

Faculty of Agricultural, Life and Environmental Sciences

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30 The Faculty of Agricultural, Life and Environmental Sciences

More Than You Expect

We offer ten distinct Bachelor of Science degrees, including two jointly with the Faculty of Business, one with Faculté Saint-Jean, one with the Faculty of Native Studies, and one with the Faculty of Education. Our strength comes from our diversity and depth in both the natural and social sciences.

Undergraduate courses in the Faculty are enriched with opportunities for experiential learning in laboratories and beyond. Our students build on knowledge acquired in the classroom setting through undergraduate research projects, field schools, practicums, capstone courses, and others. The Faculty proudly endorses “Research Makes Sense for Students” to equip students for a lifetime of inquiry.

Scholarships, Awards, and Bursaries

More than 130 scholarships, awards, and bursaries worth \$580,000 are offered to undergraduate students in the Faculty, making our students among the highest award recipients on campus. This does not include other general scholarships offered by the University (available to all students) or scholarships outside the University from private businesses as well as government.

Professional Accreditation

Our graduates are eligible for Professional Accreditation in one or more of a number of organizations depending on their field of study. These include:

- Alberta Human Ecology and Home Economics Association
- Alberta Institute of Agrologists
- College of Alberta Professional Foresters
- College of Dietitians of Alberta
- Dietitians of Canada

Internship Program

The Faculty of Agricultural, Life and Environmental Sciences offers an Internship Program (IP) for students in all programs. Through the IP, students have an opportunity to take their studies beyond the classroom and participate in an 8 to 16 month, full-time, competitively paid work placement.

Graduate and Research Program

The Faculty has an active Graduate and Research Program. Students from around the world are enrolled in MA, MSc and PhD thesis programs, and non-thesis MA, MF and combined MA/MBA and MF/MBA programs. We are also actively involved in international research initiatives with many other countries in Asia, Africa, and South America.

31 The Professors

31.1 Teaching and Scholarship

Our professors are renowned across campus for their willingness and enthusiasm to provide excellent guidance and teaching to our students. Staff members help students choose options and advise them on career opportunities. Students are encouraged to explore their chosen fields and develop practical skills.

Faculty are involved in the full chain of scholarly activity, from generation (research) and integration to dissemination (teaching and extension). Our teaching and research activities have gained international recognition and various awards. Combined with our patented discoveries, they are a testament to our continued commitment to excellence.

University Cup

MA Price (2004)

University Professor and Fellowship in the Canadian Academy of Health Sciences

T Clandinin (2006)

Fellow of the Royal Society of Canada

WL Adamowicz (2007)

AHFMR Chair

KD Raine

Academic Woman's

Association Women of the Year Award

L McCargar (2006)

Alberta Agriculture Hall of Fame Induction

F Robinson (2006)

William Hardy Alexander Award for Excellence in Undergraduate Teaching

K Chandler (2007)

Canada Research Chair

WL Adamowicz

N Erbilgin

GR Foxcroft

M Gaenzle

U Hacke

F He

B Parlee (Joint appointment with

Native Studies)

A Schieber

W Weselake

J Gordin Kaplan Award for

Excellence in Research

WL Adamowicz (2005)

Killam Annual Professorship

E Macdonald (2007)

PC Boxall (2005)

J Fast (2004)

CJ Field (2003)

J Zwiazek (2002)

MA Naeth (2001)

VJ Liefiers (1999)

WL Adamowicz (1998)

DS Chanasyk (1998)

RJ Hudson (1995)

Martha Cook Piper Research

Prize

KD Raine (2001)

McCalla Research

Professorship

N Krogman (2007)

LM McMullen (2006)

RF Grant (2005)

PC Boxall (2004)

J Zwiazek (2003)

J Fast (2002)

RJ Hudson (2001)

FC Yeh (1999)

F Temelli (1996)

NSERC Chair

VJ Liefiers

Rutherford Teaching Award

FE Robinson (2004)

PV Blenis (2003)

MA Price (2000)

MA Naeth (1999)

A Lambert (1991)

Students' Union Awards for

Leadership in Undergraduate

Teaching

SS Narine (2004)

EK Okine (2003)

DR Korver (1999)

FE Robinson (1999)

PV Blenis (1998)

3M Teaching Fellowship

FE Robinson (2007)

MA Price (1999)

MA Naeth (1997)

Teaching Unit Award

The Poultry Group (2000)

Vargo Teaching Chair

MA Naeth (2005)

J Curtis, PhD

WT Dixon, PhD

L Dossdall, PhD

N Kav, PhD

DR Korver, PhD

SS Narine, PhD

H Rahman, PhD

A Schieber, PhD

D Spaner, PhD

Z Wang, PhD

R Zijlstra, PhD

Assistant Professors

B Ametaj, PhD

D Barreda, PhD (Joint

Appointment with Science)

M Betti, PhD

D Bressler, PhD

L Chen, PhD

L Doepel, PhD

M Dyck, PhD

A Farmer, PhD

GM Fasenko, PhD

M Gaenzle, PhD

L Guan, PhD

D Haley, PhD

C Li, PhD

D Mager, PhD (Joint

Appointment with Capital

Health)

V Mazurak, PhD

M Oba, PhD

S Proctor, PhD

R Renema, PhD

P Stothard, PhD

SS Strelkov, PhD

D Vine, PhD

N Willows, PhD

WV Wismer, PhD

D Wright, PhD

J Wu, PhD

Adjunct Professors

J Aalhus, PhD

S Acharya, PhD

D Ambrose, PhD

G Ball, PhD

VE Baracos, PhD

J Basarab, PhD

K Beauchemin, PhD

E Beltrarena, PhD

L Casey, PhD

G Clayton, PhD

D Crews, PhD

LA Goonewardene, PhD

L Hall, PhD

N Harker, PhD

J Helm, PhD

RJ Howard, PhD

SF Hwang, PhD

P Kolodziejczyk, PhD

H Lapierre, PhD

A Laroche, PhD

TA McAllister, PhD

P Mir, PhD

FM Natress, PhD

J Nyachiro, PhD

J O'Donovan, PhD

PB Pencharz, PhD

D Salmun, PhD

AL Schaefer, PhD

S Shah, PhD

K Turkington, PhD

J Wegner, PhD

W Wilms, PhD

J Wilson, PhD

M Zuidhof, PhD

Clinical Associate

S Mackenzie, RD

Clinical Instructors

B Roberts, RD

MJ Harland Gregoire, RD

M Day, RD

J Meredith, RD

TK Russell, RD

Professors Emeriti

W Andrew, PhD

AW Bailey, PhD

TK Basu, PhD

RT Berg, PhD

JP Bowland, PhD

KG Briggs, PhD

RJ Christopherson, PhD

E Donald, PhD

JJ Feddes, PhD

RT Hardin, PhD

Z Hawrysh, PhD

C Hiruki, PhD

P Jelen, PhD

H Knowles, PhD

M Makarechian, PhD

GW Mathison, PhD

W Ooraikul, PhD

MA Price, PhD

W Sauer, PhD

JS Sim, PhD

MS Spencer, PhD

P Sporns, PhD

ME Stiles, PhD

GR Stringam, PhD

JP Tewari, PhD

E Toop, PhD

VH Vandenberg, PhD

P Walton, PhD

Administrative Officers

JE Cars, BSc

B Irving, PhD

C Wilkinson, PhD

R Smith, PhD

Faculty Service Officer

MC McKay, BSc (H Ec)

Human Ecology

Professors

J Fast, PhD

N Keating, PhD

A Lambert, MA

B Lemire, PhD, Henry Marshall

Tory Chair (Joint Appointment

with History and Classics)

B Munro, PhD

Associate Professors

D Williamson, PhD

B Skrypnik, PhD

Assistant Professors

R Breitreuz, PhD

L Harach, PhD

R McQueen, PhD

A Oak, PhD

G Song, PhD

Adjunct Professors

J Andrews, MSc

M Doherty-Poirier, PhD

D Dosman, PhD

M Hardy, PhD

C Jardine, PhD

P McCormack, PhD

S McDaniel, PhD

K Raine, PhD

L Strain, PhD

Professors Emeriti

D Badir, MSc

L Capjack, MSc

EM Crown, PhD

T Dennis, MSc

N Gibson, PhD

A Kernalaguen, PhD

N Kerr, PhD

D Kieren, PhD

E Richards, PhD

Faculty Service Officer

K Chandler, MSc

I Karsten, PhD

Renewable Resources

Professor and Chair

JR Spence, PhD

Professors

PV Blenis, PhD (Joint

Appointment with

Agricultural, Food and

Nutritional Science)

DS Chanasyk, PhD

PG Comeau, PhD

BP Dancik, PhD (Joint

Appointment with Devonian

Botanic Garden)

RJ Hudson, PhD (Joint

Appointment with

Agricultural, Food and

Nutritional Science)

NG Juma, PhD

G Kachanoski, PhD

VJ Liefiers, PhD

SE Macdonald, PhD

MA Naeth, PhD (Joint

Appointment with

Agricultural, Food and

Nutritional Science)

M Tyree, PhD

PM Woodard, PhD

FC Yeh, PhD

J Zwiazek, PhD

Associate Professors

GW Armstrong, PhD

S Chang, PhD

Y Feng, PhD

AL Foote, PhD

RF Grant, PhD

F He, PhD

JR King, PhD (Joint Appointment

with Agricultural, Food and

Nutritional Science)

SA Quideau, PhD

U Silins, PhD

Assistant Professors

N Erbilgin, PhD

U Hacke, PhD

A Hamann, PhD

Professors Emeriti

A Bailey, PhD
 JA Beck, PhD
 CF Bentley, PhD
 JR Butler, PhD
 F Cook, PhD
 P Crown, PhD
 KW Domier, PhD
 MJ Dudas, PhD
 AK Hellum, PhD
 FV MacHardy, PhD
 B McQuitty, PhD
 M Mico, PhD
 PJ Murphy, MScF
 MPK Nyborg, PhD
 S Pawluk, PhD
 JA Robertson, PhD
 RL Rothwell, PhD
 S Titus, PhD
 GR Webster, PhD
 RW Wein, PhD

Administrative Officers

S Gooding, BSc
 RL Longworth, BA (Hon), BSc

Faculty Service Officers

R Belland, PhD (Joint
 Appointment with Devonian
 Botanic Garden)
 R Pelletier, MSc, MA

Rural Economy**Professor and Chair**

EW Goddard, PhD (Cooperative
 Chair in Agricultural
 Marketing and Business)

Professors

WL Adamowicz, PhD
 PC Boxall, PhD
 SR Jeffrey, PhD
 MK Luckert, PhD

Associate Professors

DJ Davidson, PhD (Joint
 Appointment with Renewable
 Resources)

NT Krogman, PhD

J Parkins, PhD

J Rude, PhD

JR Unterschultz, PhD

Assistant Professors

Sven Anders, PhD

SB Cash, PhD

C Dridi, PhD

S Mohapatra, PhD

CG Jardine, PhD

TK Nilsson, PhD

BL Parlee, PhD (Joint

Appointment with Native
 Studies)

BE Steiner, PhD

Adjunct Professors

M Broadway, PhD

G Hauer, PhD

H Krahn, PhD

BL McFarlane, PhD

R Naidoo, PhD

DW Ng, PhD

FJ Tough, PhD

M Weber, PhD

B White, PhD

Professors Emeriti

LP Apedaile, PhD

M Cox-Bishop

DS Gill, PhD

MH Hawkins, PhD

ML Lerohl, PhD

E Murray, PhD

TA Petersen, PhD

WE Phillips, PhD

JJ Richter, PhD

W Schultz, PhD

E Tyrczniewicz, PhD

MM Veeman, PhD

TS Veeman, PhD

BSc in Nutrition and Food Science**Majors:**

Food Science and Technology
 Nutrition
 Nutrition and Food

Pre Professional Program**Pre-Veterinary Medicine**

For further information, visit Student Services at 231 General Services Building, or call us at (780) 492-4933 or 1-800-804-6417 (Western Canada), or e-mail questions@afhe.ualberta.ca. Our homepage is at www.afhe.ualberta.ca.

32.2 Faculty Objectives

Our undergraduate mission is to promote the development of graduates who are scientifically competent; sensitive to environmental, global, and other social issues; creative; and capable of leadership in addressing challenges faced by individuals, families, and the agriculture, forestry, food, and other natural resources sectors. The Faculty strives to develop the following skills and traits in its students:

- (1) Critical and creative thinking skills: the ability to analyze, integrate, and extrapolate information;
- (2) Good judgment in problem solving and decision making;
- (3) Good communication skills: literacy, speaking, and listening;
- (4) An appreciation of knowledge and education, and a commitment to continuous learning; and
- (5) An appreciation and understanding of international and cross-cultural considerations.

The Baccalaureate degrees in the Faculty provide students with a broad education and comprehensive preparation in their specialties. Programs provide students with

- (1) a solid foundation in applicable social, physical, and biological sciences, and in the humanities. Programs stress more than simple proficiency in these disciplines; they offer courses that feature an integrated, multidisciplinary treatment of subjects;
- (2) awareness of current issues in the various disciplines and the ability to solve problems in their chosen occupations.
- (3) the necessary academic background for graduate studies.

32 General Information

32.1 General Information

The Faculty of Agricultural, Life and Environmental Sciences administers undergraduate programs that lead to the following BSc degrees.

BSc in Agricultural/Food Business Management**Majors:**

Agricultural Business Management
 Food Business Management

BSc in Agriculture**Majors:**

Agricultural and Resource Economics
 Animal Science
 Crop Science
 Range and Pasture Management
 Sustainable Agricultural Systems

BSc in Environmental and Conservation Sciences**Majors:**

Conservation Biology
 Environmental Economics and Policy
 Human Dimensions of Environmental Management
 Land Reclamation
 Wildlife and Rangeland Resources Management

BSc in Environmental and Conservation Sciences - Bilingual**Majors:**

Conservation Biology
 Environmental Economics and Policy
 Human Dimensions of Environmental Management
 Land Reclamation
 Wildlife and Rangeland Resources Management

BSc in Environmental and Conservation Sciences/BA in Native Studies Combined Degrees

Major in Human Dimensions of Environmental Management

BSc in Forest Business Management**BSc in Forestry****BSc in Human Ecology****Majors:**

Family Ecology
 Textiles and Clothing

BSc in Human Ecology/BEd Combined Degrees

33 Faculty Regulations

33.1 Admission and Transfer

General University admission requirements are detailed in §§13 and 14. Detailed admission requirements for the Faculty of Agricultural, Life and Environmental Sciences are specified in §15.1.

The Faculty of Agricultural, Life and Environmental Sciences functions under enrolment management. As such, the Faculty's total student enrolment is limited. All applications with the minimum Admission Grade Point Average (AGPA) are evaluated and ranked as part of an applicant pool. Spaces in programs are allocated to the top applications in the applicant pool downward until the spaces in the programs are filled. Therefore, in any given year, the AGPA cutoff to a degree program may be higher than the minimum AGPA required for consideration.

Applicants should indicate their choice of a degree and major on their application. Those who have not selected a major by the end of their first year in the program shall be required to declare one before registering for the next academic year.

- (1) **Residence Requirement:** A maximum of two years of transfer credit completed outside the University of Alberta will be granted toward an undergraduate degree in the Faculty of Agricultural, Life and Environmental Sciences. This consists of ★60 or its equivalent (10 full-courses or 20 half-courses). A minimum of ★60 must be completed at the University of Alberta, of which a minimum of ★30 must be completed while registered in this Faculty. However, the amount of transfer credit granted and the amount of credit completed while registered in this Faculty will vary depending on the requirements of the particular degree. Students are advised to discuss their course and program requirements with Student Services or the Associate Dean (Academic), 231 General Services Building.

- (2) **Letter of Permission:** Following initial admission, students are expected to complete all requirements at the University of Alberta. Students may apply for permission to take courses at another institution for application to their program here if
- they are degree students in the Faculty of Agricultural, Life and Environmental Sciences;
 - they present Satisfactory academic standing (i.e., Fall/Winter Grade Point Average of 2.0 or greater).
- Approval is not granted when the student has already received the maximum allowable transfer credit. There is no obligation to grant transfer credit unless prior permission has been obtained from Student Services. Qualified students must contact Student Services, 231 General Services Building to obtain the necessary forms and approval before enrolling at another institution.
- (3) **Exchange Programs:** For students already admitted to a program in the Faculty of Agricultural, Life and Environmental Sciences who are participating in approved international exchange programs, credit is considered on a course-by-course basis. The residence requirement defined in (1) above applies to students participating in such exchanges.

33.2 Undergraduate Program Bloodborne Pathogens Policy

The University of Alberta recognizes its duty to minimize the risk of transmission of bloodborne pathogens to/by individuals studying or working at this University.

The Bloodborne Pathogens policy limits the possibility of transmission of bloodborne pathogens within the educational setting. The University recognizes, however, that it is not possible to completely eliminate the risk of infection (see §108.12, *General Faculties Council Policy Manual*).

The Faculty of Agricultural, Life and Environmental Sciences in accordance with the University of Alberta policies and other available guidelines, has developed the following policies concerning bloodborne pathogens. These policies are to be reviewed and adapted, as further information on bloodborne pathogens becomes available.

For students in the BSc Nutrition and Food Science program who are accepted into the Integrated Dietetic Internship, immunization prior to the first internship placement is required. However, for project assistants in the biological sciences areas, Hepatitis B surface antigen testing will be performed by the University Health Centre. For those students who test negative for the Hepatitis B surface antigen (HbsAg), Hepatitis B vaccination will be required. See §109 of the *General Faculties Council Policy Manual* or contact Student Services (231 General Services Building) for details about testing and immunization.

Program restrictions will be applied when necessary to minimize the risk of transmission of bloodborne pathogens from students to other students, experimental subjects and service clients. Program restrictions, in keeping with reasonable accommodation guidelines, can be expected in cases where students test positive for any bloodborne pathogen, or refuse to complete the screening questionnaire, or refuse a questionnaire-based requirement for Hepatitis B testing. Program restrictions may include prohibition from participating in certain activities and procedures performed as part of research, service testing or teaching function.

Since the risk of HIV transmission from students to other students, service clients and experimental subjects is very low for the procedures followed in these settings, HIV risk assessment and testing will not be made a requirement at this time. However, all students accepted into the Faculty of Agricultural, Life and Environmental Sciences are encouraged to undergo HIV testing whenever concerns about infection arise.

Note: For updates on changes to medical testing and immunization refer to the Faculty Office.

33.3 Practicum Placements, Professional Practice and the Public Interest

The Dean, or a designate acting on behalf of the Dean, may immediately deny assignments of a student, withdraw a student from, or vary terms, conditions or site of a work experience placement or practicum (Internship, Co-operative Education, Integrated Dietetics and the Human Ecology Practicum), if the Dean or designate has reasonable grounds to believe that this is necessary in order to protect the Public Interest. Refer to §23.8.2 Practicum Placements, Professional Practice and the Public Interest and §87, *General Faculties Council Policy Manual*.

33.4 Academic Standing and Graduation

(1) Academic Performance

Academic standing will be assessed on the basis of a grade point average (GPA). Students are expected to maintain a GPA of at least 2.0. See §§23.4(6) and 23.9.2 for information on calculation of GPAs and the academic record.

A review of academic performance is conducted for each student at the end of each Fall/Winter. Decisions regarding continuation will be based on courses completed during Fall/Winter only. Any courses completed during Spring/Summer will not be considered as part of the decision on academic standing.

The assignment and reassignment of academic standing are based on a student's performance in a minimum of ★9. If, at the time of review, the student has attempted fewer than ★9 since the last assignment of academic standing, the review will be deferred and the academic standing assigned at the last review will remain in effect until the next review.

(2) Continuation in BSc in Nutrition and Food Science (Nutrition Major)

Continuation in the BSc in Nutrition and Food Science (Nutrition Major) requires a GPA of at least 3.0. In addition, continuation into fourth year requires a combined GPA of 3.0 in NUTR 301 and 302.

Students who do not attain the required GPAs will be moved to their previous degree program in the Faculty (provided they are not Required to Withdraw). Students who transferred from another Faculty or institution directly into the Nutrition major will be moved to the NUTS major that best fits their completed courses. Those students may choose to apply to move to any of the following programs; the Food Science and Technology major (see §§15.1.8 and 34.12.2), the Nutrition and Food major (see §§15.1.8 and 34.12.3) or the BSc in Food Business Management (see §§15.1 and 34.3). The Academic Standing section below will then be applied.

(3) Application of Academic Standing

a. **Satisfactory Standing** [GPA 2.0 or higher; GPA between 2.0 and 2.9 for BSc in Nutrition and Food Science (Nutrition major), see §33.4(2)]. Students who maintain a satisfactory standing are permitted to continue their studies in the Faculty subject to meeting the specific requirements of their degree and the general requirements of the University of Alberta.

b. **Marginal Standing** (GPA 1.7 to 1.9, inclusive). Students receiving their first marginal standing are permitted to continue their studies in the Faculty under academic warning. At the next assignment of academic standing, such students must present a Fall/Winter GPA of at least 2.0 on a minimum of ★9 to clear academic warning and continue their studies with Satisfactory Standing.

Students with Marginal Standing twice during their program in the Faculty will be required to withdraw (see d. Required to Withdraw).

c. **Unsatisfactory Standing** (GPA of 1.6 or lower). Students with unsatisfactory standing are required to withdraw (see d. Required to Withdraw).

Students who are required to withdraw from the Faculty at the end of Fall/Winter may not register for the following Summer or Fall/Winter Terms. Students who register for Summer or Fall/Winter courses prior to the requirement to withdraw will have their registration cancelled without penalty.

d. Requirement to Withdraw

Students with Unsatisfactory Standing or who are placed on Marginal Standing twice during their program will normally be required to remain out of the Faculty (required to withdraw).

i. Students who have completed less than ★60 and who have achieved a GPA of between 1.3 and 1.6 may be permitted to continue at the University of Alberta in the Fresh Start program providing they have not previously been required to withdraw from any postsecondary program.

The Faculty will determine whether to recommend a student for participation in the Fresh Start program and will notify the student of that option. Successful completion of ★18 with a GPA of at least 2.7 or ★24 with a GPA of at least 2.0 [2.7 for the Business Management programs and 3.0 for the BSc in Nutrition and Food Science (Nutrition Major)] will be required for readmission. Further detailed information can be found in §§14.5, 23.6.2(3)a. and 220.5.

If successful in the Fresh Start program and all conditions specified by Open Studies and the Faculty have been fulfilled, students may apply for readmission to the Faculty as transfer students as described in §15.1.9;

- ii. Students may discontinue studies for one year and apply for readmission. Students who are readmitted will return on academic probation as described in Section §23.6.2 subject to the terms specified by the Faculty at the time of the requirement to withdraw.
- iii. Students who complete ★18 transferable to the University of Alberta with an AGPA of 2.7 or ★24 transferable to the University of Alberta with an AGPA of 2.0 (2.7 for the Business Management programs and 3.0 for the BSc in Nutrition and Food Science (Nutrition Major)) at another postsecondary institution may reapply for admission to the Faculty, unless they have been required to withdraw more than once from any postsecondary programs [see §15.1.9 (I)(4)]. See §23.6.2(3)a.
- iv. Students may petition their Required to Withdraw status and if successful will proceed on probation. At the next assignment of academic standing, such students must raise their Fall/Winter GPA to at least 2.0. Should their Fall/Winter GPA fall below 2.0 at anytime during the rest of their program they will be required to withdraw and will not be readmitted to the Faculty.
- v. Students who have been required to withdraw and who, after being readmitted, again fall below a Fall/Winter GPA of 2.0 will be required to withdraw and will not be readmitted to the Faculty.

Note: Students with marginal standing or who are on academic probation are only permitted to interrupt their programs with the prior, written approval of the Associate Dean (Academic). Should students in either of these categories interrupt their programs for more than twelve months without prior approval, readmission will not be granted unless the student meets the current readmission criteria.

- (4) **First-Class Standing:** For the purposes of scholarships and awards, First-Class Standing in a given year is awarded to any undergraduate student who obtains a GPA of not less than 3.5, the GPA to be computed on a minimum of ★24 taken during that year, the year to consist of Fall/Winter. Students who attend for only one term of Fall/Winter are eligible if they complete at least ★12 with a minimum GPA of 3.5.
- (5) **Dean's List:** This designation is given to students who achieve a GPA of at least 3.7 on a minimum of ★18 in Fall/Winter. Students who attend for only one term of Fall/Winter are eligible if they complete at least ★9 with a minimum GPA of 3.7.
- (6) a. **Application for Graduation:** Students must apply for graduation on Bear Tracks under "Academics" at (<https://www.beartracks.ualberta.ca>) by February 1 for Spring Convocation or by September 1 for Fall Convocation.
- b. **Convocation:** Students completing degree requirements during the Fall Term or Winter Term will graduate at Spring Convocation; those completing degree requirements during the Spring/Summer will graduate at Fall Convocation.

(7) Curriculum and Graduation

The programs for the BSc degrees in Agricultural/Food Business Management, Agriculture, Environmental and Conservation Sciences, BSc (Environmental and Conservation Sciences–Bilingual), BSc (Environmental and Conservation Sciences)/BA (Native Studies) Combined Degrees, Forest Business Management, Forestry, Human Ecology, Human Ecology/BEEd Combined Degrees, and Nutrition and Food Science, must conform to the descriptions in §§34.3 to 34.13, respectively. BSc in Environmental and Conservation Sciences/BA in Native Studies Combined students should also see §34.7.2. Although students are advised to discuss their programs with an Academic Advisor, students are ultimately responsible for the completeness and accuracy of their registrations.

Students registered in the BSc in Forestry and BSc in Forest Business Management programs are required to complete Forestry Field Schools (FOR 101, 302, 303, and 304). Students registered in the BSc in Environmental and Conservation Sciences, the BSc in Environmental and Conservation Sciences – Bilingual and the BSc in Environmental and Conservation Sciences/BA in Native Studies programs are required to complete ENCS Field School (ENCS 207).

Students registered in the following BSc degree programs require ★120 to graduate: Agriculture, Agricultural/Food Business Management, Environmental and Conservation Sciences, Human Ecology, and Nutrition and Food Science. Students registered in the BSc in Forestry and Forest Business Management degree programs require ★123 to graduate. Students registered in the BSc in Human Ecology/BEEd and the BSc in Environmental and Conservation Sciences/BA in Native Studies Combined Degrees require ★150 to graduate.

(8) Courses Extra to the Degree

Courses successfully completed while registered in a program which are not being used for degree credit are known as courses extra to the degree. Such courses are, however, included in the assessment of academic standing. Students who register for more than a minimum number of courses for graduation should designate the additional courses as extra. In order to exclude courses in excess of the minimum requirement from the contract for graduation, students must designate such courses as "extras" at the time of registration for their final year.

(9) Graduation Grade Point Average

To be eligible for graduation from any of the programs offered by the Faculty of Agricultural, Life and Environmental Sciences, students must present Satisfactory Academic Standing [see (10) below] and obtain a GPA of at least 2.0 [3.0 for BSc in Nutrition and Food Science (Nutrition major)] on their last ★60 normally completed during the third and fourth years.

Where more than ★60 were completed in the last two years, the grades from all courses completed in the last year will be used in this calculation. Additional credits from the previous term(s) (whether completed at this university or at another institution) will be used as necessary to make the ★60 requirement.

Where fewer than ★60 were completed in the last two years, the grades from all courses completed in the last two years will be used in this calculation. Additional credits from the previous term(s) (whether completed at this university or at another institution) will be used as necessary to make the ★60 requirement. The grade points for additional courses needed to make ★60 will be calculated by multiplying the GPA of all courses completed in that term by the number of credits required to make ★60.

Where students have designated successfully completed courses extra to the degree, the designated courses will not be included in the calculation of the graduation GPA.

(10) Extension to the Graduating Year

Students who have successfully completed at least ★120, ★123 or ★150 [for programs as indicated in (6)] who do not meet program requirements for graduation, and who are otherwise eligible to continue in their program of study, may continue to register to the end of the next Fall/Winter of study in order to meet graduation requirements.

Students who have been given their first assignment of "Marginal Standing" (i.e. Academic Warning) in their graduating year, may continue to register to the end of the next Fall/Winter of study. Students must complete a minimum ★9 to a maximum ★15 to meet the "Satisfactory Standing" requirement for graduation [see (8) above].

Students who are in Unsatisfactory Standing, (i.e., Required to Withdraw), may petition/appeal to be allowed to complete one further Fall/Winter of study to meet the "Satisfactory Standing" for graduation requirements. If graduation requirements are not met within the Fall/Winter period, such students will be required to withdraw and will not normally be readmitted.

(11) Graduation with Distinction

This designation is awarded to a student achieving a grade point average of 3.5 or greater on the last ★60. The same calculation as detailed in Graduation Grade Point Average in (8) above applies.

(12) Reexamination Policy

See §23.5.5 for University Regulations.

(13) Nonstandard course load

Students wishing to take more than ★15 in a term must have satisfactory standing and approval of an Academic Advisor and Student Services, 231 General Services Building.

33.5 Interruption of Studies

Students who wish to take a break from studies for more than 12 months follow the new program requirements when they return to the Faculty. Permission to follow their current requirements can be requested by writing the Associate Dean (Academic) at least 14 days prior to the beginning of the term the student wishes to miss.

33.6 Time Limit to Complete Program

Although there is no time limit for degree completion, program requirements change with time. Eight years from the year of original admission, students who have not yet completed their degree and wish to do so must follow the program

requirements in the current *Calendar*. Exception requests must be submitted to the Associate Dean (Academic).

33.7 Petitions and Appeals

The Faculty of Agricultural, Life and Environmental Sciences has petition and appeal procedures so that students who encounter special problems relating to academic standing, grade or course concerns, and program requirements have them reviewed in an equitable manner. A copy of these Faculty regulations regarding petitions and appeals may be obtained from Student Services, 231 General Services Building.

Note: Deadlines exist for submission of petitions and appeals. Contact the Faculty for details.

Under certain conditions, an unsuccessful appeal within the Faculty may be carried to the General Faculties Council Academic Appeals Committee. See §23.8.

33.8 Student Advisory Services

Undergraduate students seeking advice on academic matters should do the following:

- (1) For answers to general questions about careers, course content, fields of specialization, and preparation for graduate study, students should consult an Academic Advisor. A list of Academic Advisors is available from Student Services, 231 General Services Building.
- (2) For information regarding Faculty regulations on admission, readmission, program requirements, transfer credit, course registration, withdrawal, and graduation requirements, students should consult Student Services, 231 General Services Building.
- (3) Students who are encountering special difficulties related to their programs or to Faculty decisions, and students with problems of an individual nature, should contact the Associate Dean (Academic), 231 General Services Building.

34 Programs of Study

34.1 Degrees Offered

The Faculty offers programs leading to ten BSc degrees with a common structure (see §32.1 for a complete program listing). Curricular elements are drawn from the natural and social sciences and consist primarily of courses offered by the Faculty. Foundation courses, which provide basic background principles, are also offered by the Faculties of Arts, Business and Science.

- (1) **Program Core:** The Program Core consists of the central program elements in each degree.
- (2) **Requirements of the Major:** The major focuses specialization within each degree. Most programs offer majors, and some allow a double major. In those programs, one or two majors must be declared (see Note).
- (3) **Requirements of Minors:** Minors provide structured customization of the degree. Not all programs and major, include minors. Whether minors are optional or required, students who will complete a minor must declare it (see Note).
- (4) **Approved Program Electives (APEs):** APEs build on the requirements of the major and allow some customization of the learning experience. These groupings further develop depth of knowledge in key aspects of the major. Most APEs are taken at the senior level; normally only ★6 APEs are allowed at the 100- and 200-level. APEs should be selected from lists developed annually by the Faculty; additional assistance is available from Academic Advisors (see Note).
- (5) **Free Electives:** Free Electives allow students to broaden their background and knowledge base. These courses may build on their discipline or be of personal interest but unrelated to their program.
- (6) **Capstone Courses:** Capstone Courses synthesize knowledge and skills learned throughout the four years of the program. These courses are integrative and experiential, and are taken in the final year. The Faculty reviews potential Capstone Courses annually to ensure that specific criteria

are met. Some programs and majors specify the Capstone Course that must be taken (see Note under individual programs or majors); others allow selection from a list of courses or specify a given course in a given year (see Note below).

- (7) **Course Sequencing:** Students should complete all junior requirements before taking senior courses. 100-level courses from Program Cores should be taken in first year. Prerequisites must be followed and considered when planning course sequencing. Prerequisites and corequisites for each course are found in the Courses Listings section of the *Calendar*.

Note: Forms to declare majors and minors, lists of APE courses and lists of Capstone Courses for a given year are available from Student Services, 231 General Services Building. The lists are also posted at www.afhe.ualberta.ca

The Faculty also jointly offers two BSc degree programs with the Faculty of Business in Agricultural/Food Business Management and Forest Business Management. The Faculty offers two combined degrees, a BSc Human Ecology/BEEd and a BSc Environmental and Conservation Sciences/BA Native Studies. In the combined degrees programs students can complete two degrees in five years. The Faculty offers a four year BSc Environmental and Conservation Sciences–Bilingual degree jointly with Faculté Saint-Jean.

34.2 Internship and Cooperative Education Programs

Students in the Faculty of Agricultural, Life and Environmental Sciences have the opportunity to complete a paid work experience component as part of their program. Two options, detailed in §§34.2.1 and 34.2.2 are available.

34.2.1 Internship Program

The Internship Program is coordinated by the Faculty and is open to students registered in one of the Faculty programs.

The Internship Program provides experiential learning to augment academic study with an 8-, 12- or 16-month period of paid, discipline-related work experience with a cooperating employer. The work experience period is usually between the third and fourth years of academic study. Upon completing the work experience period students return for at least one academic term. To accommodate the work experience period, students normally require between four and five years to complete the full degree requirements.

Students can apply for acceptance into the Internship Program following their second year of study if they are in good academic standing, are legally permitted to work in Canada, and are registered in one of the academic programs offered by the Faculty of Agricultural, Life and Environmental Sciences. International students must apply for a working visa when applying to the program. Application forms are available at Student Services (231 General Services Building). Applicants must meet a spoken English requirement (see §13.3.2).

Students apply by November 20 for acceptance into the program. Students registered in the IP receive assistance in finding suitable work placements. The Internship Coordinator and Faculty mentors are responsible for working with IP students to help them conduct an active job search. Students can approach employers to hire them as interns as well as compete on posted internship placements. Students can start internship terms in January, May or September. The ultimate responsibility for securing work, however, rests with the student and there is no guarantee that all qualified students will be placed.

Students registered in the IP receive assistance in finding suitable work placements. The Internship Coordinator and Faculty mentors are responsible for working with IP students to help them conduct an active job search. The ultimate responsibility for securing work, however, rests with the student and there is no guarantee that all qualified students will be placed.

While engaged in work experience, IP students are enrolled in WKEXP courses, pay part-time tuition and are considered full-time students at the University of Alberta. To successfully complete the IP, students must complete at least two of the following WKEXP courses: WKEXP 981, 982, 983. All WKEXP courses are ★0 and are graded on a pass/fail basis. Grades are determined by the student's job performance, as evaluated by the employer, and by the student's final report, as evaluated by the Internship Coordinator and Faculty mentor.

Further information about the IP can be obtained by contacting the Internship Coordinator in the Faculty of Agricultural, Life and Environmental Sciences.

Students should be aware that under Alberta's *Protection for Persons in Care Act*, they may be required to satisfy a criminal records check before being allowed to serve a period of internship/coop work. See §23.8.3 for further details.

34.2.2 Cooperative Education Program

(1) **General Information:** The Cooperative Education Program is coordinated by the Faculty of Business and is open to students registered in Agricultural/Food Business Management or Forest Business Management programs. Details are described in §64.5 BCom (Cooperative Education Program).

All students who are Canadian citizens or permanent residents are eligible to compete for places in the coop program following successful completion of the second year of studies in Agricultural/Food Business Management or Forest Business Management. Students are admitted to the program based on a combination of grades, letter of intent, letters of reference, and a personal interview. The application deadline is June 30.

(2) **Course Sequence:** The required courses for Cooperative Education students are the same as provided in the BSc Agricultural/Food Business Management Program or BSc Forest Business Management Program. In addition, Year 3 includes Introduction to Cooperative Education (non-credit seminar) and WKEXP 911. Year 4 (and 5) include WKEXP 912 and WKEXP 913. Note that the final term in the Cooperative Education Program must be a school term.

34.3 BSc in Agricultural/Food Business Management

34.3.1 General Information

This program is for individuals interested in applying business skills and tools to management of organizations in the agriculture and food industries. Agricultural/Food Business Management graduates develop a strong understanding of business concepts and principles applied to these sectors and have a basic knowledge of the scientific processes involved.

The program provides the background for a career in an agricultural or food business setting. Graduates may choose careers in management, sales or finance, but they also have the ability to interact comfortably with technical specialists and have a good understanding of the products and processes with which they are involved. Graduates may become scientists and technical specialists with a deeper understanding of business management.

The program is offered jointly by the Faculty of Agricultural, Life and Environmental Sciences and the Faculty of Business. Although it is administered in the Faculty of Agricultural, Life and Environmental Sciences, the program is managed by an interdisciplinary committee with representation from both Faculties.

See §15.1.1 for admission information and recommended courses in the first year of studies.

Students are provided with the analytical, scientific and educational foundation on which to build the business and technical components of their field. Students in both majors take courses in business including accounting, finance, marketing and human resources. Each student in the program is expected, through a Capstone course, to integrate knowledge from the agricultural or food sciences with the business management disciplines.

(1) Requirements of the BSc in Agricultural/Food Business Management Program (★96)

- ★6 ENGL: (ENGL 111, 112, 113, or 114 recommended)
- AFHE 204
- SMO 301
- ECON 101 and 102
- STAT 151
- ★3 BIOL or CHEM (see Note 1)
- ACCTG 311 and 322
- AREC 214
- AREC 313, 473, and 484
- AREC 433 or 482
- ECON 281 and 282
- FIN 301
- MARK 301
- MATH 113 or 114
- ★21 Approved Program Electives [see §34.1(5) and Note]
- ★12 Free Electives
- ★3 Capstone Course [see §34.1(7) and Note]

Notes

- Food Business Management majors are required to take BIOL 107 or 108.
- Approved Program Electives include AFHE electives offered by the Faculty of Agricultural, Life and Environmental Sciences, and BUS electives offered by the Faculty of Business.
- See section §34.1 for program planning and structure details.

34.3.2 Agricultural Business Management Major

This major develops graduates with the abilities required of business professionals working within the agri-food industry. Graduates develop an appreciation of the importance of both scientific and economic relationships involved in agriculture. Graduates also fully understand and appreciate the business management skills needed to manage organizations effectively and efficiently within this sector.

Students choosing Agricultural Business Management are challenged with courses in agricultural business management, as well as courses in agricultural science, including animal, plant and soil sciences. Graduates of this major are well prepared for a management career in the agri-food industry. Graduates qualify to apply to be Articling Agrologists which can lead to status as Professional Agrologists.

(1) Requirements of the Major (★24)

- ★6 Approved Program Electives
- AREC 200, 333, and 384
- AN SC 200
- PL SC 221
- SOILS 210

34.3.3 Food Business Management Major

Graduates of this major will develop the abilities required of business professionals working within the food processing and retailing sectors. Graduates develop an understanding of the scientific and economic relationships that influence activities in the food industry. Graduates fully understand and appreciate the business management skills needed to manage organizations effectively and efficiently within this industry.

Students complete courses in food chemistry, engineering and microbiology. This provides a solid scientific background that is combined with food business management and economics courses. Graduates are well positioned for management careers in the food processing and retailing industry.

(1) Requirements of the Major (★24)

- AREC 384 or 333
- CHEM 261 and 263
- NU FS 100, 201, 363, 373 and 374 (see Note).

Note: Students who take NU FS 373 in the first year of the program should select an Approved Program Elective in place of NU FS 100.

34.3.4 Cooperative Education Program

See §34.2.2.

34.4 BSc in Agriculture

34.4.1 General Information

(1) The Faculty offers courses leading to the degree of Bachelor of Science in Agriculture. The program provides students with an understanding of the scientific principles underlying the many facets of agriculture together with their application in agricultural systems and related industries. Through a broadly based educational experience, students develop capacities for critical and independent thought and clear expression of ideas. Throughout the program, emphasis is placed on integrating several areas in the physical, biological, and social sciences relevant to modern agricultural practices.

Graduates will have a background in basic social, natural, and agricultural sciences, with an emphasis on sustainable production, renewable agricultural resource management, and economic analysis. Graduates qualify to apply to be Articling Agrologists which can lead to status as Professional Agrologists.

(2) During their first year, or before they register for their second year, students should consult an Academic Advisor. Course choices may affect scheduling for majors.

(3) Students in the Pre-Veterinary Medicine program (§34.4.7) are able to continue in the BSc in Agriculture degree and will normally receive credit for courses already completed successfully.

(4) Requirements of the Faculty Core and the BSc in Agriculture Program Core (★60)

- ★6 ENGL: (ENGL 111, 112, 113, or 114 recommended)
- AFHE 204
- AREC 323 or ORG A 301

- d. ECON 101 and 102
- e. STAT 151
- f. ★3 from BIOL 107, 108, 207, 208 (see Note)
- g. ★3 from BIOL 107, 108, 207, 208; BIOCH 200 or PL SC 331; AN SC 391 or BIOCH 310; (see Note)
- h. AREC 200
- i. AREC 214
- j. AN SC 200
- k. MATH 113 or 114
- l. PL SC 221
- m. SOILS 210
- n. ★12 Free Electives
- o. ★3 Capstone Course [see §34.1(7)]

Note: BIOL 108 and 208 are required for the Sustainable Agricultural Systems, Animal Science and Range and Pasture Management Majors, and the Pre-Veterinary Medicine Program.

34.4.2 Agricultural and Resource Economics Major

- (1) **General Information:** This major provides students with an understanding of the basic principles of economics and develops a scientific background sufficient to apply economic tools to production, processing, marketing, and financing and consumption in the agri-food and other resource industries. Students will gain expertise in the use of economic theory in agricultural and other natural resource industries, and will develop analytical techniques that permit them to understand and assess a wide variety of policy and market issues. The program develops knowledge of applied social, agricultural, and natural sciences that permits graduates to succeed in a variety of agricultural and natural resource settings.
- (2) **Requirements of the Major (★60)**
 - a. ACCTG 300
 - b. ★6 from 400-level AREC
 - c. AREC 313, 333, 384, and 473
 - d. ECON 281 and 282
 - e. ENCS 473 or FOREC 473
 - f. AREC 365
 - g. ★3 from REN R 432 or R SOC
 - h. ★24 Approved Program Electives [see §34.1(5)]

34.4.3 Animal Science Major

- (1) **General Information:** The Animal Science Major encompasses studies of livestock, including dairy, swine, beef, poultry and diversified livestock. This major enables students to gain an understanding of the scientific disciplines of animal science including physiology, genetics, biochemistry, nutrition, and behavior. Students will also learn how to integrate and apply these concepts to solve problems in animal production systems. Graduates with this major find opportunities in a wide range of agri-business industries, government agencies and primary agriculture.
- (2) **Requirements of the Major (★60)**
 - a. AN SC 310, 311, and 312
 - b. AN SC 385 or 484
 - c. ★6 from AN SC 471, 472, 474, 475, and 476
 - d. BIOL 107 and 207
 - e. AN SC 260 or ★3 NUTR
 - f. ★6 from AN SC 461, 462 and 463
 - g. ★6 from Organic Chemistry or Inorganic Chemistry
 - h. ★21 Approved Program Electives [see §34.1(5)]

34.4.4 Crop Science Major

- (1) **General Information:** This major focuses on the agronomy and science of agricultural crop production. It provides students with an in-depth understanding of plant growth, soils and factors affecting crop production. Crop responses to a range of environmental factors are addressed. Students learn about biotechnological, breeding and production management techniques used to develop, grow and market well-adapted, high quality and high yielding crop cultivars. Students also develop skills to respond to economic situations, market demands, environmental constraints and societal expectations. Graduates with this major are able to work and serve in technical, sales and management positions with agri-business industries, in advisory, regulatory and management positions with government agencies, or in primary production.

- (2) **Requirements of the Major (★60)**
 - a. ★6 from BIOL 107, 108, 207, 208, (BIOCH 200 or PL SC 331), (BIOCH 310 or AN SC 391), EAS 101, 102 (not taken in core)
 - b. BOT 240
 - c. ★6 of Organic Chemistry, Inorganic Chemistry or Physics
 - d. PL SC 324, 355, and 495
 - e. ★6 from ENT 207, PL SC 352, 380
 - f. ★3 from ENCS 356, PL SC 354, 357
 - g. PL SC 465 or SOILS 460
 - h. ★24 Approved Program Electives [see §34.1(5)]

34.4.5 Range and Pasture Management Major

- (1) **General Information:** In this cross disciplinary major students are introduced to the theory and practice of managing soil-plant-animal relationships within the context of cultivated and native grasslands used by wildlife and domestic herbivores. Key areas of study include the structure, function, and ecology of native and cultivated plant communities, plant and animal physiology, plant-animal interactions under grazing, response of plant communities to grazing, the complementary and conflicting requirements of domestic herbivores and wildlife, and intensive versus extensive-based production systems. Graduates are prepared for careers as consultants or land and livestock managers with government agencies, conservation associations or agri-businesses involved in the management of private and public (e.g. multiple-use) grazing land.
- (2) **Requirements of the Major (★60)**
 - a. ★3 from AN SC 472 or 474
 - b. ★6 from BIOL 107, 207, (BIOCH 200 or PL SC 331), (BIOCH 310 or AN SC 391), EAS 101, 102
 - c. ★3 from AN SC 260, 310, 311, BOT 240, REN R 321
 - d. ENCS 356 and 406
 - e. ★6 of Organic Chemistry, Inorganic Chemistry or Physics
 - f. ★6 from ENCS 376, ENCS 407, FOR 340, PL SC 352, REN R 414
 - g. PL SC 354
 - h. SOILS 420 or 460
 - i. ★24 Approved Program Electives [see §34.1(5)]

34.4.6 Sustainable Agricultural Systems Major

- (1) **General Information:** Knowledge about individual components of agricultural systems (including people, plants, animals and soil, water and other resources) has expanded rapidly, but less is known about how these systems work as a whole. There is a need to integrate knowledge from a number of disciplines in order to maintain and enhance the performance of agricultural systems so that resource use is efficient and sustainable. Agricultural systems can be viewed from a local, national or international perspective. A systems approach to sustainable agriculture considers the linkages between human activity and institutions with agricultural production systems. Key areas of study include agricultural production systems, natural resource management and the interrelationships of these with social and economic systems. Graduates are prepared for careers in agriculture and systems analysis within government or the agriculture and food industry.
- (2) **Requirements of the Major (★60)**
 - a. ★3 from AREC 333, 384, 473
 - b. ★6 from AN SC 471, 472, 474, 475, 476, ENCS 356, PL SC 354, 355, 357, 440
 - c. ★6 from AN SC 391, BIOCH 200 or PL SC 331, BIOL 107, 207, EAS 101, 102, Organic Chemistry, Inorganic Chemistry, PHYS
 - d. ★3 from EAS 221, FOREN 201, REN R 410
 - e. SOILS 420
 - f. REN R 250
 - g. ENCS 461
 - h. AREC 365
 - i. REN R 450
 - j. R SOC 355
 - k. ★24 Approved Program Electives [see §34.1(5)]

34.4.7 Pre-Veterinary Medicine Program

- (1) **General Information:** The Veterinary Medicine program consists of two years of Pre-Veterinary Medicine at the University of Alberta and four years of Veterinary Medicine at the Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon. A quota exists on Alberta students entering Veterinary Medicine at the University of Saskatchewan, and

students with the highest standing in the work of the two pre-veterinary years will receive preference. Because the Western College of Veterinary Medicine is a regional institution, it admits almost exclusively students from western Canada with quotas for each province. For detailed information on residence policy and admissions procedures, contact the Admissions Office, Western College of Veterinary Medicine for a copy of the Admissions Brochure.

Students planning to enter Pre-Veterinary Medicine should note the entrance requirements in §15.1.7. Inquiries about the program should be addressed to Student Services, 231 General Services Building, Faculty of Agricultural, Life and Environmental Sciences, University of Alberta.

- (2) **Required Courses:** Two full years of university training are required for admission to the Western College of Veterinary Medicine, during which credit must be secured for the number of courses customarily considered a standard load in the curriculum in which they are obtained. The program of study must include the following: Biochemistry (★6), Biology (★6), Chemistry (★6), English (★6), Electives (★15), Genetics (★3), Introductory Microbiology (★3), Mathematics or Statistics (★6), Organic Chemistry (★3), Physics (★6).
- (3) **Courses taken in the Pre-Veterinary Medicine Program (★60)**
- AFHE 204
 - BIOCH 200 and 310; or PL SC 331 and AN SC 391
 - BIOL 107 and 108
 - BIOL 207 and 208
 - CHEM 101 and 102
 - CHEM 161
 - ECON 101 and 102
 - ★6 from ENGL 111, 112, 113, or 114
 - ★6 Free Electives (AN SC 200 recommended)
 - MATH 113 (or 114)
 - PHYS 124 and 126
 - ★3 STAT
- (4) **Transfer to Programs in the Faculty:** Students successfully completing the two years of pre-veterinary medicine may continue in the Faculty and earn the BSc in Agriculture or one of the other degrees that the Faculty offers. Two additional years of credit, or more depending on the program selected, may be required to complete the degree.

34.5 BSc in Environmental and Conservation Sciences

34.5.1 General Information

- (1) The BSc in Environmental and Conservation Sciences program is for students interested in the natural world, its management, conservation and ecological perspectives. Graduates have a strong background in basic and applied sciences. They are able to evaluate effects of human land use on plant, soil, water, animal, and human resources and to assess and facilitate conservation, reclamation and remediation measures for natural, managed and damaged ecosystems. They are not only reactive but also agents for positive, responsible stewardship and change.

Graduates understand the role that social, economic, and political forces play in natural resource management. They integrate knowledge from various disciplines and are cognizant of the various philosophies about the role of humans in the environment. They are able to employ balanced judgment based on a foundation of environmental ethics and philosophy, and suggest appropriate use of natural resources.

The BSc in Environmental and Conservation Sciences emphasizes integrating natural science, management, and social science as related to environmental issues. It offers a program of study emphasizing applied problem solving and environmental management.

Employment opportunities include career paths with government or non-government agencies (such as private corporations and private consulting) concerned with forestry, parks, nature reserves, nature centres, environmental education, recreational areas, wildlife management, environmental policy analysis, rangeland management, land reclamation, environmental sociology, ecotourism, environmental planning, environmental assessment and environmental management. Students are also well prepared for entry into graduate studies.

Graduates would qualify to apply to be Articling Agrologists which can lead to status as Professional Agrologists.

- (2) The BSc in Environmental and Conservation Sciences program requires coursework in basic sciences, environmental sciences, resource assessment, environmental philosophy, environmental policy, and natural resource/

environmental economics. Students must choose a major by their second year of study. Students should consult with an academic advisor about selection of Approved Program Electives.

(3) Requirements of the BSc in Environmental and Conservation Sciences Program Core (★81)

- ★6 ENGL: (ENGL 111, 112, 113, or 114); or AFHE 204 and ★3 ENGL; or two ★3 ENGL
- AREC 214, 323, and 365
- ECON 101 and 102
- STAT 151
- BIOL 108 and 208
- ★3 in Organic Chemistry
- ★3 from CHEM, PHYS 124, 126
- ENCS 201, 260, 307, and 473
- REN R 299 (field school) (See Note 1)
- MATH 113 or 114
- REN R 110 and 250
- R SOC 355
- SOILS 210
- PL SC 221
- ★9 Free Electives
- ★3 Capstone Course [see §34.1(7) and Note]

Notes

- REN R 299 is normally taken in the spring between second and third year.
- See §34.1 for program planning and structure details.

34.5.2 Conservation Biology Major

This major builds the foundation in ecological sciences and natural resource management required to understand conservation priorities for both protected areas and lands managed for multiple values. Students are exposed to the competing demands on natural environments and the challenges in developing integrative approaches towards wildlife and habitat conservation. The program places an emphasis on understanding, planning, and managing the complex ecological relationships of natural environments and strategies aimed at securing their biological integrity and sustainability. Graduates are prepared for careers with government and nongovernment agencies concerned with land management and wildlife and fisheries issues on managed lands or protected areas, as well as advanced degrees in the fields of wildlife ecology and conservation. Employment opportunities also exist with industry and consulting firms.

(1) Requirements of the Major (★39)

- ★9 from BOT 332, ENCS 356, 376, 406, 476, FOR 322, ZOOL 332
- ENCS 364
- ENCS 462
- ★3 REN R 120, ENCS 406 or BOT 322
- ★21 Approved Program Electives [see §34.1(5) and Note]

Note: The Capstone Course for this major is ENCS 464.

34.5.3 Environmental Economics and Policy Major

Graduates choosing this major develop skills in the economic analysis of environmental problems and the policy process associated with environmental issues. The interaction among economic, social, political, and legal elements of environmental problems is addressed. The Environmental Economics and Policy major builds on the Environmental and Conservation Sciences Core with a block of courses intended to provide the background for economic, social, and legal approaches to environmental problems and to build quantitative and analytical skills. Extensions into advanced economic theory, political theory, social theory, and other policy sciences are selected from groups of Approved Program Electives.

Graduates are prepared for careers in government and private industry in environmental economic analysis, policy analysis, and other related areas.

(1) Requirements of the Major (★39)

- AREC 465
- ECON 281 and 282
- ENCS 352
- ECON 369
- ★24 Approved Program Electives [see §34.1(5) and Note]

34.5.4 Human Dimensions of Environmental Management Major

Students in this major will learn about the role of collective action, institutions, policy, and management approaches to address environmental and natural resource issues. A firm foundation in the natural sciences allows

students to understand the complexities of environmental change and then focus on the social context and organization through which environmental problems are addressed. Students will take a variety of courses that will prepare them to work in the areas of natural resource management, parks planning, management and interpretation, public outreach for environmental and parks policies and programs, and in other settings as liaisons between members of the public and resource management agencies. See §34.7 for information on the BSc in Environmental and Conservation Sciences/BA in Native Studies combined degrees with the Human Dimensions of Environmental Management major.

(1) **Requirements of the Major (★39)**

- ENCS 352
- ENCS 271
- SOC 315
- AREC 450 or R SOC 365
- R SOC 450
- ★24 Approved Program Electives [see §34.1(5) and Note]

34.5.5 Land Reclamation Major

This major combines the natural and applied sciences to understand, assess, and minimize the impacts of anthropogenic activities on natural resources, with emphasis on soil, plant, and water components of the ecosystem. The program emphasizes understanding, planning, and managing the complex ecological relationships of natural and anthropogenically disturbed environments. Graduates will be able to conduct and/or direct remediation strategies and conservation measures to maintain quality environments and to reclaim disturbed and damaged ecosystems.

Graduates are prepared for careers in government and nongovernment organizations and deal with a broad range of issues related to soil and water pollution, land reclamation, revegetation, remediation, and soil and water conservation. Graduates will contribute natural science expertise to environmental impact assessments and land-use planning.

(1) **Requirements of the Major (★39)**

- ENCS 455 and 475
- ★3 from ENCS 406, 407, REN R 120, BOT 322
- ★3 from ENCS 356, 406, PL SC 352, 354, 360
- ★6 from SOILS 420, 430, 440, 450, 460
- ★3 Capstone Course
- ★18 Approved Program Electives [see §34.1(5) and Note]

Note: The Capstone Course for this major is REN R 495 (★6).

34.5.6 Wildlife and Rangeland Resources Management Major

The Wildlife and Rangeland Resources Management major introduces the theory and practice of appropriately managing soil-plant-animal relationships on both private and public lands. Students will gain an understanding of important multiple use issues, including the integration of cattle grazing and wildlife management with intensive agriculture, forestry, recreational activities and other forms of natural resource use. This major examines the means to increase both the productivity and sustainable use of wild plants and animals within an ecosystem management framework.

Graduates are prepared for careers with government agencies, agricultural conservation associations, agri businesses or other private firms dealing with management of wildlife and rangeland resources.

(1) **Requirements of the Major (★39)**

- ENCS 356 and 406
- ENCS 376
- SOILS 420 or 460
- REN R 450
- ENCS 474
- ★21 Approved Program Electives [see §34.1(5) and Note]

34.6 BSc in Environmental and Conservation Sciences—Bilingual/ Baccalauréat ès sciences (sciences de l'environnement et de la conservation—bilingue)

34.6.1 General Information

- (1) The four-year Bilingual Bachelor of Science degree in Environmental and Conservation Sciences is a collaborative effort between Faculté Saint-Jean

and the Faculty of Agricultural, Life and Environmental Sciences. This program, unique in Canada, offers students the opportunity to obtain a fully bilingual Science degree in Environmental and Conservation Sciences in Canada's two official languages. Students will complete half of their course work in each of the two Faculties.

The program responds to the need to prepare bilingual (French-English) graduates who will evaluate effects of human land use on plant, soil, water, animal and human resources; assess and facilitate conservation, reclamation and remediation measures for natural and damaged ecosystems; understand and communicate in both official languages the role that social, economic and political forces play in natural resource management. This unique degree will be attractive to Francophone and Francophile students across Canada and from other countries.

Career opportunities for BSc Environmental and Conservation Sciences graduates fluent in both of Canada's official languages are many and varied. Employment opportunities include career paths with government or non-government agencies (such as private corporations and private consulting companies) concerned with ecotourism, environmental education, environmental management, environmental planning, environmental policy analysis, environmental risk assessment, environmental sociology, forestry, land reclamation, protected areas, nature reserves, parks, rangeland management, recreational areas, resource conservation and wildlife.

- (2) Students who have not completed any postsecondary studies will complete ★54 at Faculté Saint-Jean, not counting ★6 for ANGL 101 or equivalent, and ★60 in the Faculty of Agricultural, Life and Environmental Sciences. (see §183.1.16)

Transfer students must be fluent in both French and English; fluency criteria will be determined by the Faculties.

Students who have completed one year of postsecondary studies will complete a minimum of ★45 at Faculté Saint-Jean and a minimum of ★45 in the Faculty of Agricultural, Life and Environmental Sciences (see §183.1.16).

Students who have completed two or more years of postsecondary studies will complete a minimum of ★30 at Faculté Saint-Jean and a minimum of ★30 in the Faculty of Agricultural, Life and Environmental Sciences (see §§15.1.4 and 15.1.9).

- (3) Courses are taken in both languages in every year of the program. Year 1 is primarily taken at Faculté Saint-Jean, and later specialization courses are taken from the Faculty of Agricultural, Life and Environmental Sciences. Courses must be carefully sequenced throughout the four years; therefore, students should plan their programs carefully with help from Academic Advisors from both Faculties.

(4) **Required Courses**

See §34.5 including its notes for requirements of the Environmental and Conservation Sciences program core. Students can major in Land Reclamation, Conservation Biology, Human Dimensions of Environmental Management, Environmental Economics and Policy, or Wildlife and Rangeland Resources Management. Requirements of the individual majors can be found in §§34.5.2 through 34.5.6.

Students will take ★60 at Faculté Saint-Jean (see §184.11.2 for a complete course listing and suggested sequencing).

Students will take the following ★60 offered by the Faculty of Agricultural, Life and Environmental Sciences.

Required Courses (★27)

- AREC 323
- ENCS 201, 203, 260, 307, and 473
- ENCS 207 (field school) (See Note 1)
- PL SC 221
- SOILS 210

Major Core Courses (See §§34.5.2 through 34.5.6 for specific major requirements)

- ★15 Major Core Courses
- ★15 Approved Program Electives
- ★3 Capstone course

Note: ENCS 207 is normally taken in the spring between second and third years.

34.6.2 Appeals and Graduation

(1) **Appeals**

Students registered in the bilingual program can obtain consistent information for formal and informal grade appeal and academic appeal procedures and regulations from both the Faculty of Agricultural, Life and Environmental Sciences, and Faculté Saint-Jean.

(2) **Graduation**

Students registered in the BSc Environmental and Conservation Sciences - Bilingual require ★120 to graduate. Eligibility for convocation will be assessed by the Faculty of Agricultural, Life and Environmental Sciences in consultation with Faculté Saint-Jean.

34.7 BSc in Environmental and Conservation Sciences/BA in Native Studies Combined Degrees—Human Dimensions of Environmental Management Major

34.7.1 General Information

(See §§15.1.3 and 15.10.4)

- (1) The Faculty of Agricultural, Life and Environmental Sciences and the Faculty of Native Studies offer a five-year integrated program of ★150 leading to Bachelor of Science and a Bachelor of Arts degrees. A better academic understanding of the Aboriginal use of resources can prepare students to work effectively in various contexts where knowledge of Aboriginal and Treaty rights and issues is required. The Combined Degrees between Environmental and Conservation Sciences and Native Studies are a means for students to specialize in the management of Aboriginal resources. The major in the Combined Degrees program is Human Dimensions of Environmental Management.

The program is open to both Native and non-Native applicants. Enrolment management procedures of the Faculty of Native Studies and the Faculty of Agricultural, Life and Environmental Sciences will apply for all years of the program.

Students will remain in the Faculty to which they were admitted for the duration of their program.

(2) **Requirements of the BSc in Environmental and Conservation Sciences Program Core (★75)** (See notes and §123.5.2)

- ★6 ENGL: (ENGL 111, 112, 113, or 114); or AFHE 204 and ★3 ENGL; or two ★3 ENGL
- AREC 214, 323, and 365.
- ECON 101 and 102
- STAT 151
- BIOL 108 and 208
- ★3 Organic Chemistry
- ★3 from CHEM, PHYS 124, 126
- ENCS 201, 260, 307, and 473
- REN R 299 (field school) (see Note 3)
- MATH 113 or 114
- REN R 110 and 250
- R SOC 355
- SOILS 210
- PL SC 221
- ★3 Free Elective (see Note 1)
- ★3 Capstone Course [see §34.1(7) and Note]

(3) **Requirements of the Human Dimensions in Environmental Management Major (★33)**

- ENCS 352
- ENCS 271
- SOC 315 (see Note 2)
- AREC 450 or R SOC 365
- ★21 Approved Program Electives [see Note 1 and §34.1(5) and Note]

(4) **Requirements of the BA in Native Studies (★42)**

- ★3 Fine Arts, junior or senior (see Note 1)
- ★6 Humanities, junior or senior (see Note 1)
- ★3 Social Sciences, junior or senior (see Note 1)
- NS 210, 211, 390
- ★6 from NS 152, (NS 105 and 153), or (NS 154 and 155)
- ★9 from NS 100, or NS courses at the 200- or 300-level (see Notes 1, 2, and §123.1.3 Cross-listed Courses)
- ★6 from any NS courses at the 400-level (see §123.1.3 Cross-listed Courses)

Notes

- (1) No more than ★48 can be taken at the junior (100) level. ★42 junior level is required in the program. As a result, ★6 is the total 100-level allowable from all of the following combined: ★3 Fine Arts, ★3 Social Sciences, ★3

NS 100; and the Approved Program Electives. See §123.1.2 for courses that meet Fine Arts, Humanities and Social Science basic requirements.

- Students with greater than ★24 transfer credit will take NS 200-level or higher.
- The SOC 315 prerequisite (SOC 210) has been waived.
- REN R 299 is normally taken in the spring between second and third year.
- See §34.1 for program planning and structure details.

34.7.2 Appeals and Graduation

(1) **Appeals**

Students registered in the Combined Degrees can obtain consistent information for formal and informal grade appeal and academic appeal procedures and regulations from both the Faculty of Agricultural, Life and Environmental Sciences, and the Faculty of Native Studies.

(2) **Graduation**

Students registered in the BSc (Environmental and Conservation Sciences/BA (Native Studies) Combined Degrees require ★150 to graduate. The GPA and requirements check will be done in consultation with the Faculty of Native Studies. See §§33.4 and 122.6.

34.8 BSc in Forest Business Management

34.8.1 General Information

This program develops graduates with the abilities required of foresters and of business professionals. Graduates appreciate the need to manage forested areas with due concern for all resources and be capable of managing forested areas as integrated ecological entities. Graduates also fully understand and appreciate the business management skills needed to manage organizations effectively and efficiently within the forest industry.

The Forest Business Management degree is intended to prepare students for careers as professional foresters and is for individuals planning careers focusing on forest practices, but who also demand specialized knowledge in business management practices. The Forest Business Management program prepares students for careers as Registered Professional Foresters. Graduates may immediately apply to the Alberta Registered Professional Foresters Association to complete the registration process.

The program is offered jointly by the Faculty of Agricultural, Life and Environmental Sciences and the Faculty of Business. Although it is administered in the Faculty of Agricultural, Life and Environmental Sciences, the program is managed by an interdisciplinary committee with representation from both Faculties. See §15.1.5 for admission and recommended courses in the first year of studies.

Students in the BSc in Forest Business Management program are provided with the analytical, scientific, and broad educational foundations on which to build the business and forestry components of their field. The forestry component includes courses in areas such as ecology, engineering, and conservation.

The program includes two field schools (FOR 101 and REN R 299) that provide training in technical aspects of forestry. FOR 101 should be taken in the first year (or in the initial year in the BSc in Forest Business Management program) just before the start of regular classes. REN R 299 is normally taken in the spring between second and third years. REN R 299 must be taken prior to the fourth year of study, to ensure that students are able to apply the skills learned in their last year in the program.

The business management component of this degree consists of introductory and advanced courses in business, including accounting, finance, marketing, and human resources.

(1) **Requirements of the BSc in Forest Business Management Program Core (★123)**

- ★3 ENGL (see Note 2)
- AFHE 204
- ★3 from SMO 301, 311, 321
- ECON 101 and 102
- STAT 151
- CHEM 101 or 164
- ACCTG 311 and 322
- AREC 214
- BIOL 208
- ★6 Approved Program Electives from the Faculty of Business [see §34.1(5)]
- ECON 281
- ENCS 201 or 364
- ENT 380
- FIN 301

- o. REN R 299 (field school) (See Note 1)
- p. FOR 210, 314, 322, 323, and 340
- q. FOR EC 345 and 473
- r. FOREN 335 and 355
- s. MARK 301
- t. MATH 113 or 114
- u. PL SC 221 and 385
- v. REN R 110, 120, 201, 321, 350, and 430
- w. SOILS 210
- x. ★6 Free Electives (see Note 2)
- y. ★3 Capstone Course [see §34.1(7) and Note]

Notes

- (1) FOR 101 (★0) must be taken in the student's first year (or in the student's initial year in the BSc in Forest Business Management program) just before the start of regular classes. REN R 299 (★3) is normally taken in the spring between second and third year, but must be taken before beginning fourth year (see §231 for Forest Science course descriptions).
- (2) ENGL 111, 112, 113, or 114 (★6) recommended. Students taking ★6 ENGL reduce their Free Electives to ★3.
- (3) See §34.1 for program planning and structure details.

34.8.2 Cooperative Education Program

See §34.2.2.

34.9 BSc in Forestry**34.9.1 General Information**

The Faculty offers courses leading to the degree of BSc in Forestry. The program consists of four years of University study with a yearly course load of ★30, as well as field schools taken just prior to first year, and in the spring between second and third year.

The BSc in Forestry develops graduates who appreciate the need to manage forested areas with due concern for all resources and who have the capability and knowledge to manage forested areas as integrated ecological entities. It focuses primarily on forest management, the protection, manipulation, and use of the forest resource while ensuring that sustainability and other social and cultural needs are met.

The field of forestry embraces topics as diverse as economics, ecology, engineering and conservation. As a consequence, a broad range of career opportunities exist for graduates. The program prepares students for careers as Registered Professional Foresters working in government or industrial organizations or as consultants. To complete the registration process, graduates apply directly to the appropriate Registered Professional Foresters Association.

Field school exercises provide training in technical aspects of forestry, including forest mensuration, engineering, ecology and silviculture. All field schools must be taken prior to the fourth year of study, to ensure that students are able to apply the skills learned in their last year in the program.

(1) Requirements of the BSc in Forestry Program (★123)

- a. ★6 ENGL: (ENGL 111, 112, 113, or 114 recommended).
- b. AFHE 204
- c. AREC 214 and 323
- d. ECON 101 and 102
- e. STAT 151
- f. CHEM 101 or 164
- g. BIOL 208
- h. ENCS 201 or 364
- i. ENT 280
- j. REN R 299 (field school) (see Note 1)
- k. FOR 210, 314, 322, 323, and 340
- l. FOREC 345 and 473
- m. FOREN 335, and 355
- n. MATH 113 or 114
- o. PL SC 221 and 385
- p. REN R 110, 120, 201, 321, 350, and 430
- q. SOILS 210
- r. 12 Approved Program Electives [see § 34.1(5)]
- s. ★12 Free Electives
- t. ★3 Capstone Course [see Note 2 and §34.1(7)]

Notes

- (1) FOR 101 (★0) must be taken just before the start of regular classes in the first year. REN R 299 (★3) is normally taken in the spring between the second and third year, but must be taken before beginning fourth year (see §231 for Forest Science course descriptions).
- (2) The Capstone Course for this program is FOR 431.
- (3) See §34.1 for program planning and structure details.

34.10 BSc in Human Ecology**34.10.1 General Information**

Human Ecology is a multidisciplinary field that uses a holistic approach to solve human problems and to enhance human potential in all environments where people live and work: the social, natural, cultural, political, and material. Completion of ★120 is required. (See Notes 1 and 2).

Students should be aware that under the *Protection for Persons in Care Act*, they may be required to satisfy a criminal records check before being allowed to participate in the required practicum (field placement).

(1) Requirements of the BSc in Human Ecology Program (★63)

- a. ★6 ENGL: (ENGL 111, 112, 113 or 114 recommended)
- b. ★3 AFHE 204 or OCCTH 206
- c. AREC 323 or SMO 301
- d. ECON 101 and 102
- e. SOC 210 or STAT 151 (see Note 3)
- f. HECOL 100, 201, 300, and 408
- g. ★6 Capstone Course HECOL 409 (see §34.1 Note 6)
- h. ★3 from MARK 312, NS 390, PSYCO 212, SOC 315, W ST 302 (See Note 6)
- i. ★6 Natural Sciences from BIOL, CHEM, EAS (Faculty of Science), PYSOC (Faculty of Science), NUTR 100, NU FS 100, PHYS (see Note 4)
- j. ★6 from Social Science/Humanities (see Note 5)
- k. ★9 Free Electives (see Note 6)

Notes

- (1) Professional Designation: To meet the educational requirements for Professional Human Ecologist or Professional Home Economist designation, students must present ★48 in Human Ecology, Nutrition and Food Science, or Nutrition.
- (2) A course may be used for credit only once in a program.
- (3) SOC 210 is recommended for the Family Ecology major.
- (4) CHEM 161, 164, or 261 is highly recommended for senior textile science and conservation courses. NUTR 100 and BIOL 107 must be taken for Community Nutrition minor.
- (5) SOC 100 must be taken for Family Ecology major. Social Sciences/Humanities courses are selected from Agricultural and Resource Economics (AREC), Anthropology (ANTHR), Classics (CLASS), Comparative Literature (C LIT), Earth and Atmospheric Sciences (EAS - Faculty of Arts courses only), Economics (ECON), Film and Media Studies (FS), History (HIST), Languages, Linguistics (LING), Native Studies (NS, except NS 100), Philosophy (PHIL), Political Science (POL S), Psychology (PSYCO - Faculty of Arts courses only), Religious Studies (RELIG), Rural Sociology (R SOC), Sociology (SOC), Theology (CHRTC or CHRTP), Women's Studies (W ST), and courses defined by the Faculty of Arts as Fine Arts.
- (6) MARK 312 is required for the Minor in Fashion Merchandising and Interiors. Take the prerequisite MARK 301 as a Free Elective. The prerequisite for MARK 301 (MATH 113) has been waived for Human Ecology students.

34.10.2 Practicum Program

- (1) Two courses comprise the Practicum Program in Human Ecology: HECOL 408 and 409. HECOL 408 must be successfully completed prior to completing HECOL 409.
- (2) Students are not permitted to register in Practicum Program courses while on academic warning.
- (3) Registration in Practicum Program courses is a two-part process. Students must first complete and submit an application form to the Practicum Coordinator in April prior to the academic year they will take their practicum courses. Students then register in HECOL 408 and 409.
- (4) HECOL 408 is offered in Fall and Winter Terms. Students enrolled in Fall Term must complete HECOL 409 in the immediately following Winter Term. Students enrolled in Winter Term must complete HECOL 409 in the immediately following Spring or Fall Term.
- (5) HECOL 409 is offered in Fall, Winter and Spring Term. Not all cooperating employers offer placements in all terms
- (6) Students registering in Spring Term HECOL 409 will not be eligible for convocation in June immediately following their practicum.
- (7) Because of the intensity of the workload while completing HECOL 409, students must not exceed the ★15 maximum in course registration for that term.
- (8) A student who has been assigned a grade of "W" or "NC" in a Practicum Program course is entitled to a second registration in this course. If a student receives a "W" or "NC" in the second attempt of a Practicum

Program course, he/she is normally required to withdraw from the BSc in Human Ecology program.

- (9) Any student who has withdrawn from a Practicum Program course must receive the approval of the Practicum Coordinator to reregister in the course.
- (10) During their practicum students are expected to conduct themselves according to the AHEA Code of Ethics and the University of Alberta Code of Student Behavior.

34.10.3 Family Ecology Major

The Family Ecology major with minors in Aging, Child and Youth Studies, Community Diversity, Community Ecology, Community Nutrition, or International Development provides students with the opportunity to learn about family strengths, issues, prevention and intervention techniques across the life span. Some areas that will be covered are parent-child relationships, family relations, community diversity, community development, sexuality, family challenges, aging, and family finances. Graduates will work in jobs such as program coordinators, career counselors, family support workers, credit counselors, retirement planners, life skills educators, and community programmers.

- (1) **Requirements of the Major (★42)**
- HECOL 200, 210, 211, 310, 313, 321, 322, 412, 413, 440, and 443
 - HECOL 212 or 414
 - HECOL 301
 - SOC 271
- (2) **Requirements of the Minor (★15)**
See §§34.10.5 to 34.10.9 and 34.10.13 for course requirements.

34.10.4 Textiles and Clothing Major

The Textiles and Clothing major with minors in Design and Product Development, Fashion Merchandising, Interiors, Museum Curatorship and Conservation, Community Diversity, Community Ecology or International Development provides opportunities for students to learn about textile and apparel design including computer-aided design, the fashion business, the textile and apparel industries both locally and globally, textile and apparel science and quality assurance, histories and theories of fashion, dress and material culture, residential interiors and museum curatorship. Graduates are employed in fashion buying and merchandising, apparel design, fashion media, computer-assisted designing, textile and apparel quality assurance, museum management or textile conservation, theatre costume design, interior decorating, or as entrepreneurs.

- (1) **Requirements of the Major (★42)**
- HECOL 150, 170, 268, 270, 350, 360, 370 and 441
 - ★12 from HECOL 254, 341, 353, 354, 453, 454, 460, 462, 470, 477, 478, 490, 493 (see Note 1)
 - ★3 from HECOL 301, MARK 432, 452 (see Note 2)
 - ★3 Free Elective (see Note 3)
- Notes:**
- ★6 must be 400-level
 - Students completing a minor in Community Diversity, Community Ecology, International Development or Museum Curatorship and Conservation must take HECOL 301.
 - Students completing a minor in Fashion Merchandising or Interiors must take MARK 301 as a free elective.
- (2) **Requirements of the Minor (★15)**
See §§34.10.7 to 34.10.8 and §§34.10.10 to 34.10.14.

34.10.5 Minor in Aging

Students in the Family Ecology major (see §34.10.3) may choose to complete a minor in Aging. See §34.1(3) and Note.

- (1) **Requirements of the Minor (★15)**
- HECOL 212 or 414
 - ★6 from ANTHR 110, PEDS 385, PSYCO 459, SOC 375, 473, 475
 - ★6 from ANTH 110, INT D 370, 410, PEDS 385, PHIL 386, PSYCO 459, RLS 100, SOC 342, 375, 473, 475

34.10.6 Minor in Child and Youth Studies

Students in the Family Ecology major (see §34.10.3) may complete a minor in Child and Youth Studies. See §34.1(3) and Note.

- (1) **Requirements of the Minor (★15)**
- PSYCO 223 or EDPY 402 and 404
 - ★9-12 from INT D 410, LAW 578 (See Note), PSYCO 327, 423, SOC 224, 321, 342, 377
- Note:** There are no prerequisites for this course; contact the professor to register

34.10.7 Minor in Community Diversity

Students in the Family Ecology major and Textiles and Clothing major (see §§34.10.3 and 34.10.4) may complete a minor in Community Diversity. See §34.1(3) and Note.

- (1) **Requirements of the Minor (★15)**
- ★15 from ANTHR 110, 150, 207, INT D 410, NS 200, 210, 211, 300, 314, 320, 330, 340, 345, 375, 420, 442, 485, PHIL 368, POL S 266, 299, 327, SOC 260, 368, 370, W ST 360

34.10.8 Minor in Community Ecology

Students in the Family Ecology major and the Textiles and Clothing major (see §§34.10.3 and 34.10.4) may complete a minor in Community Ecology. See §34.1(3) and Note.

- (1) **Requirements of the Minor (★15)**
- ★3-9 from EAS 391, HECOL 462, SOC 251, 352
 - ★3-9 from EAS 293, ECON 462, REN R 401, SOC 453
 - ★3-9 from AREC 365, EAS 493, ENCS 467, NS 435, POL S 333, R SOC 355, 365, 450
- Note:** At least ★3 has to be taken from each category a, b or c.

34.10.9 Minor in Community Nutrition

Students in the Family Ecology major (see §34.10.3) may complete a minor in Community Nutrition. See §34.1(3) and Note.

- (1) **Requirements of the Minor (★15)**
- NU FS 223, 305, 356, and 377
 - ★3 from ANTH 393, NS 375, NU FS 352, SOC 382
- Notes:**
- NUTR 100 is required as a prerequisite and must be taken as the Natural Science option in §34.10.1.
 - In addition students interested in this minor must take BIOL 107 as the other ★3 Natural Science option.

34.10.10 Minor in Design and Product Development

Students in the Textiles and Clothing major (see §34.10.4) may complete a minor in Design and Product Development. See §34.1(3) and Note.

- (1) **Requirements of the Minor (★15)**
- ★6 from ART, ART H, DRAMA, DES, ENGG 209
 - ★9 from HECOL 353, 354, 453, 454

34.10.11 Minor in Fashion Merchandising

Students in the Textiles and Clothing major (see §34.10.4) may complete a minor in Fashion Merchandising. See §34.1(3) and Note.

- (1) **Requirements of the Minor (★15)**
- HECOL 341, 354
 - ★3 from ACCTG 300, 311, 322
 - ★6 from MARK 320, 432, 442, 452, 466, 468, 470

34.10.12 Minor in Interiors

Students in the Textiles and Clothing major (see §34.10.4) may choose to complete a minor in Interiors. See §34.1(3) and Note.

- (1) **Requirements of the Minor (★15)**
- ★12 from Faculty of Extension Residential Interiors Certificate Program (credit will not be granted for Colour Theory and Application or Basic Drawing)
 - ★3 from ART H, DES, MARK 320, 466, 468

34.10.13 Minor in International Development

Students in the Family Ecology major and Textiles and Clothing major (see §§34.10.3 and 34.10.4) may complete a minor in International Development. See §34.1(3) and Note.

- (1) **Requirements of the Minor (★15)**
- ★15 from ANTHR 207, ECON 213, HECOL 462, INT D 303, 370, 410, POL S 260, 266, 357, 359, 396, R SOC/W ST 310, R SOC 365, SOC 269, 352

34.10.14 Minor in Museum Curatorship and Conservation

Students in the Textiles and Clothing major (see §34.10.4) may complete a minor in Museum Curatorship and Conservation. See §34.1(3) and Note.

- (1) **Requirements of the Minor (★15)**
- HECOL 460, 462 and 477
 - ★6 from ART H 430, ART H 431, SMO 438, SOC 344, 346

34.11 BSc in Human Ecology/BEEd (Secondary) Combined Degrees

(1) General Information (See also §15.6.6)

The Faculty of Agricultural, Life and Environmental Sciences and the Faculty of Education offer a five-year integrated program of ★150 leading to the degrees of Bachelor of Science in Human Ecology and Bachelor of Education (Secondary). Students can do the Combined BSc in Human Ecology/BEEd Degrees to teach in Career and Technology Studies (CTS) strands such as Fashion Studies, Career Transitions, Foods, Community Health, or other teachable majors as well as Career and Life Management (CALM). Students initially apply for admission to the Faculty of Agricultural, Life and Environmental Sciences and are registered in that Faculty for the first three years of the program. All qualified Year 3 BSc in Human Ecology/BEEd students will be promoted to Year 4 in the Faculty of Education provided a minimum GPA of 2.0 has been achieved and a minimum of ★90 applicable to the BSc in Human Ecology/BEEd program has been successfully completed.

Notes

- (1) Students in Year 3 must submit a Readmission or On-Campus Transfer application form. Students in Year 3 who have completed less than ★90 toward the BSc in Human Ecology/BEEd program, but who have a GPA of at least 2.0, may remain in Year 3 of the BSc in Human Ecology/BEEd program in the Faculty of Agricultural, Life and Environmental Sciences for one additional year.
- (2) A student who has been assigned a grade of "W" or "NC" in an Education Field Experience course is entitled to a second registration in this course. See also §22.1.3 Reregistration in Courses. Notwithstanding §22.1.3, students who receive a "W" or "NC" in the second attempt of a Field Experience course, will be required to withdraw from the combined degrees program, but may transfer back to the BSc in Human Ecology program.
- (3) The final year of the program will normally be taken in attendance at the University of Alberta. Exemptions from this regulation can be made only with approval of the Faculty of Agricultural, Life and Environmental Sciences and the Faculty of Education.

(2) Required Courses

Courses for the Combined BSc in Human Ecology/BEEd Degrees must be carefully sequenced throughout the five years; therefore, students should plan their programs carefully with help from Academic Advisors from both Faculties.

Program Core (★84) (see Note 1 and 3)

- a. ★6 ENGL (ENGL 111, 112, 113, or 114 recommended)
- b. AFHE 204 or OCCTH 206
- c. ECON 101 and 102
- d. STAT 151 or SOC 210
- e. ★6 Natural Sciences from BIOL, CHEM, EAS (Faculty of Science) (see Note 4)
- f. ★6 Free Electives
- g. HECOL 100, 150, 170, 200, 201, 210, 211, 313, and 354
- h. HECOL 321 or HECOL 322
- i. ★6 HECOL (see Note 5)
- j. ★6 HECOL at 400-level or above
- k. ★3 from EDIT 202, ENGG 209, or HECOL 350
- l. ★3 from NU FS 100, 372, or 373
- m. NUTR 100
- n. ★3 from MARK 312, NS 390, SOC 315, W ST 302

BEEd Core (★66)

- a. ★18 Minor (See Note 2)
- b. EDU 250
- c. EDFX 350, 450 (★6), and 451
- d. EDPS 310 and 410
- e. EPY 200, 301, and 303
- f. 300-level EDSE course (Minor)
- g. EDSE 432, 433
- h. HE ED 110
- i. ★6 from Faculty of Education

Notes

- (1) Professional Designation: To meet the educational requirements for Professional Human Ecologist or Professional Home Economist designation, students must present ★48 in Human Ecology, Nutrition and Food Science, or Nutrition.
- (2) Students should declare their minor early in the program by filling out a form in 231 General Services Building.
- (3) The Management in Organizations and Capstone Course requirements in §§34.1 and 34.10 are met by completion of Faculty of Education requirements.
- (4) CHEM 161, 164 or 261 is highly recommended for senior textile science and conservation courses.
- (5) Students in the Combined BSc Human Ecology/BEEd degree cannot take HECOL 301

34.12 BSc in Nutrition and Food Science

34.12.1 General Information

The Faculty offers courses leading to the degree of Bachelor of Science in Nutrition and Food Science with majors in Nutrition and Food, Nutrition, and Food Science and Technology. A minimum of ★120 is required to complete the program for the degree of BSc in Nutrition and Food Science.

Students interested in either the Nutrition and Food major or the Nutrition major begin their program in the Nutrition and Food major. Students interested in transferring to the Nutrition major should contact the Faculty's Student Services Office about the minimum requirements for eligibility; see §15.1.8 for information on admission requirements.

Students in either the Nutrition and Food major or the Nutrition major have the option of completing a minor. By completing a minor in Human Ecology, students can meet the educational requirements for registration as Professional Human Ecologists or Professional Home Economists; students can complete a minor in Physical Activity; or students in the Nutrition and Food major can complete a minor in Food Marketing or Food Policy. Students are recommended to select minors by the second year of their program to facilitate appropriate course selection. All students must follow program and major requirements (see program requirements below and §§34.12.3 and 34.12.4). Students who wish to obtain a minor must select Free Electives and Approved Program Electives (APEs) carefully to meet the course and credit requirements of the minor (see §§34.12.9 to 34.12.7).

The Nutrition major program can, with appropriate Approved Program Electives (APEs) course selection, be accredited by the Dietitians of Canada. Students planning to be Registered Dietitians should read the information about the Nutrition major (see §34.12.4) and the Dietetic Internship (see §34.12.9).

The Food Science and Technology major meets the guidelines of the Canadian Institute of Food Science and Technology (CIFST) and the Institute of Food Technologists (IFT).

Requirements of the BSc in Nutrition and Food Science Program (★60)

- a. ★6 ENGL: (ENGL 111, 112, 113, or 114 recommended).
- b. AFHE 204
- c. AREC 323 or SMO 301
- d. ECON 101 and 102
- e. STAT 151
- f. BIOL 107
- g. ★3 from BIOCH 200 or PL SC 331 (see Note 2)
- h. CHEM 101, 102, 261 and 263
- i. NU FS 361 or 363 (see Note 1)
- j. NU FS 372 or 373 (see Note 1)
- k. ★12 Free Electives (see Note 3)
- l. ★3 Capstone course [see §34.1(7) and notes following each major]

Notes

- (1) Food Science and Technology majors are required to take NU FS 361 and NU FS 372.
- (2) Nutrition majors must take BIOCH 200.
- (3) Students in the Nutrition and Food major or the Nutrition major who plan to complete a minor should see §§34.12.5 to 34.12.8 for information that may affect Free Elective course selection. Students planning to apply for Medicine must take ★6 Physics. Students in the Nutrition and Food major are recommended to take NU FS 100.
- (4) See section §34.1 for program planning and structure details.

34.12.2 Food Science and Technology Major

This major focuses on applying chemistry, microbiology, and engineering to the food systems and technological processes used in food manufacturing, preservation, storage, and distribution.

Graduates of this major may enter the food industry as technical specialists or quality control managers. Opportunities also exist in government employment as inspectors, laboratory managers, and extension workers; in international development agencies; and in private laboratories providing consultative or technical service to the food industry and food marketing chains.

(1) Requirements of the Major (★60)

- a. CHEM 211 and 213
- b. MATH 113 or 114
- c. MICRB 265
- d. NU FS 100 or NUTR 100 (See Note 1)
- e. NU FS 283, 305, 312, 353, 374, 430, 454 and 490
- f. NU FS 201 (recommended) or PHYS ★3

- g. ★18 Approved Program Electives [★9 must be from advanced (300- or 400-level) Food Science courses as noted on the APE list. Also see §34.1(5) and Note (1)]

Notes

- (1) Transfer students who are taking NU FS 372 and 374 in their first year in the program should select an Approved Program Elective or NUTR 100.
 (2) The Capstone course for this major is NU FS 450.

34.12.3 Nutrition and Food Major

The Nutrition and Food major provides students with a diverse education in nutrition and food science. Graduates have a working knowledge of the fundamentals of nutritional science coupled with basic knowledge in applied chemistry and microbiology as it pertains to food manufacturing, preservation, storage and distribution. This degree integrates course work in the biological, behavioural and applied sciences.

Graduates of this major may find employment opportunities in a variety of public or private enterprises including health education, health industry or international aid. Careers can also be guided by the selection of a minor in Physical Activity, Human Ecology, Food Marketing or Food Policy (see §§34.12.5 to 34.12.8), which can position graduates for careers in lifestyle management, the community-based human ecology sector or the agri-food-nutrition sector.

Students in the Nutrition and Food major may transfer to the Nutrition major if they meet its required academic standings and courses by visiting Student Services in 231 General Services Building; this is normally done after first year (see §15.1.8). Students who change to the Nutrition (or Food Science and Technology) major after their first year often require more than four years to complete the entire program (see §§15.1.8 and 34.12.4 for course selection information for the Nutrition major, and §34.12.2 for the Food Science and Technology major).

(1) Requirements of the Major (★60)

- BIOL 207
- NUTR 100
- NU FS 201, 223, 283, 305, 352, 356, 374, 377
- PHYSL 210 (★6)
- ★24 Approved Program Electives [★9 must be from advanced (300- or 400-level) NUTR or NU FS courses as noted on the APE list.] (See Note)

Note: See §34.1(5) and Note. Students who plan to complete a minor see §34.12.9 to 34.12.7 for information regarding Approved Program Elective selection.

34.12.4 Nutrition Major

The goal of the Nutrition Major is to provide students with a specialized academic program in nutritional science and the related physical, health and social sciences. It incorporates experiential learning into coursework to enable students to develop skills in nutritional science.

The Nutrition major prepares students for careers in general health sciences, dietetics, health promotion, education, private practice, government and health protection agencies, research and nutrition development. Appropriate selection of Free Electives (★6 Physics) will provide the required courses for application to Medicine.

The Nutrition major, with appropriate Approved Program Electives, is accredited by the Dietitians of Canada (see §34.12.9). Students registered in this major can meet the academic competencies to be eligible for either the Integrated Dietetic Internship or postgraduate internships.

Students not completing competencies required to meet consideration for internships by the Dietitians of Canada can complete a minor in Physical Activity or Human Ecology (see §§34.12.5 and 34.12.6).

Due to the importance of maintaining high grades for the dietetic and other aspects of the program, students will be assessed annually to ensure that they maintain a GPA of at least 3.0 in the previous Fall/Winter [see §33.4(2)].

(1) Requirements of the Major (★60)

- PHYSL 210 (★6)
- BIOCH 310
- BIOL 207
- NUTR 100
- NUTR 301 and 302 (See Note 1)
- NUTR 400 and 440
- NU FS 223, 356, 377, NUTR 468
- ★9 from NUTR 452, 476, 477, 478, 479, 480, NU FS 428
- ★12 Approved Program Electives (See Note 2)

Notes

- (1) Nutrition majors must achieve a minimum combined average of 3.0 in NUTR 301 and 302 to continue in the program [See §33.4(2)].
 (2) See §34.1(5) and Note. Students who plan to apply for the Dietetic Internship or to complete a minor should see §§34.12.5 to 34.12.7 for information regarding Approved Program Electives selection.
 (3) The Capstone course for this major is NUTR 401.

34.12.5 Minor in Physical Activity

Students in the Nutrition and Food major (see §34.12.3) or in the Nutrition major (see §34.12.4) may choose to complete a minor in Physical Activity by incorporating the following ★15 into their program by careful selection of their Approved Program Electives and Free Electives. This provides the opportunity to integrate nutrition and food sciences with health and physical activity. See §34.1(4) and Note.

(1) Requirements for the Minor (★15)

- HE ED 110 (taken as a Free Elective)
- HE ED 220 and 321
- NUTR 480
- ★3 from HE ED 221, PEDS 391, PERLS 104, RLS 100

34.12.6 Minor in Human Ecology

Students in the Nutrition and Food major (see §34.12.3) or in the Nutrition major (see §34.12.4) may choose a minor in Human Ecology by incorporating the following ★18 into their program through careful selection of their Approved Program Electives and Free Electives. Depending on course selections made in major and minor areas of study, students may be eligible to apply to become a professional Human Ecologist or Professional Home Economist (information is available from 3-02 Human Ecology Building). Students in the Nutrition major who are pursuing the competencies for dietetics will require extra credits to obtain this minor. See §34.1(4) and Note.

(1) Requirements for the Minor (★18)

- HECOL 100 (taken as a Free Elective)
- HECOL 200
- HECOL 301
- HECOL 301
- ★6 from HECOL 300, 310, 313, 322, 412, 413, 414, 440, 443

34.12.7 Minor in Food Marketing

Students in the Nutrition and Food major (see §34.12.3) may choose a minor in Food Marketing by incorporating the following ★15 into their program by careful selection of their Approved Program Electives and Free Electives. This provides the opportunity to apply a nutrition and food science background to consumer and food marketing. See §34.1(4) and Note.

(1) Requirements for the Minor (★15)

- AREC 200
- AREC 384
- AREC 484
- ★6 from PSYCO 281, AREC 323 (if not taken to fulfill Program core), AREC 473, 482, 485, SMO 301 (if not taken to fulfill Program core)

34.12.8 Minor in Food Policy

Students in the Nutrition and Food major (see §34.12.3) may choose a minor in Food Policy by incorporating the following ★15 into their program through careful selection of their Approved Program Electives and Free Electives. This provides the opportunity to apply a health, fiscal and agricultural policy perspective to issues of health and food. See §34.1(4) and Note.

(1) Requirements for the Minor (★15)

- AREC 200
- AREC 473
- AREC 471
- ENCS 271
- HECOL 300

34.12.9 Dietetic Internships

To become a registered dietitian, students must complete an undergraduate degree in Nutrition and a dietetic internship. **Students must meet the additional course requirements (beyond those in the Nutrition major) outlined below to be eligible for an accredited dietetic internship.** Applicants must meet a spoken English requirement (see §13.3.2)

Integrated Dietetic Internship: Eligible students may apply for the Integrated Dietetic Internship once course requirements are met. See Note 1. In this internship, academic terms alternate with internship terms in cooperation with health care facilities throughout Alberta; the degree plus internship can be completed in approximately 5 years and then the student is eligible for registration with the College of Dietitians of Alberta and membership in Dietitians of Canada. Students admitted to the U of A Integrated Dietetic Internship are

required to maintain undergraduate registration and complete NUTR 466, 469, 470, 471 and 472 prior to convocation.

Postgraduate Internship: As an alternative to the Integrated Dietetic Internship Program, eligible students may apply for the postgraduate internship in their fourth year. Students applying for postgraduate internships through Dietitians of Canada do not complete U of A professional practice courses.

Required Course List for Dietetics Students

Students who wish to become Registered Dietitians must complete the Nutrition major, the specific additional undergraduate course requirements noted below and a dietetic internship (see Notes). These additional ★15 may be taken as Approved Program Electives or Free Electives in the Nutrition major. This combination is an accredited university undergraduate program with Dietitians of Canada.

- (1) **Required Dietetics Courses (★15)**
- INT D 410 (See Note 2)
 - NU FS 374, 461
 - ★3 Approved Program Elective chosen from NUTR 452, 478, 479, NU FS 428
 - NUTR 476

Notes

- Students planning to apply for the University of Alberta Integrated Dietetic Internship must have successfully completed NUTR 468 and have successfully completed or be registered in NU FS 377 and 461 for the upcoming academic year.
- Students must have completed NU FS 468 or NUTR 468 prior to registering in INT D 410.

Under Alberta's *Protection for Persons in Care Act*, students may be required to satisfy a criminal records check before being allowed to participate in an internship program. Students may choose programs emphasizing metabolic, clinical and community areas of concentration. Dietitians are employed in health care institutions, industry, government services, retail food services, teaching, community clinics, public relations, the media, and private practice.

34.13 BSc After Degree

General Information

An applicant holding an undergraduate degree may qualify for an AFHE BSc Degree by meeting the following requirements:

- Satisfy all requirements listed in §§34.13.1 or 34.13.2
- Satisfy all admission requirements (see §15.1), as well as program, academic standing and graduation requirements of the particular degree program (see §§33.4 and 34).

The specific course requirements for an After Degree program are determined by transfer credit assessment in Student Services at the time of admission. The After Degree program selected may be the same as the first degree program if another major is selected. Combined degrees programs are not available to students who already have one of the two degrees. For further information consult Student Services.

34.13.1 BSc After an Undergraduate Degree not from the Faculty of Agricultural, Life and Environmental Sciences at the University of Alberta

In addition to courses counted towards the first degree, students must satisfactorily complete a minimum of ★54 (normally the last 54) while registered at the University of Alberta, ★30 of which must be completed while registered in the After Degree program in the Faculty of Agricultural, Life and Environmental Sciences.

34.13.2 BSc After an Undergraduate Degree from the Faculty of Agricultural, Life and Environmental Sciences at the University of Alberta

In addition to courses counted towards the first degree, students must satisfactorily complete a minimum of ★30 while registered in the After Degree program in the Faculty of Agricultural, Life and Environmental Sciences.

34.14 Double Majors

A student in any Agricultural, Life and Environmental Sciences undergraduate degree program offering majors may qualify for a double major

in that program by completing a minimum of ★135 for their degree program and satisfying all major core requirements of each of the individual majors.

Students wishing to do a double major in two different programs must get permission from the Faculty; contact Student Services for further information.

34.15 Graduate Studies

Programs leading to advanced degrees at the Master's and Doctorate levels are offered by most Faculty departments. Course programs and thesis projects are arranged in consultation with Faculty members or with the Department's graduate coordinator.

See this Calendar's Graduate Programs section for general information about graduate studies. Specific information about requirements and opportunities in a particular field of study may be obtained from the appropriate Department in the Faculty of Agricultural, Life and Environmental Sciences.

35 Courses

The Faculty of Agricultural, Life and Environmental Sciences courses are listed in §231, Course Listings, under the following subject headings:

Agricultural and Resource Economics (AREC)
 Agricultural, Food and Nutritional Science (AF NS)
 Agricultural, Life and Environmental Sciences (AFHE)
 Animal Science (AN SC)
 Bioresource Engineering (BIOEN)
 Capstone Course (CAPS)
 Environmental and Conservation Sciences (ENCS)
 Forest Economics (FOREC)
 Forest Engineering (FOREN)
 Forest Science (FOR)
 Human Ecology (HECOL)
 Interdisciplinary Courses (INT D)
 Nutrition (NUTR)
 Nutrition and Food Sciences (NU FS)
 Plant Science (PL SC)
 Renewable Resources (REN R)
 Rural Sociology (R SOC)
 Soil Science (SOILS)
 University (UNIV)
 Work Experience (WKEXP)