KWANTLEN POLYTECHNIC UNIVERSITY
Faculty of Science and Horticulture

mailing address
12666 72 Ave. Surrey, BC
V3W 2M8 Canada
kpu.ca

FACULTY COUNCIL

Tuesday, December 19th, 2023
Microsoft Teams Meeting (Online)
4:15 PM – 6:15 PM

AGENDA

1. Additions/Approval of Agenda
2. Approval of Minutes from November 21, 2023
3. Business Arising from the Minutes
    - No business arising
4. Reports
    a) Chair's Report - (Allyson Rozell)
    b) Dean's Report - (Brett Favaro)
    c) Senate Reports
        i) Senate - (Fergal Callaghan)
        ii) Standing Committee on Program Review – (Fergal Callaghan)
        iii) Standing Committee on University Budget – (Fergal Callaghan)
        iv) Standing Committee on Academic Planning and Priorities – (Allyson Rozell)
        v) Standing Committee on Curriculum – (Brett Favaro)
        vi) Standing Committee on Research – (Brett Favaro)
        vii) Standing Committee on Teaching and Learning – (Catherine Chow)
        viii) Standing Committee on Policy – (Allyson Rozell)
    d) FSH Committee Reports
        i) Curriculum – (Brett Favaro)
            - Program Change Proposal: Bachelor of Science Major in Biology (Layne Myhre)
            - Program Change Proposal: Bachelor of Applied Science in Sustainable Agriculture (Rebecca Harbut)
        ii) Academic Planning and Priorities – (Allyson Rozell)
        iii) Nominations and Governance – (Allyson Rozell)
        iv) Research (No representative)
        v) New Business

Date of Next meeting January 16, 2024

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Tuesday, November 21st, 2023
Microsoft Teams Meeting (Online)
4:15 PM – 6:15 PM

Meeting Minutes

Attendees:
Brett Favaro; *Dean*
Jeff Dyck; *Assoc. Dean*
Erika Eliason; *Assoc. Dean*
Ashley Schneider; *Recording*
Allyson Rozell; *Chair*
Alex Lyon
Catherine Chow
Casey McConill
Christina Iggulden
Christian Lange
Fergal Callaghan
Korri Thorlacius
Laura Bryce
Nicole Tunbridge
Melissa Drury
Michael Adams
Muskandeep Kaur
Nadia Henwood
Samaneh Ghanzafari Hashemi
Tyron Tsui

Regrets:
Alan Davis
Cameron Lait
Lana Mihell; *DBM*
Mike Coombes; *Vice-Chair*
Asiyeh Sanaei
Leah DeBella
Martina Solano Bielen
Mary Hosseinyazdi
Michael Kiraly
Sepideh Tahriri Adabi
Tanya Boboricken
Xavier Ardez

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1. **Approval of the Agenda of November 21, 2023**
   The agenda was approved as distributed.

2. **Approval of the Faculty Council Minutes of October 17, 2023**
   The minutes were approved as distributed.

3. **Business Arising:**
   - Chair's Update regarding request to amend the Faculty of Art's Double Minor Degree: memo should be sent to Faculty of Arts this week following further discussion.

4. **Reports:**

a. Chair's Report:

- The name of the Faculty has officially changed to "Faculty of Science"

b. Dean's Report:

- Name change is in effect immediately, but various steps could take until September 2025 to be fully enacted. The steps that will take the longest have to do with technical changes like the website or the University calendar with the registrar.
- Reminder that it is very important we do not advise students against progressing through their program, as even though a program may change in the future it still has to make it through a series of approval steps, and there are transition plans in place for students currently in the program.
  Please refer students to our advisors for program progression questions.
- The structure of Ed Planning has changed this year. We will be mapping out a yearly plan based on past course offerings. Chairs will be reaching out to their departments to discuss any changes.
- Roberts Rules of Order – In Brief – 3rd edition
  Everyone that participates on Faculty Council, or a subcommittee, or as a department chair, will receive a copy of this book. It serves as a handbook for how to use Robert's rules and run meetings like this. We would like to make sure everyone has the support and instructions to feel confident in these meetings.
- Kwantlen Science Challenge was a huge success. Thank you to all who contributed!
  We want to make sure we are supporting the best we can, so please give us any feedback you have. We want to see lots more of these kinds of successes.

c. Senate Reports:

<u>Senate, October meeting:</u>

- As part of the initiative to provide increased recognition for prior learning, Senate passed a motion that will allow students who have completed a KPU Trades and Technology program (including two programs in the School of Horticulture) to "receive credit as Recognized Prior Learning when they are admitted to an Undergraduate level credential at KPU".
- Senate approved Richard Popoff's nomination to represent our Faculty on the Senate Standing Committee on Curriculum and Allyson Rozell's nomination to the Senate Executive Committee.
- Senate approved the academic schedules for 2024/25, 25/26, and 26/27. The Spring terms will include two non-instructional days in January for new student orientation. The 25/26 and 26/27 schedules can be revisited next year and amended if necessary.

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Senate, November meeting:

- The Program Concepts and Full Proposals for two new proposed programs were approved: Citation in Could Architecture and Security, and Diploma in Front-End Development for Interactive Applications.
- Budget updates by Kristine Kidd (Interim Director, Financial Operations)
    - Update on this year's budget: A report (called a "variance report") on the university's finances for this fiscal year up to August 31st was presented. Not counting revenue from the sale of land, so far this year we are running a surplus compared to what was expected. This is mostly due to underspending in some areas of the budget (salaries in particular) and higher than expected interest rates for our investments. Discussions with the Ministry are underway regarding if or how an end-of-year surplus could be used.
    - Update on development of 2024/25 budget: Due to an expected increase in expenses, the ongoing budget is expected to be $5.9M less than it is this year. Though there is expected to be an increase in the one-time-only budget of $15M (mostly due to reduction of salary expenses and increases in investment income). So, the net additional budget that will be available is $9.1M for one-time-only expenses. The university executive met last week to discuss the budget requests that have been received.
- A preliminary proposal for the establishment of a Faculty of Graduate Studies was presented by Dr David Burns. Senate voted in favour of further consideration of the proposal. A Task Force headed by the Provost or designate(s) will be formed to carry out consultations leading to a full written proposal that will be submitted to Senate and the Board in April.
- Senate voted to rename KPU's 'White Paper on Research and Scholarship' to the 'KPU Research Advancement Strategy'.
- After the meeting, President Davis gave a presentation entitled "Towards a Global Education Strategy at KPU". It summarized the work done so far by a KPU Global Task Force (established 2022) and outlined next steps."

- **Senate Standing Committee on Program Review (SSCPR):**
    - The Brewing and Brewery Operations Quality Assurance Plan was approved by the committee.

- **Senate Standing Committee on University Budget (SSCUB):**
    - Updates on the current fiscal year and on the development of next year's budget were presented (see notes from November Senate meeting above).

- **Senate Standing Committee on Academic Planning and Priorities (SSCAPP):**
    - Coming forward at the next meeting:
      Program Discontinuance: Diploma in Applied Business Technology
      Curricular Action Plan for Generative Artificial Intelligence

- **Senate Standing Committee on Curriculum (SSCC):**
    - Procedurally: there was a regular SSCC meeting and special SSCC meeting called on the 8th to cover missing course outlines.

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- **Senate Standing Committee on Research (SSCR):**
  - Voted to rename KPU's 'White Paper on Research and Scholarship' to the 'KPU Research Advancement Strategy'. This is a much more inclusive name based on the exclusionary history of the name "White Paper"

- **Senate Standing Committee on Teaching and Learning (SSCTL):**
  - Received reports from various departments:
  - Teaching and Learning Commons newsletter is out
  - The Learning Centre is reporting an increase in registration for their study skills workshops for students – a good reminder for faculty that they offer these
  - Academic Integrity Unit reported their new position – Academic Integrity Liaison Also highlighted student liaisons and the new use of 'Turn It In' draft coach

- **Senate Standing Committee on Policy (SSCP):**
  - Initial proposal for Graduate Studies:
    Link to post on draft Policy AC5: https://wordpress.kpu.ca/policyconsult/?p=502
    Link to post on omnibus policy revision:
    https://wordpress.kpu.ca/policyconsult/?p=506

d. Committee Reports

- **Curriculum Committee:**
  - Orientation to CIM (Course Leaf) software was hosted for this committee

- **Academic Planning and Priorities:**
  - Diploma in Brewing and Brewery Operation plans to temporarily suspend the portfolio from the admission requirements.
  - Hiatus of the Urban Ecosystems Program:
    Suspension of this program has been ongoing and the program review is currently underway. This suspension gives clarity to the status of the program and a deadline for having the review done.

MOTION: The Bachelor of Horticulture Science, Major in Urban Ecosystems program be suspended from January 2024 to Aug 2025.
Moved: Nicole Tunbridge **Seconded:** Korri Thorlacius; **Motion Carried.**

- **Research:**

  -Whereas there is approximately $3M of unspent funds that accumulated during the pandemic; and
  - Whereas these monies are part of the value of the Collective Agreement and are owed to faculty; and
  - Whereas there is an established process in place as per the 0.6% PD fund for the distribution of monies,
  - Then be it resolved that the Faculty Council for Science and Horticulture supports the proposal made by the KFA for a Research and Scholarly Activity Fund pilot.

MOTION: THAT Faculty of Science Faculty Council support the proposal made by the KFA for a Research and Scholarly Activity Fund Pilot

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Moved: Korri Thorlacius **Seconded:** Melissa Drury; **Motion Carried.**

- **Nominations and Governance:**
  - Nothing to report.

5. **New Business:**
   - Nothing arising.

Meeting adjourned by Chair at 4:58 PM

Date of next Faculty Council: December 19, 2023

New Course Proposal

Changes saved but not submitted

Viewing: BIOL 3150 : Evolutionary Biology

Last edit: Wed, 26 Jul 2023 17:48:25 GMT

Academic Level
Undergraduate (UG)

Faculty
Science & Horticulture

Department
Biology

Implementation Date
Fall 2024

Subject Code
BIOL - Biology

Course Number
3150

Descriptive Title
Evolutionary Biology

Short Title
Evolutionary Biology

Calendar Description
Students will examine key concepts and processes in evolutionary biology including microevolution, macroevolution, phylogenetics, population genetics, genome evolution, natural selection, sexual selection, adaptation, speciation, extinction, biodiversity, and evolution of development. They will further investigate evolutionary themes by completing laboratory activities, analyzing the results, and critically analyzing written and graphical material from scientific literature. Students will learn about the relevance of evolutionary biology to modern society by examining research into a range of contemporary topics such as the evolution of disease and the application of evolutionary theory to conservation.

Suggested Credit Hours
0-4
Credits
4

Suggested Classroom Hours

Lecture Hours
4

Suggested Lab Hours
0-3
Lab Hours
0

Suggested Other Hours (Clinical, Practicum, etc)

Other Hours
0

Suggested Contact Hours
0-7
Contact Hours
4

Is this course repeatable for additional credit?
No

Cross-listed Courses

Equivalent Courses

Credit-exclusion Courses

Optional Calendar Description Note

Prerequisites
BIOL 2320 and BIOL 2322

Corequisites

Schedule Types

Schedule Type
Class/Lab

Course Attributes

Pathway to Undergraduate Studies

Degree Requirement Attributes
Quantitative

Suggested Registration Restrictions

Course Registration Restrictions

Course Learning Outcomes

	A student who successfully completes the course will have reliably demonstrated the ability to:
1	Evaluate principles of evolutionary theory and incorporate them appropriately in discussions and assessments
2	Describe scientific evidence that supports evolution
3	Apply concepts of evolutionary theory to address biological problems
4	Use relevant research tools and applications to conduct simple evolutionary biology analyses
5	Manage and organize class discussions
6	Analyze, interpret, and present results of research on evolutionary biology topics from scientific literature
7	Conduct evolutionary experiments and interpret the results

Content will include, but is not restricted to, the following:

- Microevolutionary and macroevolutionary evidence for evolution
- Phylogenetic Trees
- Patterns of Variation
- Population Genetics
- Quantitative Genetics
- Adaptation
- Selection
- Molecular Evolution
- Species Concepts
- Speciation
- Evolution of Development
- Life History Evolution
- The Evolution of Social Behavior
- Genome Evolution
- Biodiversity
- Human Evolution
- Evolution and Human Health
- Evolution and Conservation

Course Learning Activities

Learning activities should be appropriately related to learning outcomes. Activities may include, but are not restricted to, the following:

Working in groups to present findings of scientific articles
Completing lab activities
Writing lab reports
Reading, summarizing, and critically evaluating scientific articles
Participation in class and lab discussions
Participation in computer simulations on evolutionary biology topics
Writing exams

Mastery Criteria

Assessment

Assessment plans comply with KPU policy and may resemble the following:

Add the details about 1 assessment prior to W date, note that an assessment can evaluate multiple LO, ensure that each LO has been evaluated, should have multi modes of assessment (not all exam based for example)

Assessment Type 1
Classroom assignment(s; 15-25%)
Type 1 Value
15

Assessment Type 2
Midterm exam(s; 15-25%)
Type 2 Value
25

Assessment Type 3
Laboratory assessments (20-40%)
Type 3 Value
30

Assessment Type 4
Final exam
Type 4 Value
30

Assessment Type 5

Type 5 Value

Assessment Type 6

Type 6 Value

Assessment Type 7

Type 7 Value

TOTAL
100

Additional Notes

Attach Learning contribution rubric

Grading System - default
Letter Grades (N)

Alternate Grading System(s) - not default

Methods for Prior Learning Assessment

Required Learning Resources
Herron, J.C. and Freeman, S. Evolutionary Analysis. Pearson. Latest Edition

Recommended Learning Resources

Other Course Materials

Open Educational Resources (OER)

Eligible for Zero Textbook Cost (ZTC)?
No

Does this course require the use of animals?
No

Do library resources in this area need more development?
No
If yes, then list details

Is this course externally accredited?
No

External Accrediting Body

Request for Quantitative Course Attribute

Please summarize the course content and the rationale behind the QUAN attribute request.

Select which Quantitative Criteria this course meets (include at least 2).

A. Developing quantitative measures of physical, behavioural, social, or economical phenomena.
B. Using forecasting models to express causal relationships and to explore the implications of changed assumptions or proposed solutions to problems.
C. Using numerical data from archives, surveys, lab experiments, or other sources; and summarizing and interpreting them in meaningful and descriptive ways to reach conclusions and/or draw inferences.
D. Testing hypotheses through statistical analysis.

Describe how this course meets Quantitative Criterion A.

The students will be enumerating and performing calculations on allele frequencies, and how they can change over time. They also will be collecting quantitative date during lab activities.

Describe how this course meets Quantitative Criterion B.

The students will be adjusting parameters in allele frequency models/equations and examining and interpreting the changes the results.

Describe how this course meets Quantitative Criterion C.

Students will be analyzing data from other researchers and their own results from laboratory exercises. They will also be interpreting the results of these analyses.

Describe how this course meets Quantitative Criterion D.

The students will be performing statistics on the data they gather in their laboratory exercises to test their hypotheses.

Attach Supporting Documents

Course Developer(s)
Carson Keever

Course Reviser(s)

Megan Marcotte

Date for Next Review
9/1/2028

Reviewer Comments

Key: 6910

Select any proposals you would like to bundle together for approval. Only proposals you have saved are available to bundle.

Bundle Title:

Course:

- [ ] Proposal A

Program:

- [ ] Proposal B

Table of Contents

1. Program Change Proposal

For degree or non-degree program changes that may be deemed substantive by the Ministry of Advanced Education, Skills & Training's website, please consult with the Provost's Office before completing this document. For degree program changes that may be deemed substantive, the Ministry's Determination of New Degree Template must be completed and approved by Senate prior to submission to the Ministry for determination. Contact the Provost's Office for assistance in completing this template.

This form is to be used for:

- minor changes to any Senate-approved degree and non-degree programs at KPU
- addition of Honours designation to a Major program currently offered at KPU
- creation of a Minor degree for which a cognate Major program is currently offered at KPU

For more information on how to complete this form, please contact the Chair of the Senate Standing Committee on Curriculum (SSCC).

The Program Change Proposal should be submitted to Senate@kpu.ca by the submission deadline posted on the Senate Standing Committee on Curriculum (SSCC) website meeting along with any new, revised, or discontinued course outlines associated with the proposal submitted on the Consent Agenda for the same meeting. Faculties must have already formally approved the associated course outlines.

PROGRAM DETAILS

Faculty:	Science and Horticulture
Program Name:	Bachelor of Science (Honours), Major in Biology with Co-operative Education Option
Department:	Biology
Effective date:	September 1, 2024 Notes: *If you are requesting a change to **admission** requirements, Senate approval is required by September meeting of Senate of the preceding academic year (prior to the first application cycle for the academic year). If you are requesting a change to **declaration or curricular** requirements, approval is required no later than the April meeting of Senate of the preceding academic year.*
Dean/Associate Dean:	Brett Favaro, Jeff Dyck
Chair/Coordinator:	Layne Myhre, Nicole Tunbridge
Submission Date:	Oct 19, 2023

CONSULTATIONS

Consultations	**Person Consulted**	**Consultation Date**
Office of the Provost:	David Burns	July 5, 2023; Sept 13, 2023
Vice Chair of Senate:	Amy Jeon, Catherine Schwichtenberg	June 9, 2023; Sept 11, 2023
Other(s)* (if applicable):	Stephanie Howes, Dean of Business, Oct 19, 2023	

**For more complex consultations, please attach the Curriculum Consultation Forms. If you have any inquiries regarding the completion of the above Consultations section or the Curriculum Consultation Forms, please contact the Chair of the Senate Standing Committee on Curriculum.*

OFFICE OF THE REGISTRAR PROPOSAL REVIEW

Review of Completed Program Change Proposal	Review Submission Date
Send to OREGCurrConsult@kpu.ca for review**	**Sept 11, 2023**

***Allow 2 weeks for the Office of the Registrar's proposal review (in advance of the SSCC submission deadline).*
If the proposed changes introduce new courses, submit 2 weeks in advance of your Faculty's curriculum committee meeting.

APPROVALS

	Proposal Approval Date
Faculty Curriculum Committee:	**TBA**
Faculty Council (if required):	**TBA**
SSC on Curriculum:	**TBA**
SSC on University Budget (if required):	n/a
SSC on Academic Planning and Priorities (if required):	n/a
Senate:	n/a

Overview of Proposed Change(s):	1. In compliance with our approved QA plan, to implement changes to our program requirements intended to streamline program progression for students and permit more choices in satisfying curricular requirements, as well as bringing our programs more in line with similar programming at other post-secondary institutions. 2. Reduce credit totals by removing some electives but increasing choices in discipline-relevant areas. 3. Introduction of a new Co-operative Education Option program for the Bachelor of Science, Major in Biology and Bachelor of Science (Honours), Major in Biology degree programs.
Rationale:	1. The approved Biology Program Review Self-Study indicated a need for removing bottlenecks from the Biology programs, which were highly prescriptive, to a degree that is unusual for a Bachelor's program in Biology. As indicated in the approved QA Plan arising from the Review, the Biology Department held a Program Curricular Retreat on June 7th to redesign the curricular requirements of the two Biology Programs to improve student progression while still supporting our established Program Learning Outcomes.

	2. As indicated in the approved QA Plan, we have reduced the credit totals of our programs by 6 credits, by reducing extraneous electives beyond the required Breadth Electives but maintaining student flexibility by retaining choice in discipline-relevant areas. 3. Developing a Co-operative Education Option within our degree programs arose as a recommendation from the BIOL program review. Having a Co-operative Education Option program gives students an opportunity to apply skills gained during their academic study to industry and government job settings. This is in keeping with the Polytechnic mandate and greatly improves student employability and job-readiness. Given the strong ties between the Biology department and local industry through various research partnerships, it is an obvious way to allow students taking our programs to capitalize on work experiences, both in- and outside the classroom. Moreover, the original Program Proposal for the Biology degree included the Co-op option, so this change is in keeping with the original ministry-approved proposal.
URL(s):	https://calendar.kpu.ca/programs-az/science-horticulture/biology/biology-bs/

Impact on Students:	**Check all that apply**: ☐ The changes alter the admission, declaration or continuance requirements *If yes, provide both the current calendar entry and new calendar entry in full. (see below)* ☒ The changes alter the curricular requirements *If yes, provide both the current calendar entry and new calendar entry in full. (see below)* ☒ The changes change the total number of required credits *If yes, state the **current** number of total credits:* **140** *and **proposed** number of total credits:* **134** ☒ The changes introduce new, revised or discontinued courses *If yes, indicate the Faculty approval date and list the courses below.* Discontinue BIOL 4150 (three credit), replaced with BIOL 3150 (four credit lab course). ☒ The changes alter the credential awarded *If yes, indicate the proposed credential:* Bachelor of Science (Honours), Major in Biology with Co-operative Education Option

Transition Plan	Current students will be able to complete the previous version of the program, and we propose to develop the BIOL 3150 Evolutionary Biology course to be offered in 2024/2025, followed by discontinuance of the BIOL 4150 Evolutionary Biology course after one year, and use the Course Substitution form to allow a direct substitution for any student using the previous version after that point. All other previously required courses will continue to be offered regularly to ensure student progression until at least 2 years after the program change.

Curriculum Map[1]

See Appendix A for full Curriculum Map.

[1] **Introduced [I]**: Course learning outcomes that concentrate on knowledge or skills related to the program outcomes at a basic level or skills at an entry-level of complexity.
Developing [D]: Course level outcomes that demonstrate learning at an increasing level of proficiency of the program level outcome as well expanding complexity.
Advanced [A]: Course level outcomes that demonstrate learning related to the program level outcome with an increasing level of independence, expertise and sophistication or integrate the use of content or skills in multiple levels of complexity.

Current Requirements with Proposed Changes *Cut and paste the relevant section(s) in full from the current Calendar website. Use track changes to show the proposed changes.* *For a new Minor degree for which a cognate Major program is currently offered at KPU, insert the following text below "This is a new Minor degree program for which a cognate Major degree program already exists at KPU. There is no existing curriculum for the minor, and as per Policy AC11 there is no requirement for a Concept Paper or FPP."*	**New Requirements** *Provide a clean copy to show how the new Calendar entry will appear. List courses in alpha/numeric order.*
Admission Requirements The Faculty's Admission Requirements, which consist of KPU's undergraduate English Proficiency Requirement, apply to this program. **Declaration Requirements** Students intending to graduate with this Faculty of Science and Horticulture degree must declare the credential by the time they complete 60 credits of undergraduate coursework. At the time of declaration, the student must satisfy all of the following requirements: In good academic standing with the University Completion of a minimum of 24 credits of undergraduate coursework, including the following: • 3 credits of ENGL at the 1100 level or higher • BIOL 1110 with a minimum grade of "C" • BIOL 1210 with a minimum grade of "C" • CHEM 1110 with a minimum grade of "B" or CHEM 1210 with a minimum grade of "C" • MATH 1120 with a minimum grade of "C" or MATH 1130 with a minimum grade of "C"	**Admission Requirements** The Faculty's Admission Requirements, which consist of KPU's undergraduate English Proficiency Requirement, apply to this program. **Declaration Requirements** Students intending to graduate with this Faculty of Science and Horticulture degree must declare the credential by the time they complete 60 credits of undergraduate coursework. At the time of declaration, the student must satisfy all of the following requirements: In good academic standing with the University Completion of a minimum of 24 credits of undergraduate coursework, including the following: • 3 credits of ENGL at the 1100 level or higher • BIOL 1110 with a minimum grade of "C" • BIOL 1210 with a minimum grade of "C" • CHEM 1110 with a minimum grade of "B" or CHEM 1210 with a minimum grade of "C" • MATH 1120 with a minimum grade of "C" or MATH 1130 with a minimum grade of "C"

• PHYS 1101 with a minimum grade of "C" or PHYS 1120 with a minimum grade of "C" **Curricular Requirements** All students must meet the following minimum requirements: • In addition to ENGL 1100, complete 3 credits from courses designated as Writing Intensive. • 120 credits from courses at the 1100 level or higher. • 45 credits from courses at the 3000 level or higher, including 9 credits at the 4000 level. • 18 credits of breadth electives (see Electives below) including at least 3 credits from a course at the 3000 level or higher. These must include: o at least 12 credits from courses that are offered outside the Faculty of Science & Horticulture; and o up to 6 credits from courses offered within the Faculty of Science & Horticulture other than BIOL, CHEM, MATH, and PHYS. • Cumulative GPA of 2.0 or higher. • At least 50% of all courses for the BSc, and at least 66% of upper-level courses for the BSc, must be completed at KPU. Enrolment in the Biology Honours program requires the permission of the Biology Department. In order to be considered for the Honours program, students must typically have a record of exceptional academic performance, including a minimum Grade Point Average of 3.0	• PHYS 1101 with a minimum grade of "C" or PHYS 1120 with a minimum grade of "C" **Curricular Requirements** All students must meet the following minimum requirements: • In addition to ENGL 1100, complete 3 credits from courses designated as Writing Intensive. • 120 credits from courses at the 1100 level or higher. • 45 credits from courses at the 3000 level or higher, including 9 credits at the 4000 level. • 18 credits of breadth electives (see Electives below) including at least 3 credits from a course at the 3000 level or higher. These must include: o at least 12 credits from courses that are offered outside the Faculty of Science & Horticulture; and o up to 6 credits from courses offered within the Faculty of Science & Horticulture other than BIOL, CHEM, MATH, and PHYS. • Cumulative GPA of 2.0 or higher. • At least 50% of all courses for the BSc, and at least 66% of upper-level courses for the BSc, must be completed at KPU. Enrolment in the Biology Honours program requires the permission of the Biology Department. In order to be considered for the Honours program, students must typically have a record of exceptional academic performance, including a minimum Grade Point Average of 3.0

The Bachelor of Science (Honours), Major in Biology degree requires the completion of a minimum of ~~140~~ 134 credits, including the following specific course requirements.

Note: Some courses are only offered once per year. Please refer to the course timetable and speak with an Academic Advisor when planning.

Year 1		
BIOL 1110	Introductory Biology I	4
BIOL 1210	Introductory Biology II	4
CHEM 1110	The Structure of Matter	4
CHEM 1210	Chemical Energetics and Dynamics	4
ENGL 1100	Introduction to University Writing	3
MATH 1130	Calculus for Life Sciences I [1]	3
MATH 1230	Calculus for Life Sciences II	3
PHYS 1101	Physics for Life Sciences I	4
PHYS 1102	Physics for Life Sciences II	4
Select three credits of ENGL at the undergraduate level		3
Credits		36

Year 2		
BIOL 2320	Genetics	4

The Bachelor of Science (Honours), Major in Biology degree requires the completion of a minimum of 134 credits, including the following specific course requirements.

Note: Some courses are only offered once per year. Please refer to the course timetable and speak with an Academic Advisor when planning.

Year 1		
BIOL 1110	Introductory Biology I	4
BIOL 1210	Introductory Biology II	4
CHEM 1110	The Structure of Matter	4
CHEM 1210	Chemical Energetics and Dynamics	4
ENGL 1100	Introduction to University Writing	3
MATH 1130	Calculus for Life Sciences I [1]	3
MATH 1230	Calculus for Life Sciences II	3
PHYS 1101	Physics for Life Sciences I	4
PHYS 1102	Physics for Life Sciences II	4
Select three credits of ENGL at the undergraduate level		3
Credits		36

Year 2		
BIOL 2320	Genetics	4

BIOL 2321	Cell Biology	4
BIOL 2322	Ecology	4
BIOL 2421	Cellular Biochemistry	3
CHEM 2320	Organic Chemistry I	4
CHEM 2420	Organic Chemistry II	4
MATH 2335	Statistics for Life Sciences	3
~~Select nine credits of Electives~~ Select six credits of Electives at the undergraduate level		~~6~~9
Credits		~~35~~32

BIOL 2321	Cell Biology	4
BIOL 2322	Ecology	4
BIOL 2421	Cellular Biochemistry	3
CHEM 2320	Organic Chemistry I	4
CHEM 2420	Organic Chemistry II	4
MATH 2335	Statistics for Life Sciences	3
Select six credits of Electives at the undergraduate level		6
Credits		32

Year 3		
~~BIOL 3110~~	~~Animal Behaviour~~	~~4~~
~~BIOL 3215~~	~~Zoology~~	~~4~~
~~BIOL 3165~~	~~Conservation Biology~~	~~3~~
BIOL 3xxx	Evolutionary Biology	4
BIOL 3180	Life Science Research Methods	3
~~BIOL 3225~~	~~Biology of Plants: An Ecological and Evolutionary Perspective~~	~~4~~
~~BIOL 3320~~	~~Molecular Genetics~~	~~4~~
~~BIOL 3321~~	~~Advanced Cell and Molecular Biology~~	~~4~~
Select at least one of:		4

Year 3		
BIOL 3150	Evolutionary Biology	4
BIOL 3180	Life Science Research Methods	3
Select at least one of:		4
BIOL 3215	Zoology	
BIOL 3225	Biology of Plants: An Ecological and Evolutionary Perspective	
Select at least one of:		4
BIOL 3320	Molecular Genetics	
BIOL 3321	Advanced Cell and Molecular Biology	
Select at least 12 credits of BIOL at the 3000 level or higher		12
Select three credits of BIOL at the undergraduate level		3
Select six credits of Electives at the undergraduate level		6
Credits		36

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BIOL 3215	Zoology	
BIOL 3225	Biology of Plants: An Ecological and Evolutionary Perspective	
Select at least one of:		4
BIOL 3320	Molecular Genetics	
BIOL 3321	Advanced Cell and Molecular Biology	
Select at least 12 credits of BIOL at the 3000 level or higher		12
Select three credits of BIOL at the undergraduate level		3
Select six credits of Electives at the undergraduate level		6
Credits		~~35~~36

Year 4		
Select at least one of:		3
BIOL 3165	Conservation Biology	
BIOL 4235	Marine Biology	
Select at least one of:		4
BIOL 4140	Animal Physiology	
BIOL 4245	Developmental Biology	
~~BIOL 4140~~	~~Animal Physiology~~	~~4~~
~~BIOL 4150~~	~~Evolutionary Biology~~	~~3~~
~~BIOL 4235~~	~~Marine Biology~~	~~3~~
~~BIOL 4245~~	~~Developmental Biology~~	~~4~~
BIOL 4990	Honours Thesis Project 1 Honours Thesis Project 2	4

Year 4		
Select at least one of:		3
BIOL 3165	Conservation Biology	
BIOL 4235	Marine Biology	
Select at least one of:		4
BIOL 4140	Animal Physiology	
BIOL 4245	Developmental Biology	
BIOL 4990	Honours Thesis Project 1	4
BIOL 4995	Honours Thesis Project 2	4
Select at least six credits of BIOL at the 3000 level or higher		6
Select 9 credits of Electives at the undergraduate level		9
Credits		30
Total Credits:		134

[1] MATH 1120 may be used as a substitute for MATH 1130

Co-operative Education Option

BIOL 4995		4
Select at least six credits of BIOL at the 3000 level or higher		6
Select ~~12~~ 9 credits of Electives at the undergraduate level		~~12~~9
Credits		~~32~~30
Total Credits:		~~140~~134

[1] MATH 1120 may be used as a substitute for MATH 1130

~~**Electives**~~

~~As part of this program, students are required to complete 27 credits of electives. These must satisfy the General Requirements for 18 credits of breadth as stated above. The following courses are recommended as electives:~~

~~**Electives Course List**~~		
~~ANTH 3242~~	~~A Survey of the Primates~~	~~3~~
~~ASTR 1105~~	~~Basic Astronomy~~	~~3~~
~~ASTR 3111~~	~~Exploring Stars & Galaxies~~	~~3~~
~~BIOL 2330~~	~~Microbiology~~	~~4~~
~~BIOL 3330~~	~~Microbiology II~~	~~4~~
~~BIOL 4260~~	~~Human Neural, Excretory and Endocrine Systems~~	~~4~~
~~BIOL 4320~~	~~Human Genetics~~	~~3~~
	~~Analytical Chemistry~~	~~4~~

The Bachelor of Science, Major in Biology degree is offered with a Cooperative Education Option. Co-operative Education gives a student the opportunity to apply the skills gained during academic study in paid, practical work experience semesters. Degree students can complete a minimum of three work terms while completing their degree. Work terms generally occur full-time in separate 4 month work semesters. Work semesters alternate with academic study.

Students wishing to enter and participate in the Co-operative Education Option must meet the following requirements:

Declaration and Entrance Requirements

- Declaration into the Bachelor of Science, Major in Biology program
- Declaration of the co-operative education option prior to completion of 90 credits for the Bachelor of Science, Major in Biology program
- Minimum GPA of 2.7

Program Continuance Requirements

- Completion of COOP 1101 prior to completing 90 credits
- Minimum GPA of 2.7
- Instructor permission

Co-op Course Requirements

The Co-operative Education designation requires successful completion of the following courses:

Required		
COOP 1101	Introduction to Professional and Career Readiness	1

Commented [VV1]: List of Electives is not included – if this was intentional, you can leave it removed from the requirements. If you do want the list of electives included, please let us know and we can add it back in

Commented [LM2R1]: Decision was to cut this list - the updated list of recommended electives will live with Advising rather than on this page.

~~CHEM 2315~~	~~Physical Chemistry~~	~~4~~
~~CHEM 3310~~	~~Introduction to Computer Literacy~~	~~3~~
~~CPSC 1100~~	~~Post University Transition~~	~~3~~
~~EDUC 4100~~	~~Environmental Toxicology~~	~~3~~
~~ENVI 2305~~	~~Environmental Legislation~~	~~3~~
~~ENVI 2405~~	~~Environment and Society~~	~~3~~
~~ENVI 3112~~	~~Nutrition~~	~~3~~
~~HSCI 3225~~	~~Entomology~~	~~3~~
~~HORT 3310~~		

COOP 1150	Co-op Work Semester 1	9
COOP 2150	Co-op Work Semester 2	9
COOP 3150	Co-op Work Semester 3	9
Optional		
COOP 4150	Co-op Work Semester 4	
Credits		28

Note: COOP courses must be completed in ascending numerical order. Contact the Co-op office for information about the possibility of part-time work terms. COOP courses may be used only to satisfy the Co-op designation and cannot be used to satisfy other curricular requirements of the program.

Co-operative Education Option

The Bachelor of Science, Major in Biology degree is offered with a Cooperative Education Option. Co-operative Education gives a student the opportunity to apply the skills gained during academic study in paid, practical work experience semesters. Degree students can complete a minimum of three work terms while completing their degree. Work terms generally occur full-time in separate 4 month work semesters. Work semesters alternate with academic study.

Students wishing to enter and participate in the Co-operative Education Option must meet the following requirements:

Declaration and Entrance Requirements

Additional Requirements

In addition to the requirements stated above, all Co-op students must satisfy the General Co-operative Education Requirements.

Credential Awarded

Upon successful completion of this program, students are eligible to receive a **Bachelor of Science, Major in Biology, Co-operative Education Option**.

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- Declaration into the Bachelor of Science, Major in Biology program
- Declaration of the co-operative education option prior to completion of 90 credits for the Bachelor of Science, Major in Biology program
- Minimum GPA of 2.7

Program Continuance Requirements

- Completion of COOP 1101 prior to completing 90 credits
- Minimum GPA of 2.7
- Instructor permission

Co-op Course Requirements

The Co-operative Education designation requires successful completion of the following courses:

Required		
COOP 1101	Introduction to Professional and Career Readiness	1
COOP 1150	Co-op Work Semester 1	9
COOP 2150	Co-op Work Semester 2	9
COOP 3150	Co-op Work Semester 3	9
Optional		
COOP 4150	Co-op Work Semester 4	
Credits		28

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Note: COOP courses must be completed in ascending numerical order. Contact the Co-op office for information about the possibility of part-time work terms. COOP courses may be used only to satisfy the Co-op designation and cannot be used to satisfy other curricular requirements of the program. **Additional Requirements** In addition to the requirements stated above, all Co-op students must satisfy the General Co-operative Education Requirements. **Credential Awarded** Upon successful completion of this program, students are eligible to receive a **Bachelor of Science (Honours), Major in Biology, Co-operative Education Option**.	

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List any new, revised or discontinued courses associated with this program change			
Course Subject Code	Course Number	Descriptive Title, hyperlinked to course outline	New, Revised, or Discontinued
BIOL	4150	Evolutionary Biology	To be Discontinued
BIOL	3150	Evolutionary Biology	New

2. Curriculum Consultations

Please consult with the Office of the Provost as additional consultations may be required depending on the scope of the proposed program changes.

For consultees, please consider the following questions when providing your feedback to the Proponent:

- Does your department/unit support the proposed curriculum? Provide rationale for support/non-support.
- How does the proposed curriculum impact your department/unit?
- How does the proposed curriculum impact your program?
- Is there potential for curricular overlap with current offerings?

Name	Department, Program and/or Faculty	Comments	Date Consulted
Jennifer O'Brien	Office of the Provost (oPro)		04 July 2023
Virginia Vandenberg	Office of the Provost (oPro)		10 July 2023

Note: No consultations in addition to those listed on page 2 were requested.

3. Financial Assessment Questions

Financial Assessment Questions The following information will help determine whether there is a budgetary impact to the proposed program changes, and what additional information and consultation will be required. Please note that all additional budgetary requests in support of the proposed program change require approval from the Dean and the Provost, and additional financial documents may be required.	
Change in number of credits	Yes☒ No☐ If Yes, please provide details: Total program credits required is reduced (134 down from 140) as recommended by our approved Program Review.
Change in space requirements	Yes☐ No☒ If Yes, please provide details:
Change in equipment requirements	Yes☐ No☒ If Yes, please provide details:
Change in support requirements	Yes☒ No☐ If Yes, please provide details: Addition of lab to BIOL 3150 will require a laboratory instructor, which may necessitate auxiliary hiring. We have added this budgetary request for the upcoming Fiscal year. If it is not approved, we may be able to absorb this one lab section into existing staff workloads, or switch offerings to accommodate the added lab section.

Please attach any financial document if required.

Table of Contents

1. Program Change Proposal

For degree or non-degree program changes that may be deemed substantive by the Ministry of Advanced Education, Skills & Training's website, please consult with the Provost's Office before completing this document. For degree program changes that may be deemed substantive, the Ministry's Determination of New Degree Template must be completed and approved by Senate prior to submission to the Ministry for determination. Contact the Provost's Office for assistance in completing this template.

This form is to be used for:

- minor changes to any Senate-approved degree and non-degree programs at KPU
- addition of Honours designation to a Major program currently offered at KPU
- creation of a Minor degree for which a cognate Major program is currently offered at KPU

For more information on how to complete this form, please contact the Chair of the Senate Standing Committee on Curriculum (SSCC).

The Program Change Proposal should be submitted to Senate@kpu.ca by the submission deadline posted on the Senate Standing Committee on Curriculum (SSCC) website meeting along with any new, revised, or discontinued course outlines associated with the proposal submitted on the Consent Agenda for the same meeting. Faculties must have already formally approved the associated course outlines.

PROGRAM DETAILS

Faculty:	Science and Horticulture
Program Name:	Bachelor of Science, Major in Biology with Co-operative Education Option
Department:	Biology
Effective date:	September 1, 2024 Notes: *If you are requesting a change to **admission** requirements, Senate approval is required by September meeting of Senate of the preceding academic year (prior to the first application cycle for the academic year). If you are requesting a change to **declaration or curricular** requirements, approval is required no later than the April meeting of Senate of the preceding academic year.*
Dean/Associate Dean:	Brett Favaro, Jeff Dyck
Chair/Coordinator:	Layne Myhre, Nicole Tunbridge
Submission Date:	Oct 19, 2023

CONSULTATIONS

Consultations	**Person Consulted**	**Consultation Date**
Office of the Provost:	David Burns	July 5, 2023; Sept 13, 2023
Vice Chair of Senate:	Amy Jeon, Catherine Schwichtenberg	June 9, 2023; Sept 11, 2023
Other(s)* (if applicable):	Stephanie Howes, Dean of Business, Oct 19, 2023	

**For more complex consultations, please attach the Curriculum Consultation Forms. If you have any inquiries regarding the completion of the above Consultations section or the Curriculum Consultation Forms, please contact the Chair of the Senate Standing Committee on Curriculum.*

OFFICE OF THE REGISTRAR PROPOSAL REVIEW

Review of Completed Program Change Proposal	Review Submission Date
Send to OREGCurrConsult@kpu.ca for review**	**Sept 11, 2023**

***Allow 2 weeks for the Office of the Registrar's proposal review (in advance of the SSCC submission deadline).*
If the proposed changes introduce new courses, submit 2 weeks in advance of your Faculty's curriculum committee meeting.

APPROVALS

	Proposal Approval Date
Faculty Curriculum Committee:	**TBA**
Faculty Council (if required):	**TBA**
SSC on Curriculum:	**TBA**
SSC on University Budget (if required):	n/a
SSC on Academic Planning and Priorities (if required):	n/a
Senate:	n/a

Overview of Proposed Change(s):	1. In compliance with our approved QA plan, to implement changes to our program requirements intended to streamline program progression for students and permit more choices in satisfying curricular requirements, as well as bringing our programs more in line with similar programming at other post-secondary institutions. 2. Reduce credit totals by removing some electives but increasing choices in discipline-relevant areas. 3. Introduction of a new Co-operative Education Option program for the Bachelor of Science, Major in Biology and Bachelor of Science (Honours), Major in Biology degree programs.
Rationale:	1. The approved Biology Program Review Self-Study indicated a need for removing bottlenecks from the Biology programs, which were highly prescriptive, to a degree that is unusual for a Bachelor's program in Biology. As indicated in the approved QA Plan arising from the Review, the Biology Department held a Program Curricular Retreat on June 7th to redesign the curricular requirements of the two Biology Programs to improve student progression while still supporting our established Program Learning Outcomes.

	2. As indicated in the approved QA Plan, we have reduced the credit totals of our programs by 6 credits, by reducing extraneous electives beyond the required Breadth Electives but maintaining student flexibility by retaining choice in discipline-relevant areas. 3. Developing a Co-operative Education Option within our degree programs arose as a recommendation from the BIOL program review. Having a Co-operative Education Option program gives students an opportunity to apply skills gained during their academic study to industry and government job settings. This is in keeping with the Polytechnic mandate and greatly improves student employability and job-readiness. Given the strong ties between the Biology department and local industry through various research partnerships, it is an obvious way to allow students taking our programs to capitalize on work experiences, both in- and outside the classroom. Moreover, the original Program Proposal for the Biology degree included the Co-op option, so this change is in keeping with the original ministry-approved proposal.
URL(s):	https://calendar.kpu.ca/programs-az/science-horticulture/biology/biology-bs/

Impact on Students:	**Check all that apply**: ☐ The changes alter the admission, declaration or continuance requirements *If yes, provide both the current calendar entry and new calendar entry in full. (see below)* ☒ The changes alter the curricular requirements *If yes, provide both the current calendar entry and new calendar entry in full. (see below)* ☒ The changes change the total number of required credits *If yes, state the **current** number of total credits:* **138** *and **proposed** number of total credits:***132** ☒ The changes introduce new, revised or discontinued courses Discontinue BIOL 4150 (three credit), replaced with BIOL 3150 (four credit lab course) *and list the courses below.* ☒ The changes alter the credential awarded *If yes, indicate the proposed credential:* Bachelor of Science, Major in Biology with Co-operative Education Option
Transition Plan	Current students will be able to complete the previous version of the program, and we propose to develop the BIOL 3150 Evolutionary Biology course to be

	offered in 2024/2025, followed by discontinuance of the BIOL 4150 Evolutionary Biology course after one year, and use the Course Substitution form to allow a direct substitution for any student using the previous version after that point. All other previously required courses will continue to be offered regularly to ensure student progression until at least 2 years after the program change.

Curriculum Map[1]

See Appendix A for full Curriculum Map.

[1] **Introduced [I]**: Course learning outcomes that concentrate on knowledge or skills related to the program outcomes at a basic level or skills at an entry-level of complexity.
Developing [D]: Course level outcomes that demonstrate learning at an increasing level of proficiency of the program level outcome as well expanding complexity.
Advanced [A]: Course level outcomes that demonstrate learning related to the program level outcome with an increasing level of independence, expertise and sophistication or integrate the use of content or skills in multiple levels of complexity.

Current Requirements with Proposed Changes *Cut and paste the relevant section(s) in full from the current Calendar website. Use track changes to show the proposed changes.* *For a new Minor degree for which a cognate Major program is currently offered at KPU, insert the following text below "This is a new Minor degree program for which a cognate Major degree program already exists at KPU. There is no existing curriculum for the minor, and as per Policy AC11 there is no requirement for a Concept Paper or FPP."*	**New Requirements** *Provide a clean copy to show how the new Calendar entry will appear. List courses in alpha/numeric order.*
Admission Requirements The Faculty's Admission Requirements, which consist of KPU's undergraduate English Proficiency Requirement, apply to this program. **Declaration Requirements** Students intending to graduate with this Faculty of Science and Horticulture degree must declare the credential by the time they complete 60 credits of undergraduate coursework. At the time of declaration, the student must satisfy all of the following requirements: In good academic standing with the University Completion of a minimum of 24 credits of undergraduate coursework, including the following: • 3 credits of ENGL at the 1100 level or higher • BIOL 1110 with a minimum grade of "C" • BIOL 1210 with a minimum grade of "C" • CHEM 1110 with a minimum grade of "B" or CHEM 1210 with a minimum grade of "C" • MATH 1120 with a minimum grade of "C" or MATH 1130 with a minimum grade of "C"	**Admission Requirements** The Faculty's Admission Requirements, which consist of KPU's undergraduate English Proficiency Requirement, apply to this program. **Declaration Requirements** Students intending to graduate with this Faculty of Science and Horticulture degree must declare the credential by the time they complete 60 credits of undergraduate coursework. At the time of declaration, the student must satisfy all of the following requirements: In good academic standing with the University Completion of a minimum of 24 credits of undergraduate coursework, including the following: • 3 credits of ENGL at the 1100 level or higher • BIOL 1110 with a minimum grade of "C" • BIOL 1210 with a minimum grade of "C" • CHEM 1110 with a minimum grade of "B" or CHEM 1210 with a minimum grade of "C" • MATH 1120 with a minimum grade of "C" or MATH 1130 with a minimum grade of "C"

• PHYS 1101 with a minimum grade of "C" or PHYS 1120 with a minimum grade of "C" **Curricular Requirements** All students must meet the following minimum requirements: • In addition to ENGL 1100, complete 3 credits from courses designated as Writing Intensive. • 120 credits from courses at the 1100 level or higher. • 45 credits from courses at the 3000 level or higher, including 9 credits at the 4000 level. • 18 credits of breadth electives (see Electives below) including at least 3 credits from a course at the 3000 level or higher. These must include: o at least 12 credits from courses that are offered outside the Faculty of Science & Horticulture; and o up to 6 credits from courses offered within the Faculty of Science & Horticulture other than BIOL, CHEM, MATH, and PHYS. • Cumulative GPA of 2.0 or higher. • At least 50% of all courses for the BSc, and at least 66% of upper-level courses for the BSc, must be completed at KPU. The Biology Major requires the completion of a minimum of ~~138~~ 132 credits, including the following specific course requirements. Note: Some courses are only offered once per year. Please refer to the course timetable and speak with an Academic Advisor when planning.	• PHYS 1101 with a minimum grade of "C" or PHYS 1120 with a minimum grade of "C" **Curricular Requirements** All students must meet the following minimum requirements: • In addition to ENGL 1100, complete 3 credits from courses designated as Writing Intensive. • 120 credits from courses at the 1100 level or higher. • 45 credits from courses at the 3000 level or higher, including 9 credits at the 4000 level. • 18 credits of breadth electives (see Electives below) including at least 3 credits from a course at the 3000 level or higher. These must include: o at least 12 credits from courses that are offered outside the Faculty of Science & Horticulture; and o up to 6 credits from courses offered within the Faculty of Science & Horticulture other than BIOL, CHEM, MATH, and PHYS. • Cumulative GPA of 2.0 or higher. • At least 50% of all courses for the BSc, and at least 66% of upper-level courses for the BSc, must be completed at KPU. The Biology Major requires the completion of a minimum of 132 credits, including the following specific course requirements. Note: Some courses are only offered once per year. Please refer to the course timetable and speak with an Academic Advisor when planning.

Year 1		
BIOL 1110	Introductory Biology I	4
BIOL 1210	Introductory Biology II	4
CHEM 1110	The Structure of Matter	4
CHEM 1210	Chemical Energetics and Dynamics	4
ENGL 1100	Introduction to University Writing	3
MATH 1130	Calculus for Life Sciences I [1]	3
MATH 1230	Calculus for Life Sciences II	3
PHYS 1101	Physics for Life Sciences I	4
PHYS 1102	Physics for Life Sciences II	4
Select three credits of ENGL at the undergraduate level		3
Credits		36

Year 2		
BIOL 2320	Genetics	4
BIOL 2321	Cell Biology	4
BIOL 2322	Ecology	4
BIOL 2421	Cellular Biochemistry	3
CHEM 2320	Organic Chemistry I	4

Year 1		
BIOL 1110	Introductory Biology I	4
BIOL 1210	Introductory Biology II	4
CHEM 1110	The Structure of Matter	4
CHEM 1210	Chemical Energetics and Dynamics	4
ENGL 1100	Introduction to University Writing	3
MATH 1130	Calculus for Life Sciences I [1]	3
MATH 1230	Calculus for Life Sciences II	3
PHYS 1101	Physics for Life Sciences I	4
PHYS 1102	Physics for Life Sciences II	4
Select three credits of ENGL at the undergraduate level		3
Credits		36

Year 2		
BIOL 2320	Genetics	4
BIOL 2321	Cell Biology	4
BIOL 2322	Ecology	4
BIOL 2421	Cellular Biochemistry	3
CHEM 2320	Organic Chemistry I	4
CHEM 2420		

CHEM 2420	Organic Chemistry II	4
MATH 2335	Statistics for Life Sciences	3
~~Select nine credits of Electives~~Select six credits of Electives at the undergraduate level		~~9~~6
Credits		~~35~~32

Year 3		
~~BIOL 3110~~	~~Animal Behaviour~~	~~4~~
~~BIOL 3215~~	~~Zoology~~	~~4~~
~~BIOL 3165~~	~~Conservation Biology~~	~~3~~
BIOL 3xxx	Evolutionary Biology	4
BIOL 3180	Life Science Research Methods	3
~~BIOL 3225~~	~~Biology of Plants: An Ecological and Evolutionary Perspective~~	~~4~~
~~BIOL 3320~~	~~Molecular Genetics~~	~~4~~
~~BIOL 3321~~	~~Advanced Cell and Molecular Biology~~	~~4~~
Select at least one of:		4
BIOL 3215	Zoology	
BIOL 3225	Biology of Plants: An Ecological and Evolutionary Perspective	
Select at least one of:		4
BIOL 3320	Molecular Genetics	
BIOL 3321	Advanced Cell and Molecular Biology	

MATH 2335	Organic Chemistry II	4
	Statistics for Life Sciences	3
Select six credits of Electives at the undergraduate level		6
Credits		32

Year 3		
BIOL 3150	Evolutionary Biology	4
BIOL 3180	Life Science Research Methods	3
Select at least one of:		4
BIOL 3215	Zoology	
BIOL 3225	Biology of Plants: An Ecological and Evolutionary Perspective	
Select at least one of:		4
BIOL 3320	Molecular Genetics	
BIOL 3321	Advanced Cell and Molecular Biology	
Select at least 12 credits of BIOL at the 3000 level or higher		12
Select three credits of BIOL at the undergraduate level		3
Select six credits of Electives at the undergraduate level		6
Credits		36

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Select at least 12 credits of BIOL at the 3000 level or higher		12
Select three credits of BIOL at the undergraduate level		3
Select six credits of Electives at the undergraduate level		6
Credits		~~35~~36

Year 4		
~~BIOL 4140~~ ~~BIOL 4150~~ ~~BIOL 4235~~ ~~BIOL 4245~~	~~Animal Physiology~~ ~~Evolutionary Biology~~ ~~Marine Biology~~ ~~Developmental Biology~~	~~4~~ ~~3~~ ~~3~~ ~~4~~
Select at least one of:		3
BIOL 3165 BIOL 4235	Conservation Biology Marine Biology	
Select at least one of:		4
BIOL 4140 BIOL 4245	Animal Physiology Developmental Biology	
Select at least six credits of BIOL at the 3000 level or higher		6
Select ~~12~~ 9 credits of Electives at the undergraduate level		~~12~~9
Select one of the following Groups:		6
Group A		
BIOL 4900	Special Topics	
Select three credits of BIOL at the 3000 level or higher		
Group B		
BIOL 4199 BIOL 4299	Research Project 1 Research Project 2	

Year 4		
Select at least one of:		3
BIOL 3165 BIOL 4235	Conservation Biology Marine Biology	
Select at least one of:		4
BIOL 4140 BIOL 4245	Animal Physiology Developmental Biology	
Select at least six credits of BIOL at the 3000 level or higher		6
Select 9 credits of Electives at the undergraduate level		9
Select one of the following Groups:		6
Group A		
BIOL 4900	Special Topics	
Select three credits of BIOL at the 3000 level or higher		
Group B		
BIOL 4199 BIOL 4299	Research Project 1 Research Project 2	
Credits		28
Total Credits:		132

[1] MATH 1120 may be used as a substitute for MATH 1130

Co-operative Education Option

The Bachelor of Science, Major in Biology degree is offered with a Cooperative Education Option. Co-operative Education gives a student the opportunity to apply the skills gained during academic

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Credits	~~32~~28
Total Credits:	~~138~~132

[1] MATH 1120 may be used as a substitute for MATH 1130

~~**Electives**~~

~~As part of this program, students are required to complete 27 credits of electives. These must satisfy the General Requirements for 18 credits of breadth as stated above. The following courses are recommended as electives:~~

~~**Electives Course List**~~		
~~ANTH 3242~~	~~A Survey of the Primates~~	~~3~~
~~ASTR 1105~~	~~Basic Astronomy~~	~~3~~
~~ASTR 3111~~	~~Exploring Stars & Galaxies~~	~~3~~
~~BIOL 2330~~	~~Microbiology~~	~~4~~
~~BIOL 3330~~	~~Microbiology II~~	~~4~~
	~~Human Neural, Excretory and Endocrine Systems~~	~~4~~
~~BIOL 4260~~	~~Human Genetics~~	~~3~~
	~~Analytical Chemistry~~	~~4~~
~~BIOL 4320~~	~~Physical Chemistry~~	~~4~~
~~CHEM 2315~~	~~Introduction to Computer Literacy~~	~~3~~
~~CHEM 3310~~		~~3~~
~~CPSC 1100~~		

study in paid, practical work experience semesters. Degree students can complete a minimum of three work terms while completing their degree. Work terms generally occur full-time in separate 4 month work semesters. Work semesters alternate with academic study.

~~Students wishing to enter and participate in the Co-operative~~ Education Option must meet the following requirements:

Declaration and Entrance Requirements

- Declaration into the Bachelor of Science, Major in Biology program
- Declaration of the co-operative education option prior to completion of 90 credits for the Bachelor of Science, Major in Biology program
- Minimum GPA of 2.7

Program Continuance Requirements

- Completion of COOP 1101 prior to completing 90 credits
- Minimum GPA of 2.7
- Instructor permission

Co-op Course Requirements

The Co-operative Education designation requires successful completion of the following courses:

Required		
COOP 1101	Introduction to Professional and Career Readiness	1
COOP 1150	Co-op Work Semester 1	9

Commented [VV1]: List of Electives is not included – if this was intentional, you can leave it removed from the requirements. If you do want the list of electives included, please let us know and we can add it back in

Commented [LM2R1]: Decision was to cut this list - the updated list of recommended electives will live with Advising rather than on this page.

~~EDUC 4100~~	~~Post University Transition~~	~~3~~
~~ENVI 2305~~	~~Environmental Toxicology~~	~~3~~
~~ENVI 2405~~	~~Environmental Legislation~~	~~3~~
~~ENVI 3112~~	~~Environment and Society~~	~~3~~
~~HSCI 3225~~	~~Nutrition~~	~~3~~
~~HORT 3310~~	~~Entomology~~	

COOP 2150	Co-op Work Semester 2	9
COOP 3150	Co-op Work Semester 3	9
Optional		
COOP 4150	Co-op Work Semester 4	
Credits		28

Note: COOP courses must be completed in ascending numerical order. Contact the Co-op office for information about the possibility of part-time work terms. COOP courses may be used only to satisfy the Co-op designation and cannot be used to satisfy other curricular requirements of the program.

Co-operative Education Option

The Bachelor of Science, Major in Biology degree is offered with a Cooperative Education Option. Co-operative Education gives a student the opportunity to apply the skills gained during academic study in paid, practical work experience semesters. Degree students can complete a minimum of three work terms while completing their degree. Work terms generally occur full-time in separate 4 month work semesters. Work semesters alternate with academic study.

Students wishing to enter and participate in the Co-operative Education Option must meet the following requirements:

Declaration and Entrance Requirements

- Declaration into the Bachelor of Science, Major in Biology program
- Declaration of the co-operative education option prior to completion of 90 credits for the Bachelor of Science, Major in Biology program

Additional Requirements

In addition to the requirements stated above, all Co-op students must satisfy the General Co-operative Education Requirements.

Credential Awarded

Upon successful completion of this program, students are eligible to receive a **Bachelor of Science, Major in Biology, Co-operative Education Option**.

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- Minimum GPA of 2.7

Program Continuance Requirements

- Completion of COOP 1101 prior to completing 90 credits
- Minimum GPA of 2.7
- Instructor permission

Co-op Course Requirements

The Co-operative Education designation requires successful completion of the following courses:

Required		
COOP 1101	Introduction to Professional and Career Readiness	1
COOP 1150	Co-op Work Semester 1	9
COOP 2150	Co-op Work Semester 2	9
COOP 3150	Co-op Work Semester 3	9
Optional		
COOP 4150	Co-op Work Semester 4	
Credits		28

Note: COOP courses must be completed in ascending numerical order. Contact the Co-op office for information about the possibility of part-time work terms. COOP courses may be used only to satisfy the Co-op designation and cannot be used to satisfy other curricular requirements of the program.

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Additional Requirements In addition to the requirements stated above, all Co-op students must satisfy the General Co-operative Education Requirements. **Credential Awarded** Upon successful completion of this program, students are eligible to receive a **Bachelor of Science, Major in Biology, Co-operative Education Option**.	

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List any new, revised or discontinued courses associated with this program change			
Course Subject Code	Course Number	Descriptive Title, hyperlinked to course outline	New, Revised, or Discontinued
BIOL	4150	Evolutionary Biology	To be Discontinued
BIOL	3150	Evolutionary Biology	New

2. Curriculum Consultations

Please consult with the Office of the Provost as additional consultations may be required depending on the scope of the proposed program changes.

For consultees, please consider the following questions when providing your feedback to the Proponent:

- Does your department/unit support the proposed curriculum? Provide rationale for support/non-support.
- How does the proposed curriculum impact your department/unit?
- How does the proposed curriculum impact your program?
- Is there potential for curricular overlap with current offerings?

Name	Department, Program and/or Faculty	Comments	Date Consulted
Jennifer O'Brien	Office of the Provost (oPro)		04 July 2023
Virginia Vandenberg	Office of the Provost (oPro)		10 July 2023

Note: No consultations in addition to those listed on page 2 were requested.

3. Financial Assessment Questions

Financial Assessment Questions The following information will help determine whether there is a budgetary impact to the proposed program changes, and what additional information and consultation will be required. Please note that all additional budgetary requests in support of the proposed program change require approval from the Dean and the Provost, and additional financial documents may be required.	
Change in number of credits	Yes☒ No☐ If Yes, please provide details:
Change in space requirements	Yes☐ No☒ If Yes, please provide details:
Change in equipment requirements	Yes☐ No☒ If Yes, please provide details:
Change in support requirements	Yes☒ No☐ If Yes, please provide details:

Please attach any financial document if required.

FACULTY OF SCIENCE, CURICULLUM COMMITTEE COMMITTEE

Agenda Number: 1
Meeting Date: Dec. , 2023
Presenter(s): Rebecca Harbut

AGENDA TITLE: SUSTAINABLE AGRICULTURE PROGRAM REVISION

ACTION REQUESTED: Motion

RECOMMENDED RESOLUTION

THAT Faculty of Science curriculum committee approves this program revision, understanding further minor revisions may be made at future governance steps.

COMMITTEE REPORT

For Secretariat Use Only

Context and Background

This program revision has been developed over the past 12 months with extensive consultation with academic units. The package that was brought forward to Curriculum Committee on Dec. 7, 2023 was prevented from moving forward due to process concerns expressed by non-voting members. These process concerns were a result of the recognition of the need to send the package to DQAB which precipitated a very tight timeline to meet all of the governance meeting dates. After consultation with the Senate office and Office of the Provost, we feel confident that the package being presented is at an appropriate stage for the curriculum committee to review it for curricular content. As the minuets from the last meeting reflect, there was discussion about the proposed changes and there were no concerns expressed about the revisions from the voting members of the committee.

The Bachelor of Applied Science in Sustainable Agriculture was launched in 2012 at the KPU Richmond campus. The proposed changes are prompted by the program review process and feedback provided by students and alumni.
The changes outlined in this program revision do not change the foundations of the program, but rather expand existing components of the program with a specific focus on three main factors:

1. Increased hands-on learning at the KPU Farm. Feedback from students and alumni have identified the need for more hands-on learning in the first two years of the course, as well as providing increased opportunities for peer mentoring between junior and senior students.

2. Desire to align our program with national and provincial commitments to Indigenization and decolonization of the academy.
3. Increased courses focused on agricultural skills and competencies. Feedback from students and alumni have expressed a need for additional courses focused on core agricultural sciences and skill development.

These changes have been developed in response to our Quality Assurance Action Plan (May 2022) and through ongoing input from students, alumni, and faculty. These revisions do not shift the focus or primary objective of the degree program but enhance the content and delivery to better equip our students with the competencies and skills required for students to embark on a career in agriculture.

This revision was previously voted down to due to concerns from non-voting members

Key Messages

1. These revisions do not change the core of the program, but involve re-arrangement, minor revisions to existing courses and, in some cases, expanding courses or adding courses to increase classes focused on agricultural science, skills, and indigenization.
2. The experiential learning outcomes from the 12-month course series, Agroecosystems Management I, II and III have been moved to a 1st year course series to address student feedback which indicated desire to have hands-on learning begin earlier in the program. The higher-level learning outcomes from Agroecosystems Management course series have been included in a new 3rd year experiential learning course, AGRI 4100 Crop Management Lab. This shift will allow 1st and 3rd year students to take courses at the same time on the farm which will facilitate peer mentoring.
3. Indigenization of program through new and revised courses.
   - Improved alignment of BIOL courses and removal of CHEM 1110 (ENVI 1106 is required and provides applied chemistry foundation.) and more focused POST/POLI courses that better align with program learning outcomes. to meet learning outcomes more effectively and efficiently.
4. Addition of core content courses focused on agricultural skills development in pest management, soil management, and agroecology.

Resource Requirements

Year 1	Course	Credits	New FTE	Comments
	Total New FTE for Year 1		**0.125**	
Year 2	**Courses**	**Credits**	**New FTE**	**Comments**
	Total New FTE for Year 2		**0.417**	
Year 3				
	Total New FTE for Year 3		**0.25**	
Year 4				
	Total New FTE for Year 4		**0.125**	
Total New FTEs required for New Program			**1.183**	

New BCGEU Salary for ENVI 1106 Lab	**$6000**	Funding for lab section

Course Delivery Costs:
We have the existing capacity to deliver the courses with the infrastructure that we currently have at the KPU Farm and in the Richmond campus building. Therefore, although we are adding several courses, the cost of delivering those courses is primarily the cost of the instructor. There is only one course that we anticipate requiring additional funding to support, AGRI 2299.

AGRI 2299: Agri-Food in the Field – This course was originally designed to be a field trip course that included overnight trips to enable visits to important agricultural regions in BC. The cost of running these field trips will be heavily influenced by the number of students but for the next 5 years, we anticipate that there will be an average of 10-20 students per year. We currently have $5,000, which is inadequate to cover the costs of the local field trips, and we feel the format we currently operate in is not an efficient way to use these funds. It would be much more cost effective to be able to charter a bus for an entire day and visit multiple locations or do an overnight trip which would allow us to see more diverse operations, which is the objective of the course. These types of experiences can provide students with an exceptional opportunity to build their network across a broader region as well as foster stronger relationships between peers. We could add a course fee to cover some of the cost but would require higher baseline support for this course. We have increased the credits for this course from 1 to 2 which will increase tuition revenue for the course, but it will need to be subsidized. We estimate that we will need an additional $10,000 added to the budget to allow for this course.
Additional Operating Budget requested: $10,000

Implications/Risks

As these changes do not represent a major shift in the program outcomes and there is a transition plan developed to ensure midstream students are not caught, there is no risk to students. As many of these changes are in response to student and alumni input, we believe the benefit these proposed changes will bring to student experience will be high.

There is a risk if the program is approved without the appropriate funding. While the core courses could be delivered without the full funding request, there would be a significant burden placed on existing faculty as it will leave the department with little to no capacity to deliver elective courses, participate in non-teaching activities (such as research and extension), contribute to graduate program or take advantage of opportunities requiring time-release.

Consultations

Name	Department, Program and/or Faculty	Comments	Date Consulted
Brett Favaro	Faculty of Science Deans' Office	Initial discussions regarding revisions. Deans' Office is supportive.	3/20/2023
Jennifer Anaquod	Indigenous Studies	Discussions to develop a cross-listed course focused on Indigenous perspectives in food systems	8/24/23 6/26/23 6/9/23 1/16/23
Jennifer Anaquod Alena Buis	Indigenous Studies	Discussions with INDG department to support the development and cross-listing of a new course in AGRI	5/19/23

Jennifer O'Brien	Office of the Provost	Draft of revisions sent to the Office of the Provost and initials discussions. Curriculum map provided.	5/26/2023
Layne Myhre Nicole Tunbridge	Biology Department	Initial discussion of the changes to BIOL requirements in the Sustainable Agriculture program.	5/3/2023
Brett Favaro Lana Mihell Allyson Rozell Layne Myhre Nicole Tunbridge Megan Marcotte	Faculty of Science Deans' Office, Biology Department	Discussion regarding proposed changes and potential curriculum, budget and staffing considerations	12-June-2023
Nicole Tunbridge Megan Marcotte	Biology Department	Discussion regarding specifics for BIOL 1110/1210/1299 and BIOL 2322	19-June-2023
Krista Gerlich-Fitzgerald	Registrar's Office	Discussion about proposed changes	13-10-2023
Shelley Boyd Valerie Vezina	Faculty of Arts Sustainable Policy Studies program and Political Science	Discussions regarding the reduction of POST/POLI credits from 6 to 3 and identification of courses that effectively meet program learning outcomes. Discussion regarding delivery at Richmond campus and/or online to ensure student access	6-10-2023 6-11-2023 9-11-2023
Layne Myhre Nicole Tunbridge	Biology Department	Initial discussion of Honours option	11-11-2023
Melinda Bige Alena Buis	Indigenous Studies	Final consultations regarding delivery of cross listed course	20-11-2023

Attachments

1. Program Change Proposal

Submitted by

Rebecca Harbut

Date submitted

Dec. 12, 2023

Table of Contents

1. Program Change Proposal

PROGRAM DETAILS

Faculty:	Faculty of Science
Program Name:	Bachelor of Applied Science in Sustainable Agriculture
Department:	Sustainable Agriculture & Food Systems
Effective date:	September 2024
Dean/Associate Dean:	Brett Favaro
Chair/Coordinator:	Rebecca Harbut
Submission Date:	

CONSULTATIONS

Consultations	Person Consulted	Consultation Date
Office of the Provost:	David Burns	November 27, 2023
Vice Chair of Senate:	Catherine Schwichtenberg	Dec. 7, 2023
Other(s)* (if applicable):		

**For more complex consultations, please attach the Curriculum Consultation Forms. If you have any inquiries regarding the completion of the above Consultations section or the Curriculum Consultation Forms, please contact the Chair of the Senate Standing Committee on Curriculum.*

OFFICE OF THE REGISTRAR PROPOSAL REVIEW

Review of Completed Program Change Proposal	Review Submission Date
Send to **OREGCurrConsult@kpu.ca** for review**	Nov.24, 2023

***Allow 2 weeks for the Office of the Registrar's proposal review (in advance of the SSCC submission deadline).*
If the proposed changes introduce new courses, submit 2 weeks in advance of your Faculty's curriculum committee meeting.

APPROVALS

	Proposal Approval Date
Faculty Curriculum Committee:	Dec. 14, 2023
Faculty Council (if required):	
SSC on Academic Planning and Priorities (if required):	
SSC on University Budget (if required):	
SSC on Research	
SSC on Curriculum:	
Senate:	

Overview of Proposed Change(s):	**These revisions do not change the core of the program, but involve re-arrangement of courses, minor revisions to existing courses and, in some cases, expanding courses or adding courses to increase classes focused on agricultural science, skills, and indigenization.** • The experiential learning outcomes from the 12-month course series, Agroecosystems Management I, II and III have been moved to a 1st year course series to address student feedback which indicated desire to have hands-on learning begin earlier in the program. The higher-level learning outcomes from Agroecosystems Management course series have been included in a new 3rd year experiential learning course, AGRI 4100 Crop Feld Management Lab. This shift will allow 1st and 3rd year students to take courses at the same time on the farm which will facilitate peer mentoring. • Indigenization of program through new and revised courses. • Improved alignment of BIOL courses to meet learning outcomes more effectively and efficiently. • Removal of CHEM 1110 as an option as this course did not contribute to program learning outcomes (PLOs). We have kept ENVI 1106 which provides applied chemistry foundation. • More focused selection of POST/POLI courses that better align with program learning outcomes. • Addition of core content courses focused on agricultural skills development in pest management, soil management, and agroecology.
Rationale:	The Bachelor of Applied Science in Sustainable Agriculture was launched in 2012 at the KPU Richmond campus. Over the past 10 years, we have developed a 20-acre certified organic teaching and learning farm through a partnership with the City of Richmond which provides an exceptional learning environment. The proposed changes are prompted by the Sustainable Agriculture Program Review process and the Quality Assurance Plan. The changes outlined in this program revision do not change the foundations of the program, but rather expand existing components of the program with a specific focus on three main factors: 1) Increased hands-on learning at the KPU Farm. Feedback from students and alumni have identified the need for more hands-on learning in the first two years of the program, as well as providing increased opportunities for peer mentoring between junior and senior students. 2) Desire to align our program with national and provincial commitments to Indigenization and decolonization of the academy. 3) Increased courses focused on agricultural skills and competencies. Feedback from students and alumni have expressed a need for additional courses focused on core agricultural sciences and skill development.

	These changes have been developed in response to our Quality Assurance Action Plan (May 2022) and through ongoing input from students, alumni, and faculty. These revisions do not shift the focus or primary objective of the degree program but enhance the content and delivery to better equip our students with the competencies and skills required for students to embark on a career in agriculture. **Improved Facilities Allow for Increased Experiential Learning.** At the time of the program's last revision, KPU did not have a Teaching and Research Farm to facilitate extensive experiential learning. As a result, the courses were limited in the amount of on-farm experiential learning that could be accomplished. Today, KPU has the KPU Farm, a 20-acre certified organic farm within walking distance of the Richmond Campus. This facility has allowed students to engage in experiential learning on an operating farm, whereas in the past, production was primarily limited to small garden plots on campus. Many of the changes proposed in this revision ensure that students are provided with as much experiential learning on the farm as possible to develop their agricultural skills. As many students do not come from agricultural backgrounds, this component of the training is essential. These revisions also provide the opportunity for students to develop their leadership and teamwork competency through peer mentoring and community action. **Indigenization of Curriculum.** In alignment with national, provincial, and institutional priorities, we have revised our program outcomes to reflect the importance of Indigenizing our curriculum. We have worked closely with the Indigenous Studies department to develop a course that will provide students with the opportunity to explore Indigenous perspectives on food systems. These revisions have also resulted in weaving Indigenous content and perspectives throughout the program. **Improved Alignment with Program Outcomes**. Through this review process and student and alumni feedback, we identified courses that were not effectively contributing to the program outcomes. These courses have been removed in consultation with affected departments. We have worked with Biology as they have been going through program revisions to rearrange content to ensure that core competencies related to Biology are covered in one introductory course, which allowed us to remove the second. Through consultation with the Sustainable Policy Studies and Political Science programs, we have identified courses which directly contribute to the program outcomes. This streamlining process has allowed us to increase the content focused on critical skills. **Increased Agricultural Competencies**. Both alumni and employers have articulated that students need a higher competency in some of the critical areas of agricultural production, such as pest management, soil management, and crop management. This proposal includes the

	addition of 6 credits of pest management, 3 credits of advanced soil management, 3 credits of Agritech, 3 credits of agroecology, and 3 credits of a Crop Management Lab which provides upper-level students the opportunity to apply their learning and develop mentoring and leadership skills. These courses will provide students with greater competency and skills that will enable them to be leaders in the agriculture sector. **Removal of research project.** The existing research project courses will be moved to an honours option. All students will still be required to take courses on statistics and experimental design and analysis, but the execution of the project will become optional. This will provide all students with the foundations of research while providing greater flexibility in their program. These two courses can be taken as 6 of the 12 elective credits in Year 4.
URL(s):	*https://calendar.kpu.ca/programs-az/science-horticulture/sustainable-agriculture/sustainable-agriculture-ba/#requirementstext*

Impact on Students:	**Check all that apply**: ☐ The changes alter the admission, declaration or continuance requirements *If yes, provide both the current calendar entry and new calendar entry in full. (see below)* ☒ The changes alter the curricular requirements *If yes, provide both the current calendar entry and new calendar entry in full. (see below)* ☐ The changes change the total number of required credits *If yes, state the **current** number of total credits:* Click or tap here to enter text. *and **proposed** number of total credits:*Click or tap here to enter text. ☒ The changes introduce new, revised or discontinued courses Click or tap here to enter text.*and list the courses below.* ☐ The changes alter the credential awarded *If yes, indicate the proposed credential:*
Transition Plan	These changes will be phased in to allow for the completion of the existing degree for current students. As most of the changes involve course additions, rather than discontinuance, we do not anticipate significant obstacles to completion for students that are midstream when the new program is implemented. Although some courses have been removed from the program requirements (CHEM 1110, BIOL 1210) and others have been changed (POST/POLI elective courses), all of these courses continue to be offered.

	Discontinued/Replaced required AGRI Courses: **AGRI 1299 – Field Systems Analysis.** This course will be replaced with a second year course which will be 2 credits (1299 was 1 credit) which will allow for more comprehensive exploration of agriculture in B.C. **AGRI 2240 – Ecologically Based Pest Management (EBPM**). This course will be discontinued and replaced with 2 new courses, AGRI 3220 – Agricultural Pests and Beneficials and AGRI 33230 – Agricultural Pest Management. As the new program will be phased in and the new courses are 3rd and 4th year courses, the existing course AGRI 2240 will be offered for 2 years which will provide sufficient time for midstream students to complete this requirement. **AGRI 3290, 3390 and 4190 - Agroecosystems Management I, II, and III**. To ensure midstream students can complete these courses in their senior years, we will keep these courses on the books for 4 years but offer them in joint sections with the new Applied Organic Agriculture Series. As these courses are all taught at the KPU Farm, students registered in the new 1st year series as well as the original 3rd year series can take the course at the same time with the same instructor, but with appropriately levelled assignments. **AGRI 3135 – Business of Agriculture.** In the existing program, this is one 6 credit course. The revised program splits this course into two 3-credit courses. Students will be able to substitute AGRI 3135 with the two new courses AGRI 3120 – Agricultural Enterprise Design and AGRI 3130 – Business Plans for Agriculture.

Transition Plan for Midstream AGRI students

The current program will continue to be offered to ensure that current students are able to complete their degree on the current program. The new program will be introduced one year at a time to ensure that midstream students are able to complete the current program without any interruption.

BIOL 1110 Substitute – The course revisions to BIOL 1110 will not be in place by Fall 2023. Until these changes have occurred, students will enroll in BIOL 1112 instead of BIOL 1110. The prerequisites for BIOL 2322 have been revised to allow students that have taken BIOL 1112 AND AGRI 1200 to enroll in BIOL 2322.

Year 1 **Year 1 courses – new program offered** **Year 2, 3 and 4 courses- current program offered**		Cr	Comments
Discontinued Required Courses			
No required courses discontinued for midstream students			
New Courses			
INDG/AGRI 1130	Indigenous Perspectives on Food Systems	3	
AGRI 1100	Applied Organic Agriculture I (Spring)	4	Offered as joint section with AGRI 3290
AGRI 1200	Applied Organic Agriculture II (Summer)	6	Offered as joint section with AGRI 3390

Year 2 **Year 1 and 2 courses – new program offered** **Year 1, 2, 3 and 4 courses- current program offered**		Cr	Comments
Discontinued Required Courses			
No required courses discontinued for midstream students			
New Courses			
AGRI 2320	Advanced Soils Management	3	
AGRI 2350	Agroecology	3	
AGRI 2150/PHYS	Agricultural Technologies	3	
AGRI 2299	Agri-Food in the Field (Summer intersession)	2	Based on AGRI 1299, but revised to 2 credits and offered in summer intersession

Year 3 **Year 1, 2 and 3 courses – new program offered** **Year 4 courses- current program offered**		Cr	Comments
Discontinued Required Courses			
AGRI 2240	Ecologically Based Pest Management	3	The content of this course will be included in the two new courses AGRI 3220 and AGRI 3230. As this is a second year course for current students all students should be completed this course by year 3 of the new program.
AGRI 3135	Agricultural Business Management	6	This 6cr. course is equivalent to AGRI 3120 (3cr) and 3130 (3cr) and can be substituted
New Courses			
AGRI 3220	Agricultural Pests and Beneficials	3	
AGRI 3120	Agricultural Enterprise Design	3	replaces AGRI 3135
AGRI 3230	Agricultural Pest Management	3	
AGRI 3130	Business Plans for Agriculture	3	replaces AGRI 3135
AGRI 4100	Crop Management Field Lab (Summer)	3	

Year 4 **Year 1, 2 and 3 courses – new program offered** **Year 4 courses- current program courses will remain on the books for one more year**		Cr	Comments
Discontinued Courses			
AGRI 3290	Agroecosystem Management I	3	By year 4, all students will have had 3 years to complete these two these two courses (3290 and 3390) and should be completed. If there are students that are not yet complete, we can delay the discontinuance with out financial implications as it can be taught during the same section as AGRI 1100 and 1200
AGRI 3390	Agro-Ecosystems Management II	6	
New Courses			
AGRI 4250	Agroecology in Action	3	

Year 5		Cr	Comments

Year 1, 2 3 and 4 courses – new program offered **No current program courses offered***			
Discontinued Courses			
AGRI 4190	Agro-Ecosystems Management III	3	*By year 5, all students will have had 4 years to complete this course and should be completed. If there are students that are not yet complete, we can delay the discontinuance without financial implications as it can be taught during the same section as AGRI 2100

Curriculum Map (See Attached file)

Program Learning Outcomes:

Current:	**Proposed:**	**Comments:**
PLO #1: Advance sustainable food system development through community engagement.	PLO # 11: Engage in food systems change through community action.	Changed wording to 'engaging in food systems change' as it is more tangible and doable than 'advancing sustainable food system development'
PLO #2: Apply principles of sustainability to agriculture and food systems.		This is redundant with the current PLO#6. Combined in the new PLO#9.
PLO #3: Critique existing and emerging agricultural paradigms from social, economic, and environmental perspectives.	PLO #5: Identify how social, economic, and political structures influence food systems at different scales.	Minor revision to wording to articulate the importance of scale.
PLO #4: Understand interrelationships between food systems, community, and human well-being.	PLO #1: Understand interrelationships between agriculture, food systems, environment, and human well-being.	Minor wording revision - added 'agriculture' as a distinct component of the food system that this program focuses on.
PLO #5: Mitigate climate change and adapt food systems to a changing climate.	PLO #7: Evaluate changes to agriculture and food systems that mitigate climate change and overreach of planetary boundaries and adapt agriculture and food systems to a changing planet.	Minor wording revision to remove the implication that students will be able to mitigate and adapt the food system. New wording focused on skills to evaluate the changes to assess their value in addressing climate issues.
PLO #6: Apply agroecological principles to agricultural production.	PLO #9: Apply agroecological principles.	Combined current PLO#2 and #6.
PLO #7: Design, conduct, analyze and critique natural and social scientific research.	PLO #8: Analyze and critique emerging research and apply its results to advance sustainable food systems.	Removed the word 'conduct' as we are moving the research project courses and moving them to the Honours option.
PLO #8: Recognize and represent diverse perspectives and ways of knowing.	PLO #2: Recognize and engage with diverse perspectives and ways of knowing including indigenous perspectives.	Minor revision – students may not be able to represent diverse perspectives, but they can engage with them.
PLO #9: Manage a sustainable agriculture business.	PLO #10: Apply principles of sustainable agriculture business management.	Minor revision – students may not manage a business but can apply principles.
	PLO #3: Understand implications of historical and contemporary relationships between agricultural food	New PLO to reflect institutional priorities to indigenize curriculum.

	systems and indigenous peoples.	
	PLO #4: Understand scientific underpinnings of agricultural disciplines including soil, plant, and animal sciences.	New PLO to reflect importance of agricultural science.
	PLO #6: Craft and share visions for a sustainable future for agriculture and food systems and analyze existing examples that advance the vision.	New PLO to reflect the learning gained in communicating and advancing new ideas.

Current Requirements with Proposed Changes *Cut and paste the relevant section(s) in full from the current Calendar website. Use track changes to show the proposed changes.* *For a new Minor degree for which a cognate Major program is currently offered at KPU, insert the following text below "This is a new Minor degree program for which a cognate Major degree program already exists at KPU. There is no existing curriculum for the minor, and as per Policy AC11 there is no requirement for a Concept Paper or FPP."*	**New Requirements** *Provide a clean copy to show how the new Calendar entry will appear. List courses in alpha/numeric order.*
Admission Requirements	**Admission Requirements**
The Faculty's Admission Requirements, which consist of KPU's undergraduate English Proficiency Requirement, apply to this program.	The Faculty's Admission Requirements, which consist of KPU's undergraduate English Proficiency Requirement, apply to this program.
Declaration Requirements	**Declaration Requirements**
Students intending to graduate with this Faculty of Science degree must declare the credential by the time they complete 60 credits of undergraduate coursework. At the time of declaration, the student must satisfy all of the following requirements:	Students intending to graduate with this Faculty of Science degree must declare the credential by the time they complete 60 credits of undergraduate coursework. At the time of declaration, the student must satisfy all of the following requirements:
· In good academic standing with the University	· In good academic standing with the University
· Completion of a minimum of 24 credits of undergraduate coursework, including the following:	· Completion of a minimum of 24 credits of undergraduate coursework, including the following:
o 3 credits of ENGL at the 1100 level or higher	o 3 credits of ENGL at the 1100 level or higher
Curricular Requirements	**Curricular Requirements**
The Bachelor of Applied Science in Sustainable Agriculture consists of 120 credits of course work, including 27 credits of electives. A minimum of 15 credits of electives must be chosen from subject areas other than AGRI, including at least 3 credits at the 3000-level or above.	The Bachelor of Applied Science in Sustainable Agriculture consists of 120 credits of course work, including 24 credits of electives. A minimum of 15 credits of electives must be chosen from subject areas other than AGRI, including at least 3 credits at the 3000-level or above.

Year 1			YEAR 1		
AGRI 1150	Sustainable Agriculture for the 21st Century	3	AGRI 1150	Foundations of Sustainable Agriculture	3
~~AGRI 1299~~	~~Food System Field Analysis~~	~~1~~	BIOL 1110	Introductory Biology I	4
BIOL 1110	Introductory Biology I	4	ENVI 1106	Environmental Chemistry I	4
~~BIOL 1210~~	~~Introductory Biology II~~	~~4~~	ENGL 1100	Intro to University Writing	3
ENGL 1100	Introduction to University Writing	3	INDG/AGRI 1130	Indigenous Perspectives on Food Systems	3
ENVI 1106	Environmental Chemistry I	4	AGRI 1100	Applied Organic Agriculture I (Spring)	3
~~or CHEM 1110~~	~~or The Structure of Matter~~	~~-~~	MATH 1115[1]	Statistics I	3
INDG/AGRI 1130	Indigenous Perspectives on Food Systems	3	AGRI 1200	Applied Organic Agriculture II (Summer)	6
AGRI 1100	Applied Organic Agriculture I	3	Electives		3
MATH 1115	Statistics I	3	**Select one of the following:**		3
AGRI 1200	Applied Organic Agriculture II	6	POST 1100/PHIL 1111	Sustainability and Ethics	
~~Select one of the following:~~	~~-~~	~~3~~	POST 1200	Inclusive Communities, Sustainable Futures	
~~PHIL 1110~~	~~Introduction to Moral Philosophy~~	~~-~~	POLI 2100	Sustainability and Government	
~~PHIL 1112~~	~~Introduction to Environmental Ethics~~	~~-~~			
~~POST 1100~~	~~Sustainability and Ethics~~	~~-~~			
~~Select 9 credits of electives 1~~		~~9~~			
Select one of the following:		3			
POST 1100/PHIL 1111	Sustainability and Government				
POST 1200	Inclusive Communities, Sustainable Futures				
POLI 2100	Sustainability and Government				
~~-~~	~~-~~	~~-~~			
	Credits	**31**		**Credits**	**35**

1 Students who need to upgrade in order to meet the prerequisites for ENVI 1106 or MATH 1115, may use MATH 1112 or MATH 1117 as an elective.	1 Students who need to upgrade in order to meet the prerequisites for ENVI 1106 or MATH 1115, may use MATH 1112 or MATH 1117 as an elective.
Note: Courses in Year one follow the agricultural season and progression of agricultural practices.	**Note**: Courses in Year One follow the agricultural season and progression of agricultural practices.

Year 2			YEAR 2		
AGRI 2100	Applied Organic Agriculture III	3	AGRI 2100	Applied Organic Agriculture III (Fall)	3
AGRI 2190	Plant Science	3	BIOL 2322	Ecology	4
AGRI 2220	Soil Stewardship and Management	4	AGRI 2250	Agriculture and Food Systems in British Columbia	3
AGRI 2230	Sustainable Human Economy	3	AGRI 2190	Plant Science	3
~~AGRI 2240~~	~~Ecologically Based Pest Management~~	~~3~~	AGRI 2220	Soil Stewardship and Management	4
AGRI 2250	Agriculture and Food Systems	3	AGRI 2230	Sustainable Human Economy	3
BIOL 2322	Ecology	4	AGRI 2320	Advanced Soils Management	3
~~MATH 1115~~	~~Statistics I~~	~~3~~	AGRI 2350	Agroecology	3
AGRI 2320	Advanced Soils Management	3	AGRI/PHYS 2150	Agricultural Technologies	3
AGRI 2350	Agroecology	3	Summer Intersession		
AGRI/PHYS 2150	Agricultural Technology	3	AGRI 2299	Agri-Food In the Field (Summer intersession)	2
Summer Intersession			Electives[2]		3
AGRI 2299	Agri-Food in the Field (Summer Intersession)	2			
~~Select one of the following:~~	-	~~3~~			
~~POLI 1120~~	~~Canadian Government and Politics~~	-			
~~POLI 1125~~	~~Introduction to Political Science~~	-			
~~POLI 2100~~	~~Sustainability and Government~~	-			
~~Select 6 credits of electives 2~~	-	~~6~~			
	Credits	**32**		**Credits**	**34**
[2] Students must have 3 credits of courses identified as Writing-Intensive to graduate.			[2] Students must have 3 credits of courses identified as Writing-Intensive to graduate.		
Year 3			**YEAR 3**		
AGRI 3225	Experimental Design & Analysis	3	AGRI 3225	Experimental Design and Analysis	3
~~AGRI 3260~~	~~Animal Agriculture~~	~~3~~	AGRI 3220	Agricultural Pests and Beneficials	3
AGRI 3220	Agricultural Pests and Beneficials	3	AGRI 3120	Agricultural Enterprise Design	3
AGRI 3120	Agricultural Enterprise Design	3	AGRI 3280	Fruit and Nut Crop Production	3

AGRI 3230	Agricultural Pest Management	3	AGRI 3130	Business Plans for Agriculture	3
AGRI 3130	Business Plans for Agriculture	3	AGRI 3270	Vegetable Crop Production	3
AGRI 3270	Vegetable Crop Production	3	AGRI 3230	Agricultural Pest Management	3
AGRI 3280	Fruit and Nut Crop Production	3	AGRI 4100	Crop Management Field Lab (Summer)	3
~~AGRI 3290~~	~~Agroecosystem Management I~~	~~3~~	Select 6 credits of electives		6
~~AGRI 3390~~	~~Agro-Ecosystems Management II~~	~~6~~			
~~AGRI 3398~~	~~Crop Physiology and Ecology~~	~~3~~			
AGRI 4100	Crop Management Field Lab	3			
~~AGRI 3399~~	~~Research Project I~~	~~3~~			
Select 6 ~~3~~ credits of electives		~~63~~			
Note: Courses in Year Three follow the agricultural season and progression of agricultural practices.			**Note**: Courses in Year Three follow the agricultural season and progression of agricultural practices.		
	Credits	**30**		**Credits**	**30**
Year 4			**YEAR 4**		
~~AGRI 3135~~	~~Business of Agriculture~~	~~6~~	AGRI 3398	Crop Physiology and Ecology	3
AGRI 3398	Crop Physiology and Ecology	3	AGRI 4298	Agroecology as a Global Movement	3
~~AGRI 4190~~	~~Agro-Ecosystems Management III~~	~~3~~	AGRI 4250	Agroecology in Action	3
AGRI 4298	~~World Trends in Agriculture~~ Agroecology as a Global Movement	3	Electives		12
AGRI 4250	Agroecology in Action	3			
~~AGRI 4299~~	~~Research Project II~~	~~3~~			
~~AGRI 4295~~	~~Internship~~	~~3~~			
~~Select 9 credits of electives, with at least 3 credits at the 3000-level or above.~~		~~9~~			
Electives		12			
	Credits	**27**		**Credits**	**21**
	Total Credits	**120**		**Total Credits**	**120**

Credential Awarded	**Credential Awarded**
Upon successful completion of this program, students are eligible to receive a **Bachelor of Applied Science in Sustainable Agriculture.**	Upon successful completion of this program, students are eligible to receive a **Bachelor of Applied Science in Sustainable Agriculture.**

List any new, revised, or discontinued courses associated with this program change			
Course Subject Code	**Course Number**	**Descriptive Title**	**New, Revised, or Discontinued**
AGRI	1150	Foundations of Sustainable Agriculture	Revised
INDG/AGRI	1130	Indigenous Perspectives on Food Systems	New
AGRI	1100	Applied Organic Agriculture I	New
AGRI	1200	Applied Organic Agriculture II	New
AGRI	2100	Applied Organic Agriculture III	New
AGRI	2190	Plant Science	Revised
AGRI	2220	Soil Stewardship and Management	Revised
AGRI	2250	Agriculture and Food Systems in British Columbia	Revised
AGRI	2230	Sustainable Human Economy	Revised
AGRI	2290	Food Systems Analysis	New
AGRI	2299	Agri-Food in the Field	New
AGRI	2320	Advanced Soil Management	Revised
AGRI/PHYS	2150	Agricultural Technologies	New
AGRI	2350	Agroecology	New
AGRI	3225	Experimental Design & Analysis	Revised
AGRI	3260	Animal Agriculture	Moved from required to elective
AGRI	3270	Vegetable Crop Production	Revised
AGRI	3280	Fruit and Nut Crop Production	Revised
AGRI	3398	Crop Physiology and Ecology	Revised
AGRI	3399	Honour Research Project I	Revised and moved to Honours program
AGRI	3220	Agricultural Pests and Beneficials	New
AGRI	3230	Agricultural Pest Management	New
AGRI	3120	Agricultural Enterprise Design	New
AGRI	3130	Business Plans for Agriculture	New
AGRI	4100	Crop Management Field Lab	New
AGRI	4298	Agroecology as a Global Movement	Revised
AGRI	4299	Honours Research Project II	Revised and moved to Honours program
AGRI	4295	Internship	Moved from required to electives

AGRI	4250	Agroecology in Action	New

2. Curriculum Consultations

Name	Department, Program and/or Faculty	Comments	Date Consulted
Brett Favaro	Faculty of Science Deans' Office	Initial discussions regarding revisions. Deans' Office is supportive.	3/20/2023
Jennifer Anaquod	Indigenous Studies	Discussions to develop a cross-listed course focused on Indigenous perspectives in food systems	8/24/23 6/26/23 6/9/23 1/16/23
Jennifer Anaquod Alena Buis	Indigenous Studies	Discussions with INDG department to support the development and cross-listing of a new course in AGRI	5/19/23
Jennifer O'Brien	Office of the Provost	Draft of revisions sent to the Office of the Provost and initials discussions. Curriculum map provided.	5/26/2023
Layne Myhre Nicole Tunbridge	Biology Department	Initial discussion of the changes to BIOL requirements in the Sustainable Agriculture program.	5/3/2023
Brett Favaro Lana Mihell Allyson Rozell Layne Myhre Nicole Tunbridge Megan Marcotte	Faculty of Science Deans' Office, Biology Department	Discussion regarding proposed changes and potential curriculum, budget and staffing considerations	12-June-2023
Nicole Tunbridge Megan Marcotte	Biology Department	Discussion regarding specifics for BIOL 1110/1210/1112 and BIOL 2322	19-June-2023
Krista Gerlich-Fitzgerald	Registrar's Office	Discussion about proposed changes	10-12-2023
Shelley Boyd Valerie Vezina	Faculty of Arts Sustainable Policy Studies program and Political Science	Discussions regarding the reduction of POST/POLI credits from 6 to 3 and identification of courses that effectively meet program learning outcomes. Discussion regarding delivery at Richmond campus and/or online to ensure student access	6-10-2023 6-11-2023 9-11-2023
Melinda Bige Alena Buis	Indigenous Studies	Final consultations regarding delivery of cross listed course	20-11-2023

3. Financial Assessment Questions

Financial Assessment Questions The following information will help determine whether there is a budgetary impact to the proposed program changes, and what additional information and consultation will be required. Please note that all additional budgetary requests in support of the proposed program change require approval from the Dean and the Provost, and additional financial documents may be required.	
Change in number of credits	Yes☐ No☒ If Yes, please provide details:
Change in space requirements	Yes☐ No☒ If Yes, please provide details:
Change in equipment requirements	Yes☐ No☒ If Yes, please provide details:
Change in support requirements	Yes☒ No☐ If Yes, please provide details:

Please attach any financial document if required.

Budget Implications for Proposed Program Changes

A major component of the changes introduced in the new Sustainable Agriculture program is to provide students with increased agricultural content. This is in response to student and alumni feedback and to ensure that students graduate with necessary skills to enter the workplace. The following table summarizes the budget implications of the new courses that have been added to Sustainable Agricultures course offerings as part of the proposed program changes.

Year 1	Course	Credits	New FTE	Comments
ENVI 1106	Environmental Chemistry	4	.1667	This course is an existing service course that will require a section to be taught at the Richmond campus. Previous attempts have been made to offer this course as a hybrid online

				however it was not a suitable delivery method for the course.
INDG/AGRI 1130	Indigenous Perspectives on Food Systems	3	0.125	This course has been co-developed with INDG. The course is designed to be taught with 2 faculty: 1 INDG and 1 AGRI
AGRI 1100	Applied Organic Agriculture I (Spring)	4		no new FTE as this will be taught as a joint section with AGRI 3290
AGRI 1200	Applied Organic Agriculture II (Summer)	6		no new FTE as this will be taught as a Joint section with AGRI 3390
	Total New FTE for Year 1		**0.2917**	
Year 2	**Courses**	**Credits**	**New FTE**	**Comments**
AGRI 2320	Advanced Soils Management	3	0.125	
AGRI 2350	Agroecology	3	0.125	
AGRI/PHYS 2150	Agricultural Technologies	3	0.125	
AGRI 2299	Food System Field Analysis (Summer intersession)	2	0.042	This is an existing course, but credits have increased from 1 to 2 credits to better reflect the weight of the course
	Total New FTE for Year 2		**0.417**	
Year 3				
AGRI 3220	Agricultural Pests and Beneficials	3		no new FTE as this course replaces existing AGRI 2240
AGRI 3230	Agricultural Pest Management	3	0.125	
AGRI 3120	Agricultural Enterprise Design	3		no new FTE as this is the AGRI 3135 course split into two. We will ensure existing students take these two to sub for AGRI 3135 so we do not need to offer both.
AGRI 3130	Business Plans for Agriculture	3		
AGRI 4100	Crop Management Field Lab (Summer)	3	0.125	
	Total New FTE for Year 3		**0.25**	
Year 4				
AGRI 4250	Agroecology in Action	3	0.125	
	Total New FTE for Year 4		**0.125**	

Total New FTEs required for New Program	**1.083**	
New BCGEU Salary for ENVI 1106 Lab	**$6000**	Funding for lab section

Course Delivery Costs:

We have the existing capacity to deliver the courses with the infrastructure that we currently have at the KPU Farm and in the Richmond campus building. Therefore, although we are adding several courses, the cost of delivering the new courses is primarily the cost of the instructor. There is only one course that we anticipate requiring additional funding to support, AGRI 2299, addressed below.

AGRI 2299: Food Systems Field Analysis – This course was originally designed to be a field trip course that included overnight trips to enable visits to important agricultural regions in BC. The cost of running these field trips will be heavily influenced by the number of students but for the next 5 years, we anticipate that there will be an average of 10-20 students per year. We currently have $5,000, which is inadequate to cover the costs of the local field trips, and we feel the format we currently operate in is not an efficient way to use these funds. It would be much more cost effective to be able to charter a bus for an entire day and visit multiple locations or do an overnight trip which would allow us to see more diverse operations, which is the objective of the course. These types of experiences can provide students with an exceptional opportunity to build their network across a broader region as well as foster stronger relationships between peers. We could add a course fee to cover some of the cost but would require higher baseline support for this course. We have increased the credits for this course from 1 to 2 which will increase tuition revenue for the course, but it will need to be subsidized. We estimate that we will need an additional $10,000 added to the budget to allow for this course.

Additional Operating Budget requested: $10,000

Determination of a New Degree Program

Please complete the following template and attach:

- evidence of the institution's internal approval for the new option (i.e., Senate or Education Council approval);
- existing and proposed calendar descriptions of courses; and
- program structure.

Degree Nomenclature

Current: Bachelor of Applied Science in Sustainable Agriculture

Proposed: No change

Goals

Current: The curriculum is designed in recognition of the need for both practical and academic training within the new powerful movement in sustainable agriculture. This program aims to achieve the following goals:

- Address community needs identified by the provincial government and municipal councils in relation to local-regional, agri-food systems and food security.
- Address institutional priorities embedded in KPU's polytechnic mission and mandate.
- Model innovative agricultural practices that will prepare knowledgeable, skilled graduates to engage in the business and practices of sustainable food production and post-production facilities.

Students will be immersed in a setting which fosters experiential learning and exploring personal interests and inclination. During our four-year bachelor's degree program, students will work to realize three major learning outcomes:

- *The ability to grow fruit and vegetable crops within a sustainable ecological context.* A full spectrum of experiential field-based agricultural courses is offered in Year 3 which, by necessity, follows a complete crop cycle beginning in the spring and extending through summer into the fall. These applied courses function as a mechanism to bring the theoretical concepts and principles of sustainable agroecosystem design, function, and management to practical realization.
- *Develop the business, sales, and marketing skills necessary to manage a sustainable agricultural farming business.* The development of these skills is facilitated by the inclusion of a broad base of foundational courses supplemented by a multidisciplinary business management course in Year Four.
- *Develop practical, problem solving and research skills, as well as an understanding of government, economic and business environments and policies needed to address issues of and advance sustainable agri-food systems, as related to employment in government, non-government organizations, and the private sector.*

Proposed (new goals in red text)

- *The ability to grow fruit and vegetable crops within a sustainable ecological context.* A full spectrum of experiential field-based agricultural courses is offered in Year 3 which, by necessity, follows a complete crop cycle beginning in the spring and extending through summer into the fall. These applied courses function as a mechanism to bring the theoretical concepts and principles of sustainable agroecosystem design, function, and management to practical realization.
- *Develop the business, sales, and marketing skills necessary to manage a sustainable agricultural farming business.* The development of these skills is facilitated by the inclusion of a broad base of foundational courses supplemented by a multidisciplinary business management course in Year Four.

- *Develop practical, problem solving and research skills, as well as an understanding of government, economic and business environments and policies needed to address issues of and advance sustainable agri-food systems, as related to employment in government, non-government organizations, and the private sector.*
- **Facilitate experiential learning and peer mentoring at the teaching and research farm throughout the 4-year degree.**
- **Facilitate an understanding of the implications of historical and contemporary relationships between agricultural food systems and Indigenous Peoples through the Indigenization of curriculum. This is in accordance with KPU's recent xéʔelɬ Pathway to Systemic Transformation Framework.**

Targeted Learners

Current: This degree is intended to attract students at the first-year level and retain enrolments for the duration of the program. Students may transfer into the program at any time provided they are assessed as meeting all program admission requirements. Alternately, students may seek prior learning assessments. In addition to recent secondary school, graduates the program also targets non-traditional students, second career, younger adults, and women.

Proposed: The proposed target learners remain the same with the addition of Indigenous students in accordance with KPU's recent xéʔelɬ Pathway to Systemic Transformation Framework.

Educational Outcomes

Current:	Proposed:	Comments:
PLO #1: Advance sustainable food system development through community engagement.	PLO # 11: Engage in food systems change through community action.	**Changed wording for clarity as it 'engaging in food systems change' is more tangible and doable than 'advancing sustainable food system development'**
PLO #2: Apply principles of sustainability to agriculture and food systems.		**This is redundant with the current PLO#6. They are combined in the new PLO#9.**
PLO #3: Critique existing and emerging agricultural paradigms from social, economic, and environmental perspectives.	PLO #5: Identify how social, economic, and political structures influence food systems at different scales.	**We want students to do more than critique, but rather develop an broad understanding of the factors that influence food systems.**
PLO #4: Understand interrelationships between food systems, community, and human well-being.	PLO #1: Understand interrelationships between agriculture, food systems, environment, and human well-being.	**Added 'agriculture' and a distinct component of the food system that this program focuses on.**
PLO #5: Mitigate climate change and adapt food systems to a changing climate.	PLO #7: Evaluate changes to agriculture and food systems that mitigate climate change and overreach of planetary boundaries	**The current PLO implies that students will be able to mitigate and adapt the food system. The wording changes the focus to developing the skills in students to be able to evaluate the changes in order to assess their value in addressing these issues.**

	and adapt agriculture and food systems to a changing planet.	
PLO #6: Apply agroecological principles to agricultural production.	PLO #9: Apply agroecological principles.	**Combined current PLO#2 and #6 and recognized that students apply agroecological principles in production, but also in other areas of study such as policy, communication, etc.**
PLO #7: Design, conduct, analyze and critique natural and social scientific research.	PLO #8: Analyze and critique emerging research and apply its results to advance sustainable food systems.	**Removed the word 'conduct' as we are moving the**
PLO #8: Recognize and represent diverse perspectives and ways of knowing.	PLO #2: Recognize and engage with diverse perspectives and ways of knowing including indigenous perspectives.	**Addition of explicit reference to Indigenous perspectives.**
PLO #9: Manage a sustainable agriculture business.	PLO #10: Apply principles of sustainable agriculture business management.	
	PLO #3: Understand implications of historical and contemporary relationships between agricultural food systems and indigenous peoples.	
	PLO #4: Understand scientific underpinnings of agricultural	

	disciplines including soil, plant, and animal sciences.	
	PLO #6: Craft and share visions for a sustainable future for agriculture and food systems and analyze existing examples that advance the vision.	

	Number of Courses	Number of Credits
Existing program courses and course credits:	**37**	**120**
Program Course Changes		
New courses designed for proposed program:	12*	36*
Existing courses new to proposed program:	1	3
New Required courses:	13*	42*
New Elective courses:	0	0
Deleted Required courses:	5	21
Deleted Elective courses:	4	12
Courses previously Elective now Required:	1	3
Courses previously Required now Elective:	4	12

*Note: 4 of these new courses (18 credits) are based on the content, but reformatted versions of 4 previous required courses.

Number of Credits Required for Graduation:

Current: 120

Proposed: 120

. . . See next page

Proposed Program Structure

(Please add or delete lines and years as necessary):

	Course no. / Name / No. of Credits	Existing Course? (Y/N)	New Course? (Y/N)	Comments
Year 1	***Required***			
	AGRI 1150 / Foundations of Sustainable Agriculture / 3	**Y**		
	BIOL 1110 / Introductory Biology I / 4	**Y**		
	ENVI 1106 / Environmental Chemistry I / 4	**Y**		
	ENGL 1100 / Intro to University Writing / 3	**Y**		
	INDG/AGRI 1130 / Indigenous Perspectives on Food Systems / 3		**Y**	
	AGRI 1100 / Applied Organic Agriculture / 3		**Y**	This course is a revision of AGRI 3290 Agroecosystems Management I, which is the current farm-based course offered in 3rd year. Higher level learning outcomes from the 3rd year course have been moved into the AGRI 4100 Crop Management Field Lab
	MATH 1115 / Statistics I / 3	**Y**		
	AGRI 1200 / Applied Organic Agriculture / 6		**Y**	This course is a revision of AGRI 3390 Agroecosystems Management II, which is the current farm-based course offered in 3rd year. Higher level learning outcomes from the 3rd year course have been moved into the AGRI 4100 Crop Management Field Lab
	Select one of the following:			
	POST 1100/PHIL 1111 / Sustainability and Ethics / 3	**Y**		
	POST 1200 / Inclusive Communities, Sustainable Futures / 3		**Y**	This is a new course for the program, but an existing course at KPU
	POLI 2100 / Sustainability and Government / 3	**Y**		
Year 2	***Required***			
	AGRI 2100 / Applied Organic Agriculture / 3		**Y**	This course is a revision of AGRI 4190 Agroecosystems Management III, which is the current farm-based course offered in 3rd year. Higher level learning outcomes from the 3rd year course have been moved into the AGRI 4100 Crop Management Field Lab
	BIOL 2322 / Ecology / 4	**Y**		
	AGRI 2250 / Agriculture and Food Systems in BC / 3	**Y**		
	AGRI 2220 / Soil Stewardship and Management / 4	**Y**		
	AGRI 2230 / Sustainable Human Economy / 3	**Y**		
	AGRI 2190 / Plant Science / 3	**Y**		
	AGRI 2350 / Agroecology / 3		**Y**	
	AGRI 2320 / Advanced Soils Management / 3	**Y**		
	AGRI/PHYS 2150 / Agricultural Technology / 3		**Y**	
	AGRI 2299 / Agri-Food in the Field / 2		**Y**	This is a revision of an existing course 1299, but changes it to a 2nd year course and addition of 1 credit.
Year 3	***Required***			
	AGRI 3225 / Experimental Design and Analysis / 3	**Y**		
	AGRI 3220 / Agricultural Pests and Beneficials / 3		**Y**	This course, along with AGRI 3230 is replacing and expanding on the current AGRI 2240 Ecologically Based Pest Management course. It was necessary to expand the course into two due to the need to develop pest management knowledge and skills

	AGRI 3120 / Agricultural Enterprise Design / 3		**Y**	This course along with AGRI 3130 will replace the current 6 credit course, AGRI 3135/Business of Agriculture to allow the content to be taught over 2 terms.
	AGRI 3230 / Agricultural Pest Management / 3		**Y**	This course, along with AGRI 3220, is replacing and expanding on the current AGRI 2240 Ecologically Based Pest Management course. It was necessary to expand the course into two due to the need to develop pest management knowledge and skills
	AGRI 3130 / Business Plans for Agriculture / 3		**Y**	This course along with AGRI 3120 will replace the current 6 credit course, AGRI 3135/Business of Agriculture to allow the content to be taught over 2 terms.
	AGRI 3270 / Vegetable Crop Production / 3	**Y**		
	AGRI 3280 / Fruit and Nut Crop Production / 3	**Y**		
	AGRI 4100 / Crop Management Field Lab / 3		**Y**	This course contains the higher-level learning outcomes from the previous Agroecosystems Management courses and provides students with additional on farm demonstration of learning as well as peer mentoring opportunities.
	Electives: (6 credits)			
Year 4	**Required**			
	AGRI 3398 / Crop Physiology and Ecology / 3	**Y**		
	AGRI 4250 / Agroecology in Action / 3		**Y**	This course provides students with professional practice training, network building and communication and writing skills.
	AGRI 4298 / Agroecology as a Global Movement / 3	**Y**		
	Electives: 12 credits (at least 3 credits at 3000 level and above)			

Proposed Calendar Descriptions
(Existing Courses are in black text, new courses are in red text)

AGRI 1150 Foundations of Sustainable Agriculture
Agriculture is one of the fundamental ways in which humans interact with the natural world and has a crucial role to play in a sustainable future. This class will cover the history of agriculture and the current food system through the lens of sustainability. We will explore how the dominant paradigm of modern agricultural production developed, connecting structural and historical processes to current issues. We will also learn about movements for sustainable and just food systems and their potential to address climate change and other issues of global concern.

BIOL 1110/Introductory Biology I
Students will study the diversity of life on Earth, the classification of organisms, and the interactions of organisms with their environments. They will examine the structure and function of tissues and body systems in a variety of organisms. Students will use microscopes and perform a range of experimental procedures in the laboratory.

ENVI 1106/Environmental Chemistry I
Students will study chemistry with a focus on environmental issues and applications. They will study volumetric and gravimetric analysis, general equilibrium reactions, intermolecular forces, basic organic chemistry concepts, and oxidation-reduction reactions relevant to natural and environmental applications. Students with credit for CHEM 1110 may not take this course for further credit.

ENGL 1100/Intro to University Writing
In this introductory university writing course, students will develop their abilities in critical reading, analysis, critical thinking, and clear written expression. Through selected readings and a variety of media, students will explore, assess, and respond to

arguments and issues from across disciplines and relevant to contemporary cultures. This course will also introduce students to research methods, including finding, evaluating, integrating, and documenting sources.

INDI/AGRI 1130/Indigenous Perspectives on Food Systems
Food systems and food sovereignty are deeply connected to Indigenous well-being and relationship to the land, both historically and in the present. Food systems and agriculture are also intertwined with the history of colonialism in Canada. At the same time, Indigenous knowledge and land stewardship practices have provided the foundation for many areas of sustainable agriculture including agroecology, organic agriculture, permaculture, and regenerative agriculture. This course will use a land-based learning approach to explore Indigenous food systems as an integral part of sustainable agriculture. Using examples from local First Nations as well as cases across Canada, students will learn about historic and contemporary factors that impact Indigenous food systems and food sovereignty and consider the significance of reconciliation in the context of food systems.

AGRI 1100/Applied Organic Agriculture
Students will study the integrated application of food crop production principles and practices at the certified organic, KPU Farm. They will focus on late winter and spring operations including planning seasonal operations and plantings, equipment assessment and maintenance; procuring seed and plants; establishing orchard and field plantings; perennial crops canopy management; soil, nutrition, irrigation and pest management regimes and farm safety. This course is only offered in the spring term.

MATH 1115/Statistics I
Students will summarize and display data and perform inferences about proportions, means and standard deviations for one and two populations. Students will summarize and display data, find confidence intervals, and perform hypothesis tests for proportions, means, and standard deviations, for one and two populations, both large and small. They will also perform regression analysis and determine probabilities.

AGRI 1200/Applied Organic Agriculture
Students will build on the crop production principles and practices of integrated crop production covered in AGRI 1100. They will focus on spring and summer operations including work scheduling; transplant production; planting, transplanting, and direct seeding; fertility management; equipment use and maintenance; irrigation; pest management; weed management; warm season cover cropping; harvest; post-harvest management; marketing, and record keeping. This course is only offered in the summer term.

POST 1100/PHIL 1111/Sustainability and Ethics
Students will examine various concepts of sustainability. They will explore evaluation methods including ethical reasoning, and may include other approaches such as game theory, cognitive science, and behavioural economics. Students will evaluate key sustainability policy issues such as climate change, global and intergenerational inequalities, and decolonization. Note: This course is cross listed with PHIL 1111. Students may not get credit for both courses. Students in the Policy Studies (POST) program must take POST 1100.

POST 1200/Inclusive Communities, Sustainable Futures/3
Students will undertake an in-depth study of one broad sustainability issue that relates directly to our lives, such as the climate emergency, inclusive affordable housing, Indigenous land rights, disability rights, or the future of work. Through class discussion, secondary research, and reflection, students will examine various perspectives and current conditions related to the sustainability issue. They will learn how to become self-advocates and develop tools and strategies to advocate for diverse communities and the environment. Students will also collaborate to imagine, evaluate, and promote solutions that lead to a more just and sustainable future.

POLI 2100/Sustainability and Government
Students will explore environmental sustainability as an issue in Canadian politics. They will examine the evolution of the environmental movement in Canada and study the linkages between environmental concerns and Canadian political culture, parties, advocacy organizations, federal-provincial-indigenous self-government relations, domestic and foreign policy, and other areas of interest.

AGRI 2100/ Applied Organic Agriculture
Students will continue to build on organic crop production principles and practices learned in previous Applied Organic Agriculture courses. They will focus on fall operations including work scheduling, late season planting, season extension, fertility management, equipment use and maintenance, pest management, cool season cover cropping, harvest, post-harvest management, farm winterization activities, marketing and record keeping.

BIOL 2322/Ecology
Students will learn the basic properties of ecosystem, community and population ecology, including energy transfer, mineral cycling, community structure and dynamics, competition, predation, evolution and population dynamics. They will perform experimental investigations in the lab and use a range of instruments and equipment to record observations in the field.

AGRI 2250/Agriculture and Food Systems in BC
This course provides an introduction to the concept of a food system as an interconnected web of activities, processes, structures, resources, and people involved in providing human nourishment. Using case examples from British Columbia, we will examine the underlying logic, values, and function of food systems, and their implications for communities and the environment. We will consider how food systems outcomes are shaped by regional policies such as supply management and the Agricultural Land Reserve, and how food systems contribute to issues of international interest such as the United Nations' Sustainable Development Goals.

AGRI 2220/Soil Stewardship and Management
The ultimate goal of this course is to prepare you as future agricultural professionals to apply the soil science knowledge you learn in this course to the challenges of contemporary land management. This course will introduce you to the fundamental concepts related to soil science, discuss key characteristics of soils and ecology, and management of soils with an emphasis on understanding soil as a living system, in the context of the agroecosystem and as a precious natural resource. You will study soil formation and development processes, physical and chemical characteristics of soils, soil biodiversity and soil food webs, and major biogeochemical cycles. We will also cover concepts related to soil fertility and nutrient management, soil water management, soil conservation, and plant nutrient uptake in agroecosystems.

AGRI 2230/Sustainable Human Economy
Students will consider the roles that environment, society and economics has played in the development of the current global economic model. They will critically examine the impacts of the dominant economic system on the environment and human well-being. They will study key principles and concepts of ecological and sustainable economics in comparison to classical and neo-classical economics. Students will examine alternative economic perspectives and case studies that demonstrate alternative economic models that consider planetary boundaries and human well-being.

AGRI 2190/Plant Science
Students will study basic crop plant anatomy, morphology, physiology, growth and development, breeding and genetics. They will also study environmental (biotic and abiotic) and agroecosystem management interactions and their effects on crop growth, yield and quality.

AGRI 2350/Agroecology
Students will examine the history of agroecology as a science, practice, and social movement and consider the vision it suggests for a more sustainable food system. Students will explore the role that agroecology plays in the transformation of food systems. They will study the interactions of the components of this discipline including agricultural, ecological, economic, social, cultural, and political.

PHYS/AGRI 2150/Agricultural Technology
Critically examine established and emerging agricultural technologies through environmental, social, and economic lenses. Consider lifecycle impacts of technologies on food security, greenhouse gas emissions, resource use, and circular economy restoration through case studies.

AGRI 2299/Agri-Food in the Field
Students will visit and observe agri-food system farm processing and distribution enterprises in British Columbia. They will assess the function and operation of these enterprises and identify challenges and opportunities for advancing agri-food

system sustainability. Students will explore ways to define, assess, and interpret factors that contribute to agri-food system sustainability. They will learn how factors interact and learn to weigh these factors in holistic agri-food system sustainability assessments, decision making, and planning processes.
This course may include field trips that happen outside of regular class hours, including overnight trips and additional course fees.

AGRI 3225/Experimental Design and Analysis
Students will learn the fundamental principles of agricultural experimental design and analysis and prepare an applied research proposal.

AGRI 3220/Agricultural Pests and Beneficials
Learn about the damaging insects, pathogens, weeds, and other organisms considered pests in agro-ecosystems. Natural enemies of pest organisms will also be introduced. Topics will include common characteristics of pest and beneficial organisms, taxonomy, anatomy, life cycles, habitat needs, and survival strategies.

AGRI 3120/Agricultural Enterprise Design (existing course AGRI 3135 split into two 3 credit courses)
Students will examine the unique aspects of small scale agricultural businesses and understand the diversity of agricultural businesses. They will compare and contrast small scale operations with commodity-based large scale agricultural enterprises to differentiate between the two business models. By interpreting financial statements, identifying business goals, conducting farm inventories, producing agricultural maps, and researching product markets, students will critique numerous agricultural enterprises.

AGRI 3230/Agricultural Pest Management
Students will survey the evolution of agricultural pest management paradigms and the ecological impacts of changing approaches over time. Practical examples will be used to distinguish between cultural, physical, biological, behavioural, and chemical pest management strategies, and the ecological impacts of each. Current and historical case studies will guide critical assessment of the promise and reality of Integrated Pest Management, Genetic Modification, Sterile Insect Release, and emerging pest management technologies. Restrictions on pest management tactics imposed by the Pest Management Regulatory Agency and the Canadian organic standards, and the practical impacts of these rules, will be considered in light of the regulations' guiding principles and intent.

AGRI 3130/Business Plans for Agriculture (existing course AGRI 3135 split into two 3 credit courses)
Students will produce a business plan for a small scale agricultural business. Starting with business goals, students will identify local agricultural market opportunities, determine products to sell, design agricultural operations, estimate revenues, and research costs. Through explaining the importance of research, record keeping, and generating accounting statements, students will prepare for future conversations to request funding.

AGRI 3270/Vegetable Crop Production
Students will study the principles and practices utilized to cultivate vegetable crops, emphasizing but not limited to southwest British Columbia production (topics include adapted and novel crops and cultivars, field preparation, seeding, soil and nutrition management, water management, pest management, crop plant growth and development, crop maturation and harvest and post-harvest handling). They will also study integrated cropping system planning and management.

AGRI 3280/Fruit and Nut Crop Production
Students will study the principles and practices utilized in tree, small, bush, and cane fruit crops and nut crops cultivated in British Columbia (topics will include adapted and novel crops; climatic requirements; site selection and preparation; propagation; orchard, grove and patch planning and establishment; canopy management; pest, water, and fertility management; plant growth and development; crop maturation and harvest; and post-harvest handling and storage).

AGRI 4100/Crop Management Field Lab
Students will apply practical field skills in the management of organic field crops on a diversified farm. They will contribute to crop establishment, management, harvest, marketing, and agricultural pest and beneficial organism monitoring and management. Cultural, physical, behavioural, and biological pest control strategies will be emphasized and integrated.

Chemical control will be avoided if possible and limited to products allowed for use in organic production systems. Field and laboratory observations will be combined with an understanding of organisms' ecological needs and interactions to develop agroecosystem management strategies that reduce pest pressure and enable organic production. Students will also provide mentorship to junior students in the Applied Organic Agriculture II course. This course is only offered during the summer term.

AGRI 3398/Crop Physiology and Ecology
Students will explore the interactions of plant communities with their environment across plant life cycles and the implications of this interaction on the quantity and quality of crop yield. They will examine definitions of productivity as it relates to sustainable land use. Students will learn biochemical, physiological and ecological principles important to the growth and development of crops and interaction with the environment.

AGRI 4250/Agroecology in Action
In this capstone course, students will reflect on the skills and capacities they have developed in the Sustainable Agriculture program and consider their next steps and contributions to this field. This exploration will be facilitated through various means including extensive writing and reflection, meeting professionals in the field and learning about work opportunities. Alongside instructors and professionals, each student will define a question they would like to explore. They will reflect and compile a portfolio that demonstrates how the skills and knowledge can be applied in the agricultural sector.

AGRI 4298/Agroecology as a Global Movement
In this class we will explore how agroecology has developed as a transnational social movement for more democratic, equitable, and sustainable agri-food systems. Students will analyze and lead discussions on a series of selected case studies from around the world, examining the barriers and successes that grassroots farmer movements have faced. We will consider the role of national and international governments, trade, civil society, farm workers, rural and urban communities, and social groups in shaping these movements, as well as the role of geographic and environmental factors. Students will then research and present their own case study, focusing on a grassroots group of their choosing that is working to make change in the food system.

Calendar Descriptions of Removed Required Courses

AGRI 2240 Ecologically Based Pest Management
Students will study common plant, insect, mite, bacterial, fungal, viral and vertebrate pests, and associated injury and or disease caused to common fruit and vegetable crop plants cultivated in the Pacific Northwest. They will study the agro-ecological basis for plant pest occurrence and plant response to infestation/infection. Students will study cultural, behavioral, biological, physical and chemical pest management methods and tools based on maintaining or enhancing agro-ecosystem integrity, function and sustainability. They will learn to identify/ diagnose arthropod, plant and microbial pests/ disease and develop appropriate integrated pest management strategies and action plans. They will also learn to distinguish between pathogenic and non-pathogenic plant disease.

AGRI 3290 Agroecosystem Management I
Students will study the integrated application of food crop production principles and practices in a laboratory farm setting. They will focus on late winter and spring operations including planning seasonal operations and plantings, equipment assessment and maintenance; procuring seed and plants; establishing orchard and field plantings; perennial crops canopy management; soil, nutrition, irrigation and pest management regimes.

AGRI 3390 Agro-Ecosystems Management II
Students will build on the crop production principles and practices of integrated crop production covered in AGRI 3290. They will focus on spring and summer operations including work scheduling; transplant production; planting, transplanting, and direct seeding; fertility management; equipment use and maintenance; irrigation; pest management; weed management; warm season cover cropping; harvest; post-harvest management; and record keeping.

AGRI 4190 Agro-Ecosystems Management III
Students will continue to build on integrated crop production principles and practices learned in previous Agro-Ecosystems Management courses. They will focus on fall operations including work scheduling, late season planting, season extension,

fertility management, equipment use and maintenance, pest management, cool season cover cropping, harvest, post-harvest management, and record keeping.

AGRI 3135 Business of Agriculture
Students will examine the unique aspects of small-scale agricultural business operations. They will study the critical factors involved in business development and management such as: goal setting, farm mapping and planning, business plan development, record keeping, employee management and marketing.

Calendar Description of Courses Removed as Required to Elective

AGRI 3399 Research Project I (This course is now an honours option)
Students will implement the applied research project proposed in AGRI 3225 and participate in a journal club. They will provide regular updates on research progress, challenges encountered, and changes made to the original plan. They will collect and archive data. Students will complete the project and present their work in poster, paper and presentation format in AGRI 4299

AGRI 4299 Research Project II (This course is now an honours option)
Students will complete, analyze, and present their applied research project implemented in AGRI 3399 and participate in a community of learning through a Journal Club

AGRI 3260 Animal Agriculture
Students will study introductory and general principles and practices utilized for small and large animal production, with an emphasis on small scale, low input, integrated methods and objectives. They will study breeds and breeding, nutrition and health, reproduction, sheltering, growth and development, behavior, egg, meat and milk production, and integration of stock with cropping systems on sustainable farms.

AGRI 4298 Internship
In this course, students engage in a hands-on workplace experience related to their career interests in agriculture and food systems. In collaboration with the host organization, students complete 120 hours of internship work, students establish their own learning goals, track progress towards those goals, and deliver a presentation of their work at the end of the term. Students must identify and secure an internship at an organization of their choice, and have it approved by the instructor, before enrolling in this class. Please meet with the instructor several months ahead of the start of class – or as early in your degree as you wish – for an internship advising session.

Calendar Description of Elective Courses removed

CHEM 1110 Structure of Matter
Students will study the modern view of atomic structure, nuclear chemistry, theories of bonding and molecular structure, organic chemistry (properties and reactions of the major functional groups and isomerism) after a brief review of stoichiometry, gases and the treatment of experimental data. Students will also perform experiments in the laboratory.

PHIL 1110 Intro to Moral Philosophy
Students will consider the meaning and justification of moral judgment by examining various views on whether or not morality has an objective basis. They will be introduced to leading theories of ethical conduct and will learn to apply these theories to contemporary moral problems and workplace situations.
PHIL 1112 Intro to Environmental Ethics

POLI 1120 Canadian Government and Politics
Students will survey Canadian politics and government. They will explore Canada's political culture, its constitution, federalism, and relations with indigenous peoples, as well as its institutions of government, including parliament, crown, prime minister and cabinet, bureaucracy, and the courts. Students will also investigate the mechanisms that help to mobilize citizens and link them to government, such as political parties, elections, interest groups and social movements. Students will thus acquire an enhanced command of their political environment and an enriched understanding of dilemmas facing Canada as a diverse liberal-democratic community.

POLI 1125 Intro to Political Science

Students will examine the fundamental concepts and phenomena of political life. They will: explore such core concepts as power, authority, legitimacy, states, ideology, and political culture; analyze different approaches to organizing political systems (e.g., authoritarian and democratic); and investigate various institutions of government, such as constitutions, legislatures, executives, and judiciaries. Students will examine mechanisms for mobilizing civic participation, including political parties, elections, interest groups, and social movements, and survey the international context within which states operate.