planning, administration, and governance of human settlements from towns to metropolitan regions. Courses delve into the physical, social, spatial, economic, political and planning factors that shape urban areas. Topics such as architecture and the city, urban and regional planning, urban systems, globalization, and issues such as immigration, aging, homelessness and environmental sustainability may be included.

Please refer to the program website ([www.uleth.ca/artsci/urban-regional-studies](http://www.uleth.ca/artsci/urban-regional-studies)) for more information.

**Required core (10 courses):**

- Geography 2535 - Introduction to Planning
- Geography 4500 - Contemporary Issues and Problems in Planning (Series)

**Three of (Introductory Courses):**

- Anthropology 1000 - The Anthropological Perspective
- Economics 1010 - Introduction to Microeconomics
- Economics 1012 - Introduction to Macroeconomics
- Geography 1000 - Introduction to Physical Geography
- Geography 1200 - Introduction to Human Geography
- History 1000 - Western Civilization or History 1200 - World History
- Political Science 1000 - Introduction to Political Science
- Sociology 1000 - Introduction to Sociology

**Two of (Urban Studies):**

- Anthropology 3280 - Urban Anthropology
- Geography 3230 - Urban Social Geography
- Geography 3245 - Urbanization in Developing Countries

**One of (Statistical Methods):**

- Geography 2700 - Geographical Data and Analysis
- Sociology 2130 - Social Statistics I
- Statistics 1770 - Introduction to Probability and Statistics

**One of (Research Techniques):**

- Economics 2900 - Economics and Business Statistics
- Geography 2735 - Introduction to Geographical Information Science
- Political Science 2610 - Introductory Research Methods
- Sociology 2100 - Research Methodology

Sociology 3110 - Survey Research  
Sociology 3120 - Qualitative Research Methods  
Statistics 2780 - Statistical Inference

**One of:**

One course (3.0 credit hours) in English at the 1000 level or higher  
Writing 1000 - Introduction to Academic Writing

**Independent Study or Applied Studies (1 course)**

One Independent Study or Applied Studies course at the 3000/4000 level. This course must be (1) clearly related to Urban and Regional Studies, (2) multidisciplinary, and (3) approved by the Urban and Regional Studies Coordinator.

**<sup>1</sup>Options (10 courses):**

The ten options courses (30.0 credit hours) must draw from **at least two and no more than three** of the following disciplines. At least six of these courses (18.0 credit hours) must be at the 3000/4000 level.

**Anthropology**

Anthropology 2210 - Cultures of the World (Series)  
Anthropology 3280 - Urban Anthropology

**Economics**

Economics 2750 - Quantitative Methods in Economics  
Economics 2900 - Economics and Business Statistics  
Economics 3010 - Intermediate Microeconomic Theory  
Economics 3012 - Intermediate Macroeconomic Theory  
Economics 3750 - Economics of Public Spending  
Economics 3950 - Econometrics I

**Geography**

Geography 1200 - Introduction to Human Geography  
Geography 2210 - Spatial Organization of Economic Activity  
Geography 3075 - Environmental Resources Management  
Geography 3225/Management 3660 - Industrial Location and Globalization of Enterprise  
Geography 3230 - Urban Social Geography  
Geography 3235 - Quantitative Models for Geographic Analysis  
Geography 3245 - Urbanization in Developing Countries  
Geography 3750 - GIS Applications in Human Geography  
Geography 4220 - Advanced Economic Geography (Series)  
Geography 4240 - Advanced Urban Geography (Series)  
Additional offerings of Geography 4500 - Contemporary Issues and Problems in Planning (Series)

**History**

History 2001 - Main Themes in Ancient History

**Political Science**

Political Science 2210 - Canadian Politics and Government  
Political Science 2511 - Introduction to Political Theory  
Political Science 3210 - Local Government and Politics

Political Science 3250 - Alberta Politics and Government  
Political Science 3260 - Canadian Public Policy  
Political Science 3400 - Public Administration  
Political Science 3511 - Political Thought Since 1500 (Series)

**Sociology**

Sociology 2010 - Canadian Society  
Sociology 2600 - The Individual and Society  
Sociology 3020 - Social Problems  
Sociology 3050 - Sociology of Race and Ethnicity  
Sociology 3210 - Classical Sociological Theory  
Sociology 3220 - Contemporary Sociological Theory

**Notes**

<sup>1</sup> Many of the options courses require prerequisites, thus students should choose courses with this in mind.

A maximum of two courses (6.0 credit hours) chosen from Applied Studies, Independent Study, Series and Topics courses in any of the above disciplines may be counted toward the Option courses in the major provided (1) they are clearly related to Urban and Regional Studies and (2) they are approved by the Urban and Regional Studies Coordinator.

See also:

- Bachelor of Arts/Bachelor of Management - Urban and Regional Studies

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/ubre\\_ba](http://www.uleth.ca/ross/sequencing-plans/ubre_ba) for a suggested sequencing plan for the Urban and Regional Studies major in the B.A. program.

<p><b>Urban and Regional Studies (B.A.)</b></p> <p><b>Number of courses required for the major ..... 21</b></p> <p><i>(Independent Study - Required in major)</i></p>
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**qq. Women and Gender Studies**

Department: Women and Gender Studies

Women and Gender Studies examines the historical and contemporary conditions of women and men in society. By using feminist theories and research methodologies, students will broaden their knowledge of various power relations shaping women's lives, bodies, experiences, labour and scholarship. Students will explore feminism as an important influence in political and societal change. The program draws on a vibrant community of women scholars, contemporary research and activism inside and outside the University to explore a breadth of social issues. In Women and Gender Studies classes, students will develop an in-depth understanding of how current and historical events, ideas and institutions have been structured by gender, ethnicity, race, age, ability, class and sexuality.

Please refer to the program website ([www.uleth.ca/artsci/women-gender-studies](http://www.uleth.ca/artsci/women-gender-studies)) for more information.

**Required courses:**

Women and Gender Studies 1000 - Knowing Bodies: An Introduction to Women and Gender Studies  
Women and Gender Studies 2300 - Theorizing Women's Lives: Feminist Frameworks  
Women and Gender Studies 2600 - Activism and Advocacy

Women and Gender Studies 2700 - Feminist Approaches to Research

Six courses (18.0 credit hours) in Women and Gender Studies at the 3000/4000 level

Three additional courses (9.0 credit hours) in Women and Gender Studies

### Notes

With the permission of the Department Chair, students may take a maximum of two courses (6.0 credit hours) from other disciplines which offer related or complementary course materials.

Students may take more than one offering of a Series course or more than one Independent Study for credit if the offerings (as indicated by the specific titles) are distinct.

See also:

- Bachelor of Arts/Bachelor of Management - Women and Gender Studies

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/wgst\\_ba](http://www.uleth.ca/ross/sequencing-plans/wgst_ba) for a suggested sequencing plan for the Women and Gender Studies major in the B.A. program.

#### **Women and Gender Studies (B.A.)**

**Number of courses required for the major ..... 13**

*(Independent Study - Optional; may be counted in required courses for major)*

### rr. Double Majors

Although the Faculty of Arts and Science does not recognize double majors as official student programs leading toward the B.A. or B.Sc. degree, it will authorize the designation of the double major for all students who, upon graduation, have completed all of the minimum requirements for two majors.

Double majors are formed by completing the requirements of two established majors for the B.A. or two established majors for the B.Sc. Individual Multidisciplinary majors and General majors are ineligible for double major designation. Double counting of courses is not allowed. Students choosing to complete two majors may need to complete more than the minimum 40 courses for the degree depending on the choice of majors.

The Faculty cannot guarantee that course sequencing and timetables will accommodate all double major combinations within eight consecutive regular semesters of work. While students may intend to pursue two majors, only one major will be recognized on their official program forms and for establishing priority in access to courses. Double major status will only be designated upon application for graduation.

Interested students are encouraged to consult with Academic Advisors regarding double majors.

### ss. Individual Multidisciplinary Majors

Students may establish Individual Multidisciplinary majors. An Individual Multidisciplinary major must represent an identifiable and significant body of knowledge and entail in-depth study rather than a superficial survey of a broad topic. For the most part, the program is expected to be derived from the existing curriculum in Arts and Science.

An individual multidisciplinary major program consists of 20 courses with the following structure:

#### a. Required Core

The core of the major must contain a minimum of eight and a maximum of 12 required courses providing a broad-based familiarity with the major. These core courses must be taken from at least two disciplines.

#### b. An Independent Study at the 3000 or 4000 level.

#### c. Options

The remaining courses in the Individual Multidisciplinary major must be chosen from a list of optional courses. The chosen courses must be from at least two disciplines.

#### d. At least six of the 20 courses must be at the 3000 or 4000 level, one of which must be at the 4000 level.

Students are encouraged to apply early to establish an Individual Multidisciplinary major and also to explore potential programs with faculty members prior to making an application.

An application to establish an Individual Multidisciplinary major must be submitted to the Dean or Dean's designate. Approval of an Individual Multidisciplinary major by Arts and Science Council must be obtained prior to registration in the final 10 courses in the degree. Students are advised that formulation and approval of a program normally takes up to six months after the initial application and thus applications should be submitted in sufficient time to allow processing.

The Individual Multidisciplinary major shall be formulated by a committee, chaired by the Dean or Dean's designate and composed of the student and faculty representatives, appointed by their departments, from at least two appropriate departments chosen by the Dean or Dean's designate.

During its deliberations the committee shall consult all departments represented in the major. Before being submitted to the Arts and Science Curriculum Committee, the proposed program shall be approved by the Chairs of the departments represented on the committee.

Students interested in an Individual Multidisciplinary major should contact the Dean or Dean's designate.

## 17. MINORS

Students in the 40-course (120.0 credit hours) Bachelor of Arts (B.A.), Bachelor of Science (B.Sc.), or Bachelor of Arts and Science (BASc.) program may declare a minor, to be completed in addition to their major.

**Note:** Arts and Science minors are not available to students in the Combined Degrees programs (i.e., B.A./B.Ed., B.A./B.Mgt., B.Sc./B.Ed., B.Sc./B.Mgt.), Post-Diploma programs, or the B.A., B.Sc., or BASc. as second degree.

*Students choosing to complete a minor may need to complete more than the minimum 40 courses for the degree depending on the program and choice of major(s).*

### General Requirements

Students must complete at least six courses (18.0 credit hours), including at least one course (3.0 credit hours) at the 3000/4000 level. Required courses for each minor are listed below.

Students may not double count courses required for the minor in fulfilling requirements for their major. The six courses comprising the minor must be distinct from any such major requirements.

For students who complete the required courses, the minor will be acknowledged on the official transcript.

### Arts and Science Minors

The Faculty of Arts and Science offers minors as detailed below:

#### a. Asian Studies

The minor in Asian Studies is available as an adjunct to all majors in the B.A., B.Sc., and BAsC.

##### Required courses:

Six courses (18.0 credit hours) in Asian Studies and related subjects, including at least one course (3.0 credit hours) at the 3000/4000 level, as follows:

Asian Studies 1000 - Introduction to Asia

##### Five of:

History 2250 - China in the 19th and 20th Centuries

History 2290 - Main Themes in East Asian History

History 4040 - Seminars in East Asian History (Series)

##### One of:

Interdisciplinary Studies 2008 - Japan and the Japanese (Series)

Interdisciplinary Studies 2600 - Study Tour of Japan

Japanese 1000 - Beginners' Japanese I

Japanese 1100 - Beginners' Japanese II

Japanese 1500 - Intermediate Language I

Japanese 2000 - Intermediate Language II

Japanese 3001 - Advanced Language

Religious Studies 2100 - The Hindu Tradition

Religious Studies 2200 - The Buddhist Tradition

Religious Studies 2300 - East Asian Religions

Religious Studies 3100 - Studies in Indian Religion (Series)

Religious Studies 3300 - Studies in East Asian Religions (Series)

Religious Studies 4110 - Seminars in Eastern Religions (Series)

Students may include up to four Management courses in the minor, subject to the following provisions:

- No more than two courses offered by the Faculty of Management may be completed. These may include offerings in Management 3815 - Regional Aspects of International Management (Series) and Management 4640 - Cross-Cultural Work Study provided (1) they are clearly related to Asian Studies and (2) they are approved by the Dean of Arts and Science.
- No more than two courses completed at an exchange partner institution in Asia provided (1) they are clearly related to Asian Studies and (2) they are approved by the Dean of Arts and Science.

Topics courses, Series courses (e.g. offerings in Anthropology 3100), Applied Studies, Independent Studies, and courses offered by a Faculty other than the Faculty of Arts and Science, and non-Management courses taken at an exchange partner institution in Asia may be counted toward the minor provided (1) they are clearly related to Asian Studies and (2) they are approved by the Dean of Arts and Science.

**Note:** Many of the courses require prerequisites, thus students should choose courses with this in mind.

No more than one Independent Study (2990, 3990, 4990) or Applied Studies (2980, 3980, 4980) course may be counted towards the minor.

No more than two courses from any one discipline may be counted among the six courses required for the Asian Studies minor.

No more than two Asian language courses may be counted among the six courses required for the Asian Studies minor.

#### b. Computer Science

The minor in Computer Science is available as an adjunct to all majors in the B.A., B.Sc., and BAsC. except majors in Computer Science, Computer Science and Geographical Information Science, and the General Major in the Sciences if Computer Science is chosen as one of the disciplinary streams.

##### Required courses:

Six courses (18.0 credit hours) in Computer Science, including at least two Computer Science courses (6.0 credit hours) at the 3000/4000 level.

**Note:** Students may not include Computer Science 1000 - Introduction to Computer Science among the six courses required for the minor.

No more than one Independent Study (Computer Science 2990, 3990, 4990) or Applied Studies (Computer Science 2980, 3980, 4980) course may be counted towards the minor.

#### c. Economics

The minor in Economics is available as an adjunct to all majors in the B.A., B.Sc. and BAsC. except the major in Economics and the General Major in the Social Sciences if Economics is chosen as one of the disciplinary streams.

##### Required courses:

Economics 1010 - Introduction to Microeconomics

Economics 1012 - Introduction to Macroeconomics

One course (3.0 credit hours) in Economics at the 3000/4000 level

Three additional courses (9.0 credit hours) in Economics

No more than one Independent Study (Economics 2990, 3990, 4990) or Applied Studies (Economics 2980, 3980, 4980) course may be counted towards the minor.

#### d. English

The minor in English is available as an adjunct to all majors in the B.A., B.Sc., and BAsC. except the major in English and the General Major in the Humanities if English is chosen as one of the disciplinary streams.

##### Required courses:

Six courses (18.0 credit hours) in English, including at least two courses (6.0 credit hours) in English at the 3000/4000 level.

No more than one Independent Study (English 2990, 3990, 4990) course may be counted towards the minor.

Applied Studies courses (English 2980, 3980, 4980) may **not** be counted towards the minor in English.

**e. French**

The minor in French is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the majors in French, French/German, and French/Spanish, and the General Major in the Humanities if French is chosen as one of the disciplinary streams.

Courses taken through the French Visiting Student program may be counted towards the minor.

**Required courses:**

Six courses (18.0 credit hours) in French, including at least one French course (3.0 credit hours) at the 3000/4000 level.

No more than one Independent Study (French 2990, 3990, 4990) or Applied Studies (French 2980, 3980, 4980) course may be counted towards the minor.

**f. German**

**Note:** Effective May 1, 2013, the Minor in German has been suspended. Students may not declare this minor in the 2013/2014 academic year and thereafter, until further notice.

The minor in German is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the majors in German and French/German, and the General Major in the Humanities if German is chosen as one of the disciplinary streams.

Courses taken through the German Visiting Student program may be counted towards the minor.

**Required courses:**

Six courses (18.0 credit hours) in German, including at least one German course (3.0 credit hours) at the 3000/4000 level.

No more than one Independent Study (German 2990, 3990, 4990) or Applied Studies (German 2980, 3980, 4980) course may be counted towards the minor.

**g. History**

The minor in History is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the major in History and the General Majors in the Humanities and Social Sciences if History is chosen as one of the disciplinary streams.

**Required courses:**

Six courses (18.0 credit hours) in History, including at least one History course (3.0 credit hours) at the 3000/4000 level.

No more than one Independent Study (History 2990, 3990, 4990) or Applied Studies (History 2980, 3980, 4980) course may be counted towards the minor.

**h. Japanese**

The minor in Japanese is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the General Major in the Humanities if Japanese is chosen as one of the disciplinary streams.

**Required courses:**

Six courses (18.0 credit hours) in Japanese and related subjects as follows:

A minimum of four Japanese (JPNS) courses (12.0 credit hours) for which the language of instruction is Japanese, including a minimum of one Japanese course (3.0 credit hours) at the 3000/4000 level.

**Note:** *Japanese 2850, Japanese 3850, or Japanese 4850 may be included with permission of the Department of Modern Languages.*

Up to two courses from the following list, for which the language of instruction is English, may be counted among the six courses required for the minor in Japanese:

Interdisciplinary Studies 2008 - Japan and the Japanese (Series)

Interdisciplinary Studies 2600 - Study Tour of Japan

**Note:** *Offerings in Modern Languages 2850, Modern Languages 3850, or Modern Languages 4850 with a focus on Japanese language or culture may be included, with permission of the Department of Modern Languages.*

No more than one Independent Study (Japanese 2990, 3990, 4990) or Applied Studies (Japanese 2980, 3980, 4980) course may be counted towards the minor.

**i. Linguistics**

The minor in Linguistics is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the General Major in the Humanities if Linguistics is chosen as one of the disciplinary streams.

**Required courses:**

Six courses (18.0 credit hours) in Linguistics, including at least one Linguistics course (3.0 credit hours) at the 3000/4000 level.

One of the following courses may be counted as one of the six courses required for the Linguistics minor:

Anthropology 2510 - Language, Culture, and Communication

Blackfoot 2210 - Structure of the Blackfoot Language

Blackfoot 3210 - Blackfoot Morphology and Syntax

Cree 2210 - Structure of the Plains Cree Language

English 2810 - Grammar

English 3450 - Old English

English 3901 - History of the English Language

French 3450 - Phonetics and Diction

French 4001 - Advanced Language II

German 3000 - Advanced Language

Greek 1300 - Elementary Biblical Greek II

Hebrew 1100 - Elementary Hebrew II

Japanese 3001 - Advanced Language

Latin 1100 - Elementary Latin II

Philosophy 3280 - Philosophy of Language

Psychology 3240 - Psychology of Language

Spanish 3001 - Advanced Language

Instead of a course from the above list, students may, with the permission of the Department of Modern Languages, include one Topics or Series course with an emphasis on Linguistics offered by another discipline.

No more than one Independent Study (Linguistics 2990, 3990, 4990) or Applied Studies (Linguistics 2980, 3980, 4980) course may be counted towards the minor.

## j. Mathematics

The minor in Mathematics is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the major in Mathematics and the General Major in the Sciences if Mathematics is chosen as one of the disciplinary streams.

### Required courses:

Four courses (12.0 credit hours) in Mathematics

Two courses (6.0 credit hours) in Mathematics or Statistics at the 3000/4000 level

Students may **not** include Mathematics 0500 (Essential Mathematics), Mathematics 2090 (Number Systems), Independent Study courses (Mathematics or Statistics 2990, 3990, 4990) or Applied Studies courses (Mathematics or Statistics 2980, 3980, 4980) among the six courses required for the minor.

## k. Philosophy

The minor in Philosophy is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the major in Philosophy and the General Major in the Humanities if Philosophy is chosen as one of the disciplinary streams.

### Required courses:

Six courses (18.0 credit hours) in Philosophy and/or Logic, including at least one Philosophy or Logic course (3.0 credit hours) at the 3000/4000 level.

No more than one Independent Study (Philosophy or Logic 2990, 3990, 4990) or Applied Studies (Philosophy or Logic 2980, 3980, 4980) course may be counted towards the minor.

## l. Physics

The minor in Physics is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the major in Physics, the major in Remote Sensing, and the General Major in the Sciences if Physics is chosen as one of the disciplinary streams.

### Required courses:

<sup>1</sup> Physics 2000 - Introduction to Physics II

<sup>1</sup> Physics 2120 - Introduction to Physics III

<sup>2</sup> Physics 2130 - Waves, Optics and Sound

Physics 3750 - Contemporary Physics

### One of:

Physics 1000 - Introduction to Physics I

Physics 1050 - Introduction to Biophysics

### One of:

Astronomy 2020 - Modern Astronomy

Astronomy 2070 - The Solar System

Astronomy 3020 - Introduction to Cosmology

<sup>1</sup> Prerequisite required: Mathematics 1560; Corequisite required: Mathematics 2560.

<sup>2</sup> Corequisite required: Mathematics 1560.

## m. Political Science

The minor in Political Science is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the major in Political Science and the General Major in the Social Sciences if Political Science is chosen as one of the disciplinary streams.

### Required courses:

Six courses (18.0 credit hours) in Political Science, including at least one Political Science course (3.0 credit hours) at the 3000/4000 level.

No more than one Independent Study (Political Science 2990, 3990, 4990) or Applied Studies (Political Science 2980, 3980, 4980) course may be counted towards the minor.

## n. Religious Studies

The minor in Religious Studies is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the major in Religious Studies and the General Major in the Humanities if Religious Studies is chosen as one of the disciplinary streams.

### Required courses:

Religious Studies 1000 - Introduction to World Religions

One course in Religious Studies (3.0 credit hours) at the 3000/4000 level

Four additional courses (12.0 credit hours) in Religious Studies

Independent Study (Religious Studies 2990, 3990, 4990) or Applied Studies (Religious Studies 2980, 3980, 4980) courses may **not** be counted towards the minor in Religious Studies.

## o. Spanish

The minor in Spanish is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the major in French/Spanish and the General Major in the Humanities if Spanish is chosen as one of the disciplinary streams.

Courses taken through the Spanish Visiting Student program may be counted towards the minor.

### Required courses:

Six courses (18.0 credit hours) in Spanish, including at least one Spanish course (3.0 credit hours) at the 3000/4000 level.

No more than one Independent Study (Spanish 2990, 3990, 4990) or Applied Studies (Spanish 2980, 3980, 4980) course may be counted towards the minor.

## p. Women and Gender Studies

The minor in Women and Gender Studies is available as an adjunct to all majors in the B.A., B.Sc., and B.A.Sc. except the major in Women and Gender Studies and the General Major in the Social Sciences if Women and Gender Studies is chosen as one of the disciplinary streams.

### Required courses:

Women and Gender Studies 1000 - Knowing Bodies: An Introduction to Women and Gender Studies

Women and Gender Studies 2300 - Theorizing Women's Lives: Feminist Frameworks

Women and Gender Studies 2600 - Activism and Advocacy

Women and Gender Studies 2700 - Feminist Approaches to Research

Two Women and Gender Studies courses (6.0 credit hours) at the 3000/4000 level

No more than one Independent Study (Women and Gender Studies 2990, 3990, 4990) or Applied Studies (Women and Gender Studies 2980, 3980, 4980) course may be counted towards the minor.

## 18. CONCENTRATIONS

A concentration is a defined set of courses related to a major. In the Faculty of Arts and Science, concentrations are optional and require five courses (15.0 credit hours) in addition to the minimum requirements for the major or program. The one exception is the Post-Diploma B.Sc. in Geography with a Concentration in Geographical Information Science, where courses for the concentration are specified requirements for the program.

Students in certain majors in the B.A., B.Sc., or BASc. degree programs and in some post-diploma programs may declare a concentration. For students who complete all requirements, the concentration will be acknowledged on the official transcript.

Available concentrations are listed below:

### a. Concentration in Agricultural Business

- Major in Agricultural Studies (B.A. or B.Sc.)
- Major in Agricultural Biotechnology (B.Sc.)
- Post-Diploma B.A. in Agricultural Studies
- Post-Diploma B.Sc. in Agricultural Studies

### b. Concentration in Geographical Information Science

- Major in Agricultural Studies (B.Sc.)
- Major in Archaeology and Geography (B.A. or B.Sc.)
- Major in Environmental Science (B.Sc.)
- Major in Geography (B.A., B.Sc., or BASc.)
- Post-Diploma B.Sc. in Agricultural Studies
- Post-Diploma B.Sc. in Environmental Science

### c. Concentration in Legal Reasoning

- Major in Philosophy (B.A. or BASc.)

Required courses for the concentrations can be found in **Section 16 (Majors)** along with the requirements for the given major or in **Section 22** where requirements for each post-diploma program are outlined.

## 19. COMBINED DEGREES

There are combined 50-course programs leading to the degrees B.A./B.Ed. and B.Sc./B.Ed., and the degrees B.A./B.Mgt. and B.Sc./B.Mgt. Upon successful completion of the program the student receives the degree B.A. or B.Sc. from the Faculty of Arts and Science and the degree B.Ed. from the Faculty of Education or the degree B.Mgt. from the Faculty of Management. Neither degree is granted until the entire combined degrees program is completed. See **Part 13 - Combined Degrees**, for complete information.

## 20. B.A., B.Sc. or BASc. AFTER AN APPROVED DEGREE

### a. General Requirements

1. Completion of at least 20 courses (60.0 credit hours) with a grade point average of at least 2.00.

The program must be approved on an individual basis in advance by the Dean, and in some cases more than 20 courses (60.0 credit hours) may be required to satisfy all second degree and major requirements.

2. Completion of the General Liberal Education Requirement: six courses, two from each of List I, List II, and List III (see **Part 4 - Academic Regulations, Section 10, p. 83**).

3. No courses may be completed for credit towards the degree below the 2000 level, unless required for the major.
4. Completion of at least 10 courses (30.0 credit hours) from disciplines offered by the Faculty of Arts and Science or the Faculty of Fine Arts at the 3000/4000 level, excluding activity courses (labelled PHAC and MUSE).
5. Not more than three Independent Study courses (9.0 credit hours) may be completed for credit towards the degree.
6. Not more than three Disciplinary Credit Applied Studies courses (9.0 credit hours) may be completed for credit towards the degree. Students may, in addition, complete Applied Studies 2000, 2001, 2010, and 2011.
7. No courses from disciplines outside the Faculty of Arts and Science or the Faculty of Fine Arts may be completed towards the degree.
8. Residence Requirement: 20 courses (60.0 credit hours) taken at the University of Lethbridge after admission to the second degree program, including the last 10 (30.0 credit hours) taken for credit toward the degree.
9. Academic Standards: A cumulative grade point average of at least 2.00 must be maintained at all times.
10. Credit earned towards a previous degree may not be used toward the second bachelor's degree. However, recognition may be given for the content of such previous work in the major(s). In such cases, students will be required to complete appropriate 3000/4000-level courses in lieu of those for which exemption has been granted. Substitutions must be approved by the Dean, Faculty of Arts and Science, on recommendation from the Department Chair or Program Coordinator.

### b. Major Requirements

1. The majors(s) must be declared at the time of program approval. Please see **pp. 103-104** for a listing of majors available for B.A., B.Sc., and BASc. degrees. All requirements for the major(s) must be completed.
2. Students seeking a General Major for a B.A. or B.Sc. after an approved degree, must complete a modified 16-course General Major which includes at least four courses in each of three disciplinary streams, three additional courses from any of the available disciplinary streams, and one additional course. Please see **pp. 122-123** for more information on the General Majors.

## 21. B.A. or B.Sc. AFTER COMPLETION OF A PROFESSIONAL DEGREE

Students who initially complete an approved 30-course program in the Faculty of Arts and Science may attain the University of Lethbridge degree B.A. or B.Sc. after completing degree requirements in Dentistry, Law, Medicine and Social Work in professional Faculties elsewhere. Other professional programs may be approved on an individual basis.

Students completing other professional degrees in combination with the initial 30-course Arts and Science programs may be awarded the B.A. or B.Sc. degree upon approval of the Faculty of Arts and Science.

Students intending to complete the B.A. or B.Sc. requirements in the above manner must have their programs approved by the Dean or Dean's designate. It is recommended that interested students consult with an Academic Advisor early in their programs.

## 22. POST-DIPLOMA DEGREE PROGRAMS

### a. Post-Diploma Bachelor of Arts (B.A.) in Agricultural Studies

This program is directed toward graduates of approved two-year college diplomas in Agriculture. Graduates of other diploma programs in Agriculture will also be considered. See **Part 20 - Collaborating and Partnering Institutions** for a list of colleges with approved diplomas; website: [www.uleth.ca/postdiploma](http://www.uleth.ca/postdiploma). Students must complete at least 20 courses (60.0 credit hours), as follows, with a minimum grade point average of 2.00.

#### Required core (12 courses):

Agricultural Studies 1000 - The Evolution of Agriculture  
Agricultural Studies 3300 - Modelling of Agricultural Systems

Agricultural Studies 4000 - Seminar in Agricultural Issues  
Economics 1010 - Introduction to Microeconomics  
Economics 2750 - Quantitative Methods in Economics  
Economics 3300 - Agricultural Policy I  
Statistics 1770 - Introduction to Probability and Statistics

#### One of:

Economics 2150 - Economics of Agricultural Issues  
Economics 2350 - Economics of Agricultural Markets I

#### One of:

Philosophy 2001 - Introduction to Ethics  
Philosophy 2236 - Environmental Philosophy  
Philosophy 3402 - Biomedical Ethics

#### One of:

Economics 2900 - Economics and Business Statistics  
Statistics 2780 - Statistical Inference

#### One of:

English 1900 - Introduction to Language and Literature  
History 1000 - Western Civilization  
History 1200 - World History  
Philosophy 1000 - Introduction to Philosophy  
Religious Studies 1000 - Introduction to World Religions

One additional course (3.0 credit hours) from List I: Fine Arts and Humanities Courses

#### Required stream (Choose one of the following streams; 8 courses):

##### General Stream

Three courses (9.0 credit hours) at the 3000/4000 level from List I: Fine Arts and Humanities Courses and List II: Social Science Courses

One additional course (3.0 credit hours) from List I: Fine Arts and Humanities Courses and List II: Social Science Courses

Four additional courses (12.0 credit hours) from disciplines offered by the Faculty of Arts and Science

### Agricultural Economics Stream

Economics 1012 - Introduction to Macroeconomics  
Economics 3010 - Intermediate Microeconomic Theory  
Economics 3012 - Intermediate Macroeconomic Theory  
Economics 4300 - Agricultural Policy II

Two additional courses (6.0 credit hours) at the 3000/4000 level from List I: Fine Arts and Humanities Courses and List II: Social Science Courses

Two additional courses (6.0 credit hours) from disciplines offered by the Faculty of Arts and Science

#### Notes

To determine if a given course has a Fine Arts and Humanities designation or Social Science designation, see List I: Fine Arts and Humanities Courses and List II: Social Science Courses (see **Part 4 - Academic Regulations, Section 10.b., p. 83**).

No more than two Independent Study courses (3990 or 4990; 6.0 credit hours) may be counted towards the program.

Students with an interest in graduate study in Agriculture or recognition in professional societies should select their additional courses from Economics (3000/4000 level).

A student who successfully completes this degree program and major may apply to the Alberta Institute of Agrologists (AIA) to be registered as a Professional Agrologist within Alberta. Students should contact the Coordinator of Agricultural Studies early in the program for further information.

#### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/agst\\_ba\\_pd\\_gen](http://www.uleth.ca/ross/sequencing-plans/agst_ba_pd_gen) for a suggested sequencing plan for the Agricultural Studies major with a General stream in the Post-Diploma B.A. program.

See [www.uleth.ca/ross/sequencing-plans/agst\\_ba\\_pd\\_econ](http://www.uleth.ca/ross/sequencing-plans/agst_ba_pd_econ) for a suggested sequencing plan for the Agricultural Studies major with an Agricultural Economics stream in the Post-Diploma B.A. program.

#### Concentration: Agricultural Business (Optional)

Students in the Post-Diploma B.A. in Agricultural Studies degree program may declare a Concentration in Agricultural Business.

#### Required courses:

Management 2020 - Marketing  
Management 2100 - Introductory Accounting

#### Three of:

Economics 3030 - Managerial Economics  
Economics 3080/Management 3780 - Principles of Industrial Organization I  
Management 3010 - Management Law  
Political Science 2210 - Canadian Politics and Government  
<sup>1</sup> Political Science 3420/Management 3050 - Human Resource Management

#### Notes

<sup>1</sup> Has prerequisites: One of Management 2030 or one 2000-level Political Science course (3.0 credit hours), and one of Writing 1000 or a university English course (3.0 credit hours).

Students may not double count courses required for the Concentration in Agricultural Business in fulfilling requirements for the post-diploma program.

For students who complete all requirements, the Concentration in Agricultural Business will be acknowledged on the official transcript.

**Post-Diploma B.A. in Agricultural Studies**

**Number of courses required for program ..... 20**

*(Independent Study - Optional; may be counted in required courses for program)*

**Concentration: Agricultural Business (optional)**

**Number of courses required for concentration ..... 5**

**b. Post-Diploma Bachelor of Science (B.Sc.) in Agricultural Studies**

This program is directed toward graduates of approved two-year college diplomas in Agriculture. Graduates of other diploma programs in Agriculture will also be considered. See **Part 20 - Collaborating and Partnering Institutions** for a list of colleges with approved diplomas; website: [www.uleth.ca/postdiploma](http://www.uleth.ca/postdiploma). Students must complete at least 20 courses (60.0 credit hours), as follows, with a minimum grade point average of 2.00.

**Required core (12 courses):**

- Agricultural Studies 1000 - The Evolution of Agriculture
- Agricultural Studies 3300 - Modelling of Agricultural Systems
- Agricultural Studies 4000 - Seminar in Agricultural Issues
- Biology 1010 - Cellular Basis of Life
- Economics 1010 - Introduction to Microeconomics
- Economics 3220 - Environmental Economics
- Economics 3300 - Agricultural Policy I
- Geography 3210 - Agricultural Geography
- Statistics 1770 - Introduction to Probability and Statistics

**One of:**

- Philosophy 2001 - Introduction to Ethics
- Philosophy 2236 - Environmental Philosophy
- Philosophy 3402 - Biomedical Ethics

**One of:**

- English 1900 - Introduction to Language and Literature
- History 1000 - Western Civilization
- History 1200 - World History
- Philosophy 1000 - Introduction to Philosophy
- Religious Studies 1000 - Introduction to World Religions

One additional course from List I: Fine Arts and Humanities Courses

**Required stream (Choose one of the following streams; 8 courses):**

**Biological Sciences Stream**

- Biology 2000 - Principles of Genetics
- Biology 2200 - Principles of Ecology
- Chemistry 1110 - Chemistry for Life Sciences I
- Chemistry 2120 - Chemistry for Life Sciences II

**Four of:**

- Biology 3000 - Gene Expression and Regulation
- Biology 3105 - Signal Transduction
- <sup>1</sup>Biology 3310 - Developmental Biology

- Biology 3400 - Principles of Microbiology
- Biology 3420 - Animal Physiology
- Biology 3460 - Plant Physiology
- Biology 3520 - Invertebrate Zoology
- Biology 3530 - Vertebrate Zoology
- Biology 3560 - Integrative Plant Biology
- <sup>2</sup>Biology 3610 - Prairie Conservation
- Biology 3700 - Ecosystem and Community Ecology
- Biology 4100 - Advances in Agricultural Biotechnology
- <sup>3</sup>Biology 4170 - Plant Biotechnology
- Biology 4560 - Plant Development

**Geography Stream**

**Eight of:**

- Environmental Science 2000 - Fundamentals of Environmental Science
- Geography 2300 - Weather and Climate
- Geography 2700 - Geographical Data and Analysis
- Geography 2735 - Introduction to Geographical Information Science
- Geography 3075 - Environmental Resources Management
- Geography 3080 - Soils
- Geography 3400 - Hydrology I
- Geography 3700 - Cartography
- Geography 3720 - Remote Sensing
- Geography 3740 - Geographical Information Systems
- Geography 4060 - Agricultural Soil Management
- Geography 4065 - Irrigation Science
- Geography 4200 - Project in Agricultural Geography
- Geography 4400 - Hydrology II
- Geography 4415 - Integrated Watershed Management
- Geography 4725 - Advanced Remote Sensing
- Geography 4740 - Advanced Geographical Information Systems

**Notes**

- <sup>1</sup> Prerequisite required: *Biochemistry 2000.*
- <sup>2</sup> Prerequisite required: *Environmental Science 2000.*
- <sup>3</sup> Prerequisite required: *Biology 3210.*

To determine if a given course has a Fine Arts and Humanities designation, see List I: Fine Arts and Humanities Courses (see **Part 4 - Academic Regulations, Section 10.b., p. 83**).

No more than two Independent Study courses (3990 or 4990; 6.0 credit hours) may be counted towards the program.

Students may count a maximum of two Special Topics courses (i.e., Biology or Geography 3850 or 4850) towards the required stream provided:

1. They are clearly related to the stream; and,
2. They are approved by the Coordinator of Agricultural Studies.

Students wishing to pursue the Concentration in Geographical Information Science must complete Geography 2735 among the eight courses required in the Geography Stream.

A student who successfully completes this degree program and major may apply to the Alberta Institute of Agrologists (AIA) to be registered as a Professional Agrologist within Alberta. Students should contact the Coordinator of Agricultural Studies early in the program for further information.

### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/agtst\\_bsc\\_pd](http://www.uleth.ca/ross/sequencing-plans/agtst_bsc_pd) for a suggested sequencing plan for the Agricultural Studies major in the Post-Diploma B.Sc. program.

#### Concentration: Agricultural Business (Optional)

Students in the Post-Diploma B.Sc. in Agricultural Studies degree program may declare a Concentration in Agricultural Business.

#### Required courses:

Management 2020 - Marketing  
Management 2100 - Introductory Accounting

#### Three of:

Economics 3030 - Managerial Economics  
Economics 3080/Management 3780 - Principles of Industrial Organization I  
Management 3010 - Management Law  
Political Science 2210 - Canadian Politics and Government  
<sup>1</sup> Political Science 3420/Management 3050 - Human Resource Management

#### Notes

<sup>1</sup> Has prerequisites: One of Management 2030 or one 2000-level Political Science course (3.0 credit hours), and one of Writing 1000 or a university English course (3.0 credit hours).

For students who complete all the requirements, the Concentration in Agricultural Business will be acknowledged on the official transcript.

#### Concentration: Geographical Information Science (Optional)

Students in the Post-Diploma B.Sc. in Agricultural Studies degree program may declare a Concentration in Geographical Information Science.

#### Required courses:

Computer Science 1620 - Fundamentals of Programming I  
Geography 3720 - Remote Sensing  
Geography 3740 - Geographical Information Systems  
Geography 4725 - Advanced Remote Sensing  
Geography 4740 - Advanced Geographical Information Systems

#### Notes

Students may not double count courses required for the Concentration in Geographical Information Science in fulfilling requirements for the Geography stream.

For students who complete all the requirements, the Concentration in Geographical Information Science will be acknowledged on the official transcript.

#### Post-Diploma B.Sc. in Agricultural Studies

Number of courses required for program ..... 20

*(Independent Study - Optional; may be counted in required courses for program)*

#### Concentration: Agricultural Business (optional)

Number of courses required for concentration ..... 5

#### Concentration: Geographical Information Science (optional)

Number of courses required for concentration ..... 5

### c. Post-Diploma Bachelor of Science (B.Sc.) in Computer Science

This program is directed toward graduates of approved two-year college diploma programs in Computer System Technology or Computer Information Technology. Graduates of other diploma programs in these areas will also be considered. See **Part 20 - Collaborating and Partnering Institutions** for a list of colleges with approved diplomas; website: [www.uleth.ca/postdiploma](http://www.uleth.ca/postdiploma).

Students must complete at least 20 courses (60.0 credit hours), as follows, with a minimum grade point average of 2.00.

#### Required courses:

Computer Science 1820 - Discrete Structures  
Computer Science 2720 - Practical Software Development  
Computer Science 3615 - Computer Architecture  
Computer Science 3620 - Data Structures and Algorithms  
Computer Science 3740 - Programming Languages  
Mathematics 2000 - Mathematical Concepts

<sup>1</sup> Four additional courses (12.0 credit hours) in Computer Science at the 3000/4000 level

Two courses (6.0 credit hours) in Computer Science at the 4000 level, excluding Computer Science 4850 (Topics), Computer Science 4980 (Applied Studies), and Computer Science 4990 (Independent Study).

Four courses (12.0 credit hours) from List I: Fine Arts and Humanities

Four courses (12.0 credit hours) from List II: Social Sciences

#### Notes

<sup>1</sup> One of the additional 3000-level Computer Science courses may be replaced by a course from the following list:

*Physics 3900 - Intermediate Experimental Physics (Series) (Digital Electronics)*

*Any 3000/4000-level Mathematics course*

To determine if a given course has a Fine Arts and Humanities designation or a Social Science designation, see List I: Fine Arts and Humanities Courses and List II: Social Science Courses (see **Part 4 - Academic Regulations, Section 10.b., p. 83**).

No more than two Independent Study courses (3990 or 4990; 6.0 credit hours) may be counted towards the program.

Students may find that their diploma courses may overlap in content with some course offerings in the Computer Science program. However, the Department's offerings will often differ in focus and emphasis from diploma course offerings that bear superficially similar course descriptions. Students who have reservations about apparent duplication of offerings of Computer Science electives studied in their diploma programs are encouraged to pursue other elective offerings from the Department.

Students will be expected to have a working knowledge of the programming languages used by the Department in the delivery of Computer Science 1620 and Computer Science 2620. A student without this background will be expected to remedy any programming language deficiencies.

#### Suggested Sequencing Plan

See [www.uleth.ca/ross/sequencing-plans/cpsc\\_bsc\\_pd](http://www.uleth.ca/ross/sequencing-plans/cpsc_bsc_pd) for a suggested sequencing plan for the Computer Science major in the Post-Diploma B.Sc. program.

**Post-Diploma B.Sc. in Computer Science**

**Number of courses required for program ..... 20**

*(Independent Study - Optional; may be counted in required courses for program)*

**d. Post-Diploma Bachelor of Science (B.Sc.) in Environmental Science**

This program is directed toward graduates of approved two-year college diploma programs in Environmental Science or related areas. Graduates of other diploma programs in Environmental Science will also be considered. See **Part 20 - Collaborating and Partnering Institutions** for a list of colleges with approved diplomas; website: [www.uleth.ca/postdiploma](http://www.uleth.ca/postdiploma).

Students must complete at least 20 courses (60.0 credit hours), as follows, with a minimum grade point average of 2.00.

**Required courses:**

- Biology 1010 - Cellular Basis of Life
- Biology 2000 - Principles of Genetics
- Environmental Science 4000 - Selected Studies in Environmental Science II (Series)
- Geography 2300 - Weather and Climate
- Geography 2700 - Geographical Data and Analysis
- Geography 3740 - Geographical Information Systems

**One of:**

- Physics 1050 - Introduction to Biophysics
- Statistics 1770 - Introduction to Probability and Statistics

**One of:**

- Biology 3300 - Evolution
- One course (3.0 credit hours) in Biology at the 3000/4000 level chosen from the Biological Sciences Department's List 3 (Ecology and Evolutionary Biology), see **Section 16.i. (p. 112)**

Two courses (6.0 credit hours) in Biology at the 3000/4000 level chosen from among the Biological Sciences Department's List 1 (Cellular and Molecular Biology), List 2 (Organismal Biology), and List 3 (Ecology and Evolutionary Biology) courses, see **Section 16.i. (p. 112)**

Two courses (6.0 credit hours) in Geography or Geology at the 3000/4000 level, with a Science designation

Two lab-based courses (6.0 credit hours) in Chemistry at the 1000 level or above (preferably Chemistry 1110 - Chemistry for Life Sciences I and Chemistry 2120 - Chemistry for Life Sciences II)

Three courses (9.0 credit hours) from List I: Fine Arts and Humanities

One course (3.0 credit hours) from List II: Social Sciences

One course (3.0 credit hours) from List I: Fine Arts and Humanities or List II: Social Sciences

One additional course (3.0 credit hours) at the 3000/4000 level

**Notes**

To determine if a given course has a Fine Arts and Humanities, Social Science, or Science designation, see List I: Fine Arts and Humanities Courses, List II: Social Science Courses, and List III: Science Courses (see **Part 4 - Academic Regulations, Section 10.b., p. 83**).

No more than two Independent Study courses (3990 or 4990; 6.0 credit hours) may be counted towards the program.

Students may not take for credit those courses offered by Biological Sciences or Geography that have close equivalents in the college diploma program. These excluded courses include the following: Biology 1020, Biology 2200, Geography 1000, Geography 2735, Geography 3080, and Geology 2060.

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/envs\\_bsc\\_pd](http://www.uleth.ca/ross/sequencing-plans/envs_bsc_pd) for a suggested sequencing plan for the Environmental Science major in the Post-Diploma B.Sc. program.

**Concentration: Geographical Information Science (Optional)**

Students in the Post-Diploma B.Sc. in Environmental Science degree program may declare a Concentration in Geographical Information Science.

**Required courses:**

- Computer Science 1620 - Fundamentals of Programming I
- Geography 3720 - Remote Sensing
- Geography 4725 - Advanced Remote Sensing
- Geography 4740 - Advanced Geographical Information Systems

**One of:**

- Geography 4400 - Hydrology II
- Geography 4415 - Integrated Watershed Management
- Geography 4700 - Advanced Computer Mapping
- Geography 4710 - Remote Sensing Field Techniques
- Geography 4730 - Spatial Statistics
- <sup>1</sup>Geography 4750 - Glacial Processes, Measurements, and Models
- Geography 4751 - Project in Spatial Modelling
- Geography 4753 - Seminar in Remote Sensing

<sup>1</sup>Additional prerequisite required: *Geography 2030*

Students may not double count courses required for the Concentration in Geographical Information Science in fulfilling requirements for the major.

For students who complete, in addition to the minimum 20 courses for this B.Sc. degree program, all five courses, the Concentration in Geographical Information Science will be acknowledged on the official transcript.

**Post-Diploma B.Sc. in Environmental Science**

**Number of courses required for program ..... 20**

*(Independent Study - Optional; may be counted in required courses for program)*

**Concentration: Geographical Information Science (Optional)**

**Number of courses required for concentration ..... 5**

**e. Post-Diploma Bachelor of Science (B.Sc.) in Geography, With a Concentration in Geographical Information Science**

This program is directed toward graduates of approved two-year college diploma programs in geography, geomatics and land resource information systems. Graduates of other diploma programs in these areas will also be considered. See **Part 20 - Collaborating and**

**Partnering Institutions** for a list of colleges with approved diplomas; website: [www.uleth.ca/postdiploma](http://www.uleth.ca/postdiploma). Students must complete at least 20 courses (60.0 credit hours), as follows, with a minimum grade point average of 2.00.

**Required courses:**

- Computer Science 1620 - Fundamentals of Programming I
- Geography 1200 - Introduction to Human Geography
- Geography 2210 - Spatial Organization of Economic Activity
- Geography 2700 - Geographical Data and Analysis
- Geography 3720 - Remote Sensing
- Geography 3740 - Geographical Information Systems
- Geography 4725 - Advanced Remote Sensing
- Geography 4740 - Advanced Geographical Information Systems

**Two of:**

- Environmental Science 2000 - Fundamentals of Environmental Science
- Geography 2030 - Geomorphology
- Geography 2300 - Weather and Climate

**One of:**

- Geography 3235 - Quantitative Models for Geographic Analysis
- Geography 3700 - Cartography
- Geography 3710 - Field Techniques in the Earth Sciences
- Geography 3750 - GIS Applications in Human Geography

**One of:**

- Geography 4400 - Hydrology II
- Geography 4415 - Integrated Watershed Management
- Geography 4700 - Advanced Computer Mapping
- Geography 4710 - Remote Sensing Field Techniques
- Geography 4730 - Spatial Statistics
- Geography 4750 - Glacial Processes, Measurements, and Models
- Geography 4751 - Project in Spatial Modelling
- Geography 4753 - Seminar in Remote Sensing

One additional course (3.0 credit hours) in Geography, Geology or Archaeology at the 3000/4000 level, with a Science designation

One additional course (3.0 credit hours) in Geography, Geology or Archaeology at the 4000 level, with a Science designation

Three courses (9.0 credit hours) from List I: Fine Arts and Humanities

One course (3.0 credit hours) from List II: Social Sciences

One course (3.0 credit hours) from List I: Fine Arts and Humanities or List II: Social Sciences

One additional course (3.0 credit hours) at the 3000/4000 level

**Notes**

To determine if a given course has a Fine Arts and Humanities, Social Science, or Science designation, see List I: Fine Arts and Humanities Courses, List II: Social Science Courses, and List III: Science Courses (see **Part 4 - Academic Regulations, Section 10.b., p. 83**).

Students may not take for credit courses that have close equivalents in their diploma program. Students should consult the Program Coordinator for Geography (Geographical Information Science Concentration)

concerning possible adjustments to the above program requirements. Excluded courses include the following: Geography 1000 and Geography 2735.

**Suggested Sequencing Plan**

See [www.uleth.ca/ross/sequencing-plans/geog\\_gis\\_bsc\\_pd](http://www.uleth.ca/ross/sequencing-plans/geog_gis_bsc_pd) for a suggested sequencing plan for the Geography major, with a Concentration in GIS, in the Post-Diploma B.Sc. program.

**Post-Diploma B.Sc. in Geography, with a Concentration in Geographical Information Science**

**Number of courses required for program ..... 20**

*(Independent Study - Optional; may be counted in required courses for program)*

**23. PRE-NURSING PATHWAY**

The Faculty of Health Sciences and the Faculty of Arts and Science collaborate to offer a Pre-Nursing Pathway. Aimed at B.N. applicants who did not make the cut-off for admission, the program is designed to provide students with an opportunity to increase their grades for possible admission to the Bachelor of Nursing program the following year at the same time as completing requirements for that program.

The admission policies and procedures set out in Part 1 - Admissions of this Calendar apply. See **Part 1 - Admission - Section 3.a.1. (p. 28)** for general admission requirements.

Courses offered as part of the Pre-Nursing Pathway may include:

- Chemistry 0500 - Introduction to Modern Chemistry
- Health Sciences 1010 - Personal Health and Wellness
- Health Sciences 1160/Kinesiology 1160 - Human Anatomy and Physiology I
- Health Sciences 1161/Kinesiology 1161 - Human Anatomy and Physiology II
- Health Sciences 1170 - Human Development Across the Lifespan
- Health Sciences 2400 - Medical Microbiology
- Mathematics 0500 - Essential Mathematics
- Philosophy 1000 - Introduction to Philosophy
- Psychology 1000 - Basic Concepts of Psychology
- Sociology 1000 - Introduction to Sociology
- Writing 1000 - Introduction to Academic Writing
- General Liberal Education Requirements (GLER)

Refer to [www.uleth.ca/healthsciences/substitutions](http://www.uleth.ca/healthsciences/substitutions) for the list of courses which may be substituted in the Bachelor of Nursing program.

**Note:** *Students should see a Student Program Advisor in the Faculty of Health Sciences for program planning prior to course registration.*

**24. PRE-PROFESSIONAL TRANSFER PROGRAMS**

Students at the University of Lethbridge may prepare themselves to apply for admission to a number of professional programs offered at other institutions. Admission to these programs is by quota and is competitive.

Through arrangements between the University of Lethbridge and professional Faculties at other universities, transfer programs have been established for the professional programs listed below. Students should be aware that programs offered by other institutions are subject to change or cancellation without notice. The University of Lethbridge endeavours to provide students with complete, timely and accurate information but cannot guarantee the offerings of other institutions. At the time of Calendar publication, the information listed below was correct.

Some professional schools make specific course recommendations for students preparing to apply for admission. However, they reserve the right to admit students who have not followed these recommendations, but have chosen to study other disciplines. The programs suggested here are intended to give students priority access to courses satisfying the programs recommended by the professional schools. Students may choose alternative routes but do so at their own risk. Please refer to the Program Planning Guide Enclosures for Pre-Professional Transfer programs for more specific information.

Students are advised that 'D' grades are not transferable. As well, students may experience difficulties in transferring courses for which grades are not assigned: for example, courses for which Credit/Non-Credit or Pass/Fail appear on the transcript generally do not transfer.

Students who plan to apply to professional programs at other universities not listed below must have courses approved by the professional Faculty at the institution to which they intend to transfer. The University of Lethbridge cannot guarantee program requirements for such programs.

Students with an academic objective of Engineering select the Pre-Professional Transfer Program in Engineering (Engineering Transfer Program). Students with an academic objective of Dentistry, Journalism, Law, Medicine, Social Work and Veterinary Medicine select a University of Lethbridge degree program (either B.A. or B.Sc.) with an appropriate major. Note that Agricultural Biotechnology, Biochemistry, Biological Sciences, Chemistry, and Neuroscience are fields of study in their own right but may also prepare students for application to professional programs of Dentistry, Medicine and Veterinary Medicine.

	University of Transfer	U of L Program of Admission	Year of Program	First Major
Dentistry	Alberta	B.Sc.	1, 2, 3, 4	Agricultural Biotechnology/ Biochemistry/ Biological Sciences/ Chemistry/ Neuroscience
Engineering	Alberta	Pre-Professional Transfer Program in Engineering (Engineering Transfer Program)	1	n/a
Journalism	Regina	B.A.	1, 2, 3, 4	B.A. majors
Law	Alberta	B.A.	1, 2, 3, 4	B.A. majors
Law	Calgary	B.A.	1, 2, 3, 4	B.A. majors
Medicine	Alberta	B.Sc.	1, 2, 3, 4	Agricultural Biotechnology/ Biochemistry/ Biological Sciences/ Chemistry/ Neuroscience
Medicine	Calgary	B.Sc.	1, 2, 3, 4	B.Sc. majors
Social Work <sup>1</sup>	Calgary	B.A.	1, 2, 3, 4	B.A. majors
Veterinary Medicine	Saskatchewan	B.Sc.	1, 2, 3, 4	Agricultural Biotechnology/ Biochemistry/ Biological Sciences/ Chemistry/ Neuroscience

<sup>1</sup> The final two years of the Bachelor of Social Work program are offered at the University of Lethbridge by the University of Calgary Faculty of Social Work, Lethbridge Division. See **Part 12 - Social Work** in this Calendar.

For information about the B.A. or B.Sc. After Completion of a Professional Degree, see **Section 21, p. 141**.

#### a. Dentistry

Students with an academic objective of Dentistry are admitted to the B.Sc. program with a major in Agricultural Biotechnology, Biochemistry, Biological Sciences, Chemistry, or Neuroscience. Students are referred to **Sections 14 and 16** for information on the University of Lethbridge general degree and major requirements.

Minimum of 20 courses at the University of Lethbridge  
University of Transfer: Alberta

The basic requirement for admission to the Dentistry program is 20 courses (60.0 credit hours), including 6.0 credit hours in each of the following:

- Biology
- English
- General Chemistry
- Organic Chemistry
- Physics

In addition, 3.0 credit hours in each of the following is required:

- Biochemistry
- Statistics

*For detailed information about the Dentistry program at the University of Alberta, and planning the University of Lethbridge degree in order to meet those requirements, students are directed to the Program Planning Guide for the B.Sc. with the appropriate major, with the **Dentistry Enclosure**.*

#### b. Pre-Professional Transfer Program in Engineering (Engineering Transfer Program (Alberta))

Students with an academic objective of Engineering must apply to the Pre-Professional Transfer Program in Engineering (Engineering Transfer Program).

12 courses at the University of Lethbridge  
University of Transfer: Alberta

##### Required courses:

- Chemistry 1000 - General Chemistry I
- Chemistry 2000 - General Chemistry II
- Computer Science 1620 - Fundamentals of Programming I
- Engineering 1100 - The Engineering Profession I
- Engineering 2000 - Engineering Statics
- Engineering 2060 - Engineering Mechanics
- Engineering 2100 - The Engineering Profession II
- Mathematics 1410 - Elementary Linear Algebra
- Mathematics 1560 - Calculus I
- Mathematics 2560 - Calculus II
- Physics 2130 - Waves, Optics and Sound

##### One of:

- Anthropology 1000 - The Anthropological Perspective
- Economics 1010 - Introduction to Microeconomics
- Economics 1012 - Introduction to Macroeconomics
- English 1900 - Introduction to Language and Literature
- History 1000 - Western Civilization
- Linguistics 2300 - Introduction to Linguistics I: Phonetics and Phonology
- Philosophy 1000 - Introduction to Philosophy
- Political Science 1000 - Introduction to Political Science
- Psychology 1000 - Basic Concepts of Psychology
- Sociology 1000 - Introduction to Sociology

A minimum GPA of 2.50 is required for admission into the second year of Engineering at the University of Alberta. Students presenting a GPA lower than 2.50 may be offered admission based on available seats. Students are expected to complete the required 12 courses in two successive semesters.

*For detailed information about the Engineering program at the University of Alberta, and planning the University of Lethbridge program in order to meet those requirements, students are directed to the Program Planning Enclosure for **Engineering (Alberta)**.*

### c. Journalism

Students with an academic objective of Journalism are generally admitted to a B.A. program at the University of Lethbridge with a major of the student's choice. Majors in Economics, English, History, Political Science or Sociology may be of particular interest. Students are referred to **Sections 13 and 16** respectively for information on the University of Lethbridge general degree and major requirements.

Minimum of 20 courses at the University of Lethbridge  
University of Transfer: Regina

Among the courses completed for the B.A. degree, students should ensure that they have the following:

#### Required courses:

English 1900 - Introduction to Language and Literature

\* Political Science 2210 - Canadian Politics and Government

#### One of:

Economics 1010 - Introduction to Microeconomics

Economics 1012 - Introduction to Macroeconomics

#### One of:

English 2000 - Survey of Canadian Literature

English 2100 - Poetry

English 2200 - Drama

English 2300 - Prose Fiction

English 2400 - Survey of English Literature I

English 2450 - Survey of English Literature II

English 2500 - Survey of American Literature I

English 2550 - Survey of American Literature II

#### One of:

\* History 2710 - Canada to 1867

\* History 2720 - Canada Since 1867

**Two** courses in a language other than English (both must be in the same language at the 1000 level or higher), chosen from:

French

German

Japanese

Spanish

#### One of:

Logic 1000 - Critical Thinking

Mathematics 1410 - Elementary Linear Algebra

Mathematics 1510 - Calculus for Management and Social Sciences

Mathematics 1560 - Calculus I

#### One of:

Biology 1010 - Cellular Basis of Life

Biology 1020 - Diversity of Life

Chemistry 1000 - General Chemistry I

\* Geology 2060 - Physical Geology

Physics 1000 - Introduction to Physics I

Physics 1050 - Introduction to Biophysics

#### One of:

Art History/Museum Studies 1000 - Introduction to Art

Drama 1000 - Introduction to Dramatic Arts

Music 1000 - Introduction to Music

#### One of:

Linguistics 2300 - Introduction to Linguistics I: Phonetics and Phonology

Philosophy 1000 - Introduction to Philosophy

Religious Studies 1000 - Introduction to World Religions

Women and Gender Studies 1000 - Knowing Bodies: An Introduction to Women and Gender Studies

Additional English course

Additional language course

\* Has prerequisite.

The remaining courses are to be chosen from the Faculty of Arts and Science course offerings and should be in accordance with the General Liberal Education Requirement.

*For detailed information about the Journalism program at the University of Regina, and planning the University of Lethbridge degree in order to meet those requirements, students are directed to the Program Planning Guide for the B.A. with an appropriate major, and the **Journalism Enclosure**.*

### d. Law (Alberta)

Students with an academic objective of Law are generally admitted to a B.A. program at the University of Lethbridge with a major of the student's choice. Students are referred to **Sections 13 and 16** respectively for information on the University of Lethbridge general degree and major requirements.

30 courses at the University of Lethbridge  
University of Transfer: Alberta

To be considered for admission, prospective applicants must have an undergraduate degree or have completed at least 30 semester courses. In exceptional circumstances, students may apply to the Faculty of Law after completion of 20 courses.

The Faculty of Law, University of Alberta, does not require any specific courses or identify any particular discipline as a required area of study in preparation for Law School.

The University of Lethbridge recommends that a student should possess knowledge from such disciplines as Economics, History, Philosophy, and Political Science. While a pre-Law background in the pure sciences should not be seen as a disadvantage, the oral, literary and analytical skills developed in the humanities and social sciences provide an excellent foundation for the study of law.

*Students are directed to the Program Planning Guide for the B.A. with the appropriate major, with the **Law Enclosure (Alberta)**.*

### e. Law (Calgary)

Students with an academic objective of Law are generally admitted to a B.A. program at the University of Lethbridge with a major of the student's choice. Students are referred to **Sections 13 and 16** respectively for information on the University of Lethbridge general degree and major requirements.

30 courses at the University of Lethbridge  
University of Transfer: Calgary

Although students may apply after completion of 20 courses, most students are admitted after completion of 30 courses or an undergraduate degree.

There are no formal pre-Law requirements. The Faculty of Law at the University of Calgary recognizes that students may benefit from a diverse educational background and seeks, therefore, to attract applicants from business, humanities, pure science and social science undergraduate courses which develop analytical and reasoning skills. Courses which stress the use of the English language are advantageous in the preparation for a career in Law. The courses which best fit this description are found in the humanities and social sciences.

*Students are directed to the Program Planning Guide for the B.A. with the appropriate major, with the **Law Enclosure (Calgary)**.*

#### f. **Medicine (Alberta)**

Students with an academic objective of Medicine (Alberta) are admitted to the B.Sc. program with a major in Agricultural Biotechnology, Biochemistry, Biological Sciences, Chemistry, or Neuroscience. Students are referred to **Sections 14** and **16** for information on the University of Lethbridge general degree and major requirements.

Minimum of 20 courses at the University of Lethbridge  
University of Transfer: Alberta

Although students may apply after completion of 20 courses, most students are admitted after completion of an undergraduate degree.

All students considering Medicine at the University of Alberta must include the following:

6.0 credit hours in each of:

Biology  
English  
General Chemistry  
Organic Chemistry  
Physics

3.0 credit hours in each of:

Biochemistry  
Statistics

*For detailed information about the Medicine program at the University of Alberta, and planning the University of Lethbridge degree in order to meet those requirements, students are directed to the Program Planning Guide for the B.Sc. - with the appropriate major, with the **Medicine (Alberta) Enclosure**.*

#### g. **Medicine (Calgary)**

Students with an academic objective of Medicine (Calgary) are generally admitted to a B.Sc. program at the University of Lethbridge with a major of the student's choice. Majors in Agricultural Biotechnology, Biochemistry, Biological Sciences, Chemistry, and Neuroscience are of particular interest, although students from a wide variety of majors are admitted to this program. Admission is not restricted to students who have completed a B.Sc. Students are referred to **Sections 14** and **16** respectively for information on the University of Lethbridge general degree and major requirements.

Minimum of 20 courses at the University of Lethbridge  
University of Transfer: Calgary

Most successful applicants to the University of Calgary program will have completed a baccalaureate degree before admission. However, to be considered for

admission, prospective applicants must have completed a minimum of two full years of university courses at the time of application.

No degree is preferred and no specific courses are required for application or acceptance to the MD program at the University of Calgary. The admissions committee recommends that applicants consider taking as many of the courses listed below as their schedules allow, as the content of these courses will be helpful when writing the MCAT and during the MD program. Whether or not an applicant has taken these courses at the time of application will not be taken into consideration in scoring the academic record.

Suggested courses:

Biology  
Organic and Inorganic Chemistry  
Physics  
English  
Biochemistry  
Physiology  
Statistics or Calculus  
Psychology, Sociology, or Anthropology

Completion of the recommended courses does not guarantee admission.

*For detailed information about the Medicine program at the University of Calgary and planning the University of Lethbridge degree in order to meet those requirements, students are directed to a Program Planning Guide with the major of their choice, with the **Medicine (Calgary) Enclosure**.*

#### h. **Social Work**

Students with an academic objective of Social Work are generally admitted to a B.A. program at the University of Lethbridge with a major of the student's choice. Majors in Economics, Political Science, Psychology or Sociology may be of particular interest. Students are referred to **Sections 13** and **16** respectively for information on the University of Lethbridge general degree and major requirements.

Minimum of 19 courses at the University of Lethbridge,  
plus one specific prerequisite University of Calgary  
course (see below)

University of Transfer: Calgary

The Bachelor of Social Work is offered through the University of Calgary and may be taken at one of the three divisions: University of Calgary campus, University of Lethbridge campus or University of Alberta campus.

The nature of the Social Work profession is such that a student should possess a strong background in the Social Sciences before application to the Faculty. The University of Lethbridge offers courses which prepare a student for application to the University of Calgary, Faculty of Social Work.

Prospective applicants must enrol in Social Work 201 (Introduction to Social Welfare), which is offered on the University of Lethbridge campus. Students must first obtain a letter of permission granting Visiting Student Authorization to the University of Calgary from the Arts and Science Student Program Services Office as well as provide an official transcript of all post-secondary education.

For further details, see **Part 12 - Social Work** in this Calendar.

*Students are directed to the Program Planning Guide for the B.A. with the appropriate major, with the **Social Work Enclosure**.*

## i. **Veterinary Medicine**

Students with an academic objective of Veterinary Medicine are admitted to the B.Sc. program with a major in Agricultural Biotechnology, Biochemistry, Biological Sciences, Chemistry, or Neuroscience. Students are referred to **Sections 14** and **16** for information on the University of Lethbridge general degree and major requirements.

Minimum of 20 courses at the University of Lethbridge  
University of Transfer: Western College of Veterinary  
Medicine, University of Saskatchewan

The minimum admission requirements for Veterinary  
Medicine are as follows:

6.0 credit hours in each of:

Biology  
Chemistry  
English  
Mathematics or Statistics

**plus:**

3.0 credit hours in each of:

Biochemistry  
Genetics  
Introductory Microbiology  
Organic Chemistry  
Physics

**plus:**

21.0 credit hours of electives

*For detailed information about the Veterinary Medicine program at the University of Saskatchewan (Western College of Veterinary Medicine), and planning the University of Lethbridge degree in order to meet those requirements, students are directed to the Program Planning Guide for the B.Sc. with the appropriate major, with the **Veterinary Medicine Enclosure**.*