



Lakehead University
Faculty of Science and Environmental Studies

REQUEST REPORT

Request Tracking Number: 2015-SCI-5297
Request Title: Program-MinorModification-Biology

[DeAcTerm[EffectiveDate]] [DeAc[RequestEffectiveDate]]
Request Status: In Workflow
 Request can be split

Request Contents

Type		Title
1.	New Version of a Degree	BSc (Biology Major)
2.	New Version of a Degree	BSc (Natural Science Major)
3.	New Version of a Degree	Honours Bachelor of Environmental Science (Biology Major)
4.	New Version of a Degree	BSc (Natural Science Major)/Honours Bachelor of Outdoor Recreation
5.	New Version of a Degree	Honours BSc (Biology Major) with Concentration in Animal Sciences
6.	New Version of a Degree	Honours BSc (Biology Major)
7.	New Version of a Degree	Honours BSc (Biology and Chemistry Majors)

Request History

Workflow Step	Workflow Action	User	Change Made	Comments	Date
Initiator	Approved	Eleanor Maunula	Yes	Submitted to workflow	10/29/2015
Submission Review (Academic & Curriculum Development Coordinator)	Approved	submission review	No	Approved	10/29/2015

Supporting Documents

File Name	Uploaded By	Upload Date	Size
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Supporting Documents Audit Trail

File Name	User	Date	Action
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Notes

Date	User	Note
10/29/2015	Eleanor Maunula	Submitted into workflow.

1.	New Version of a Degree	BSC.BIOL - BSc (Biology Major)
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Degree Details

CURRENT VERSION	PROPOSED VERSION
BSC.BIOL - BSc (Biology Major) Start Term: Fall 2013 End Term: No Specified End Date	BSC.BIOL - BSc (Biology Major) Start Term: Fall 2013 2016-17 End Term: No Specified End Date

<u>Required Information</u>	
CURRENT VERSION	PROPOSED VERSION
Institution Unit Faculty of Science and Environmental Studies	Institution Unit Faculty of Science and Environmental Studies
Degree Type BSC	Degree Type BSC
Major BIOL	Major BIOL
Minor	Minor
Specialization	Specialization
Rationale D. Law authorized split PHYS 1101 into two half-courses, associated change not originally included in request #2012-SCI-417 approved at 22Mar2013 Senate meeting.	Rationale D. Law authorized split PHYS 1101 into two half-courses, associated change not originally included in request #2012-SCI-417 approved at 22Mar2013 Senate meeting. This is for (a) housekeeping and (b) to conform to the new ICR.
Requirements Three Year program The Biology programs permit students to select courses according to their career aspirations. In addition to a variety of elective courses there is a set of core courses. Each student is required to take each of the following compulsory courses: Biology 1110 - Animal Biology Biology 1130 - Plant Biology Biology 2171 - Genetics Biology 2210 - Introductory Ecology Biology 2230 - Cell Biology Biology 3671 - Evolutionary Concepts Students are encouraged to select elective	Requirements <i>Requirements</i> Three Year program The Biology programs permit students to select courses according to their career aspirations. In addition to a variety of elective courses there is a set of core courses. Each student is required to take each of the following compulsory courses:

courses that are congruent with one of the following two lists: (a) Cell and Molecular Biology, (b) Ecology, Evolution and Environmental Biology.

Students are advised to contact a Biology advisor regarding elective courses. See the Biology Elective Lists on the Biology Programs Information page.

First Year:

- (a) Biology 1110, 1130
- (b) Chemistry 1110, 1130
- (c) A half-course elective
- (d) Mathematics 1151 and 1152 or Mathematics 1171 and 1172
- (e) One FCE in Science other than Biology
- (f) A half-course non-Science elective

Note:

Students considering a career in the health sciences are advised to take Physics 1113 and 1133, or Physics 1211 and 1212.

Second Year:

- (a) Biology 2171, 2210 and 2230
- (b) A half-course elective in Biology
- (c) Mathematics 2310 and 2311 or Mathematics 3332 and 3334
- (d) Two of: Chemistry 2111, 2211, 2231
- (e) A half-course in Science other than Biology
- (f) A half-course elective

Third Year:

- (a) Biology 3671
- (b) One and one-half FCEs selected from courses in [List A](#)
- (c) One and one-half FCEs selected from courses in [List B](#)
- (d) A half-course in Biology
- (e) A half-course non-Science elective
- (f) A half-course elective

Biology 1110 - Animal Biology

Biology 1130 - Plant Biology

Biology 2171 - Genetics

Biology 2210 - Introductory Ecology

Biology 2230 - Cell Biology

Biology 3671 - Evolutionary Concepts

Biology 3XXX - Aboriginal Ethnobotany

Students are encouraged to select elective courses that are congruent with one of the following two lists: (a) Cell and Molecular Biology, (b) Ecology, Evolution and Environmental Biology.

Students are advised to contact a Biology advisor regarding elective courses. See the Biology Elective Lists on the Biology Programs Information page.

First Year:

(a) Biology 1110, 1130

(b) Chemistry 1110, 1130

(c) ~~A half-course elective~~(d) Mathematics 1151 and ~~1152 or 1152, or~~ Mathematics 1171 and 1172

(~~ed~~) One FCE ~~in Science other than Biology~~(f) ~~A half-course non-Science elective~~ *Type C course(s) not in Biology*

(e) One-half FCE elective that is not Type C

(f) One-half FCE elective

Note:

Students considering a career in the health sciences are advised to take Physics 1113 and 1133, or Physics 1211 and 1212.

Second Year:

(a) Biology 2171, 2210-~~and~~, 2230

(b) A half-course elective in Biology

(c) Mathematics 2310 and ~~2311 or Mathematics 3332~~ *2311, or Mathematics 3332* and 3334

(d) Two of: Chemistry 2111, 2211, 2231

(e) ~~A half course in Science other than~~ *One-half FCE Type C course not in* Biology

(f) ~~A One-half course~~ *FCE* elective

Third Year:

(a) Biology 3671, *3XXX*

(b) One and one-half FCEs selected from courses in ~~List~~ *Biology Electives List A*

(c) One and one-half FCEs selected from courses in ~~List~~ *Biology Electives List B*

(d) ~~A~~ *A half-course non-Science elective One-half FCE Type C course not in* Biology

(e) ~~A half A One-course non-Science elective~~ (f) ~~A half-course elective~~ *half -course elective FCE elective*

	<p><i>Note: This program fulfills the Indigenous Content Requirement by including Biology 3XXX.</i></p>
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<u>Budgetary Considerations</u>	
CURRENT VERSION	PROPOSED VERSION
Student Enrolment	Student Enrolment ?
Student Enrolment Other Units	Student Enrolment Other Units ?
Additional Resources	Additional Resources ?
Teaching Loads	Teaching Loads ?
TeachingSupport Services	TeachingSupport Services ?
Outside Support	Outside Support ?

2.	New Version of a Degree	BSC.NATU - BSc (Natural Science Major)
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Degree Details

CURRENT VERSION	PROPOSED VERSION
BSC.NATU - BSc (Natural Science Major) Start Term: Fall 1999 End Term: No Specified End Date	BSC.NATU - BSc (Natural Science Major) Start Term: Fall 1999 2016-17 End Term: No Specified End Date

<u>Required Information</u>	
CURRENT VERSION	PROPOSED VERSION
Institution Unit Faculty of Science and Environmental Studies	Institution Unit Faculty of Science and Environmental Studies
Degree Type BSC	Degree Type BSC
Major NATU	Major NATU
Minor	Minor
Specialization	Specialization
Rationale	Rationale <i>This change is for (a) housekeeping and (b) to conform to the new ICR.</i>
Requirements Three Year program First Year: (a) Biology 1110, 1130 (b) One FCE in English (any combination of English 1011, 1031, 1111 or 1112) (c) Philosophy 1100 (d) One FCE science elective course other than Biology (e) One FCE elective course Second Year: (a) Biology 2210 and either Biology 2171 or 2230 (b) One FCE elective in Biology (c) One FCE elective in Science other than Biology (d) One FCE elective at the second year level or higher, chosen from courses within the Faculty of Social Sciences and Humanities	Requirements Three Year program First Year: (a) Biology 1110, 1130 (b) <i>Two FCEs Type A courses</i> (c) One FCE in English (any combination of English 1011, 1031, 1111 or 1112)(c) Philosophy 1100 <i>Type</i>

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(e) One FCE elective

Third Year:

- (a) Two FCE electives in Biology
- (b) One FCE elective in Science other than Biology
- (c) One FCE elective at the third year level or higher, chosen from courses within the Faculty of Social Sciences and Humanities
- (d) One FCE elective

Note:

No more than seven courses may be taken at the first year level.

C course(s) not in Biology

~~(d) One FCE science elective course other than Biology(es) One FCE elective course~~

Second Year:

(a) Biology 2210 and either Biology 2171 or 2230

(b) One FCE ~~elective~~ in Biology *at the second year level or higher*

(c) One FCE ~~elective in Science other than Type C~~ *course not in Biology*

(d) One FCE ~~elective Type A and/or Type B course(s)~~ at the second year level or higher

~~chosen from courses within the Faculty of Social Sciences and Humanities~~ (e) One FCE elective

Third Year:

~~(a) Two FCE electives in Biology (b) One FCE elective in Science other than Biology (c) One FCE elective One-and-one-half FCEs in Biology at the third year level or higher~~

(b) Biology 3XXX (Aboriginal Plant Biology)

	<p><i>(c) One FCE Type C course not in Biology</i></p> <p><i>(d) One FCE Type A and/or Type B at the third year level or higher</i></p> <p>chosen from courses within the Faculty of Social Sciences and Humanities <i>(e) One FCE elective</i></p> <p>Note: No more than seven courses may be taken at the first year level <i>This program fulfills the Indigenous Content Requirement by including Biology 3XXX.</i></p>
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<i>Budgetary Considerations</i>	
CURRENT VERSION	PROPOSED VERSION
Student Enrolment	Student Enrolment x
Student Enrolment Other Units	Student Enrolment Other Units x
Additional Resources	Additional Resources x
Teaching Loads	Teaching Loads x
TeachingSupport Services	TeachingSupport Services x
Outside Support	Outside Support x

3.	New Version of a Degree	HBESC.BIOL - Honours Bachelor of Environmental Science (Biology Major)
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Degree Details

CURRENT VERSION	PROPOSED VERSION
HBESC.BIOL - Honours Bachelor of Environmental Science (Biology Major) Start Term: Fall 2013 End Term: No Specified End Date	HBESC.BIOL - Honours Bachelor of Environmental Science (Biology Major) Start Term: Fall 2013 2016-17 End Term: No Specified End Date

<u>Required Information</u>	
CURRENT VERSION	PROPOSED VERSION
Institution Unit Faculty of Science and Environmental Studies	Institution Unit Faculty of Science and Environmental Studies
Degree Type HBESC	Degree Type HBESC
Major BIOL	Major BIOL
Minor	Minor
Specialization	Specialization
Rationale #2012-SCI-242 (discontinue ENST4800) and #2012-SCI-243 (add new ENST 4810) (referred 18Jan2013 and approved 22Mar2013) plus #2012-SCI-293 (add new WATE 3094) (referred 18Jan2013 and approved 25Apr2013). Associated program changes to HBESc (Biology Major).	Rationale #2012-SCI-242 (discontinue ENST4800) and #2012-SCI-243 (add new ENST 4810) (referred 18Jan2013 and approved 22Mar2013) plus #2012-SCI-293 (add new WATE 3094) (referred 18Jan2013 and approved 25Apr2013). Associated program changes to HBESc (Biology Major). <i>This change is for (a) housekeeping and (b) to conform to the new ICR.</i>
Requirements Four Year program First Year: (a) Environmental Studies 1120 (b) Biology 1110 and 1130 (c) Chemistry 1110, 1130 (d) One full course equivalent (FCE) from Group I (see Faculty of Social Sciences and Humanities Regulations, First Year Arts Program Grouping Requirements) (e) Mathematics 1151 and 1152, or Physics 1113 and 1133	Requirements Four Year program First Year: (a) Environmental Studies 1120 1170

<p>Second Year: (a) Environmental Studies 2013 and 2210 (b) One FCE Environmental Studies elective (Science Stream) (c) Two of: Chemistry 2111, 2211, 2231 (d) Two of: Biology 2171, 2230, 2711 (e) Mathematics 2310 and 2311</p> <p>Third Year: (a) Environmental Studies 3094 (b) Two FCEs Environmental Studies electives (Science Stream) (c) Two and a half FCEs from Ecology, Evolution and Environmental Biology (in the list of Biology Elective Streams (b), of the Biology Programs)</p> <p>Fourth Year: (a) Three FCE biology courses at the third or fourth year level selected from the list of Ecology, Evolution and Environmental Biology Stream courses in the Biology Programs (b) Environmental Studies 4810 (c) One and one-half FCE elective</p>	<p>(b) Biology 1110 and, 1130</p> <p>(c) Chemistry 1110, 1130</p> <p>(d) One full-FCE Type A course-equivalent (FCEs) from Group I (see Faculty of Social Sciences and Humanities Regulations, First Year Arts Program Grouping Requirements) (e) Mathematics 1151 and 1152, or Physics 1113 and 1133</p> <p><i>(f) One-half FCE elective</i></p> <p>Second Year:</p> <p>(a) Environmental Studies 2013 and, 2210</p> <p>(b) One FCE Environmental Studies elective (Science Stream)</p> <p>(c) Two of: Chemistry 2111, 2211, 2231</p> <p>(d) Two of: Biology 2171, 2230, 2711</p> <p>(e) Mathematics 2310 and, 2311</p> <p>Third Year:</p>
<p>Printed: 10/29/2015</p>	<p>12</p>

	<p>(a) Environmental Studies 3094-3094</p> <p>(b) Two FCEs Environmental Studies electives (Science Stream)</p> <p>(c) Two and a half FCEs from Ecology, Evolution and Environmental Biology (in the list of Biology Elective Streams (b), of the Biology Programs) <i>Biology 3XXX (Aboriginal Plant Biology)</i></p> <p>(d) <i>Two FCEs Biology courses selected from courses in Biology Electives List B</i></p> <p>Fourth Year:</p> <p>(a) Three FCE <i>Three FCEs</i> biology courses at the third or fourth year level selected from the list of Ecology, Evolution and Environmental Biology Stream courses in the <i>Biology Programs Electives List B</i></p> <p>(b) Environmental Studies 4810</p> <p>(c) One and one-half FCE elective <i>FCEs electives</i></p> <p><i>Note: This program fulfills the Indigenous Content Requirement by including Biology 3XXX.</i></p>
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<u>Budgetary Considerations</u>	
CURRENT VERSION	PROPOSED VERSION
Student Enrolment	Student Enrolment

	X
Student Enrolment Other Units	Student Enrolment Other Units X
Additional Resources	Additional Resources X
Teaching Loads	Teaching Loads X
TeachingSupport Services	TeachingSupport Services X
Outside Support	Outside Support X

4.	New Version of a Degree	HBORBSC.NATU - BSc (Natural Science Major)/Honours Bachelor of Outdoor Recreation
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Degree Details

CURRENT VERSION	PROPOSED VERSION
HBORBSC.NATU - BSc (Natural Science Major)/Honours Bachelor of Outdoor Recreation Start Term: 2015-16 End Term: No Specified End Date	HBORBSC.NATU - BSc (Natural Science Major)/Honours Bachelor of Outdoor Recreation Start Term: 2015 2016-1617 End Term: No Specified End Date

<u>Required Information</u>	
CURRENT VERSION	PROPOSED VERSION
Institution Unit Faculty of Science and Environmental Studies	Institution Unit Faculty of Science and Environmental Studies
Degree Type HBORS	Degree Type HBORS
Major OUTD	Major OUTD
Minor	Minor
Specialization	Specialization
Rationale After considerable conversation, debate and analysis of trends over time, the School of ORPT has decided that significant changes are required to the structure of our program. The proposed new HBOR degree structure reflects changes in industry and society, responses to student feedback and the reduction in faculty complement. We are aiming to provide excellence in programing within the limits of the resources available to us. The first year of our program only had two OUTD courses and our students found that this did not give them a sense of belonging within in the program; we have reinstated a first year course and moved one of our second year courses to the first year. The second year of our program had too many OUTD courses, and students felt overwhelmed. Further, three of our field-based courses fell within this year and the third and fourth years of our program did not have any required field-based courses. As a result we moved one course to first year and made our required field exploration course a full year third year course. Finally, both of our research methods classes fell in the third year, and we found that students were not prepared for various kinds of research projects early enough, as a result we moved one of these to the	After considerable conversation, debate and analysis of trends over time, the School of ORPT has decided that significant changes are required to the structure of our program. The proposed new HBOR degree structure reflects changes in industry and society, responses to student feedback and the reduction in faculty complement. We are aiming to provide excellence in programing within the limits of the resources available to us. The first year of our program only had two OUTD courses and our students found that this did not give them a sense of belonging within in the program; we have reinstated a first year course and moved one of our second year courses to the first year. The second year of our program had too many OUTD courses, and students felt overwhelmed. Further, three of our field-based courses fell within this year and the third and fourth years of our program did not have any required field-based courses. As a result we moved one course to first year and made our required field exploration course a full year third year course. Finally, both of our research methods classes fell in the third year, and we found that students were not prepared for various kinds of research projects early enough, as a result we moved one of these to the second year. We have also added required content

<p>second year. We have also added required content by making our current elective course on risk management mandatory, reflecting the nature of the changes within industry. We have also added a fourth year, 1 FCE required “career explorations” course, which will give students the opportunity to gain work experience and prepare for the work environment. To address the reduction in our faculty complement, we have combined two of our second year courses (Theory of Parks and Theory of Tourism) into one course. These curriculum changes affect each of our partnering degrees (Geography, History, Natural Science, Women’s Studies and Concurrent Education – IS, JI, PJ) all of whom have been consulted and are in favour of the changes.</p>	<p>by making our current elective course on risk management mandatory, reflecting the nature of the changes within industry. We have also added a fourth year, 1 FCE required “career explorations” course, which will give students the opportunity to gain work experience and prepare for the work environment. To address the reduction in our faculty complement, we have combined two of our second year courses (Theory of Parks and Theory of Tourism) into one course. These curriculum changes affect each of our partnering degrees (Geography, History, Natural Science, Women’s Studies and Concurrent Education – IS, JI, PJ) all of whom have been consulted and are in favour of the changes. <i>This change is for (a) housekeeping and (b) to conform to the new ICR. Note: This program fulfills the Indigenous Content Requirement by including Outdoor Recreation 1150 and Biology 3XXX.</i></p>
<p>Requirements</p> <p>Four Year program</p> <p>First Year:</p> <p>(a) Outdoor Recreation 1010, 1070, 1150, 1310 (b) English 1016 (c) Biology 1110 and 1130 (d) One of: Anthropology 1032 and 1034; Economics 1100; Geography 1120; Political Science 1100; Psychology 1100; Sociology 1100 (e) One half-course elective in Science other than Biology</p> <p>Second Year:</p> <p>(a) Outdoor Recreation 2210, 2270, 2350, 2511, 2755 (b) Outdoor Recreation 2910 (non-credit course) (c) Biology 2210 (d) Either Biology 2171 or 2230 (e) One and one-half FCE electives in Science other than Biology</p> <p>Third Year:</p> <p>(a) Outdoor Recreation 3050,3312, 3380 (b) Four half-courses in Outdoor Recreation at the third year level (c) One FCE in Biology</p> <p>Fourth Year:</p> <p>(a) Outdoor Recreation 4920 (b) Four half-courses in Outdoor Recreation at the fourth year level (c) One and one half FCE electives in Biology (d) One half-course in Science which may be in Biology</p> <p style="text-align: right;">Printed: 10/29/2015</p>	<p>Requirements</p> <p>Four Year program</p> <p>First Year:</p> <p>(a) Outdoor Recreation 1010, 1070 1070, 1150, 1310</p> <p>(b) English 1016</p> <p>(c) Biology 1110 and, 1130</p> <p>(d) One <i>FCE</i> of: Anthropology 1032 and 1034; Economics 1100; Geography 1120; Political Science 1100; Psychology 1100; Sociology 1100</p> <p>(e) One half-course elective in Science <i>-half FCE Type C</i> other than Biology</p> <p>Second Year:</p> <p>(a) Outdoor Recreation 2210, 2270, 2350, 2511, 2755</p>

(b) Outdoor Recreation 2910 (non-credit course)

(c) Biology 2210

(d) Either Biology 2171 or 2230

(e) ~~One and~~ ~~One and~~ one-half ~~FCE~~ ~~electives in~~ ~~Science other than~~ ~~FCEs~~ ~~Type C~~ ~~courses not in~~ ~~Biology~~

Third Year:

(a) Outdoor Recreation 3050, 3312, 3380

(b) ~~Four half~~ ~~Four~~ ~~0.5-FCE~~ courses in Outdoor Recreation at the third year level

(c) ~~One~~ ~~One~~ FCE in Biology

Fourth Year:

(a) Outdoor Recreation 4920

(b) Four ~~half~~ ~~0.5-FCE~~ courses in Outdoor Recreation at the fourth year level

(c) ~~One and one half~~ ~~FCE~~ ~~electives~~ ~~FCEs~~ in Biology

(d) ~~One half course in~~ ~~Science~~ ~~half~~ ~~FCE~~ ~~Type C~~,

	<p>which may be in Biology</p> <p><i>Note: This program fulfills the Indigenous Content Requirement by including Outdoor Recreation XXXX and Biology 3XXX.</i></p>
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<u>Budgetary Considerations</u>	
CURRENT VERSION	PROPOSED VERSION
Student Enrolment No	Student Enrolment No
Student Enrolment Other Units No	Student Enrolment Other Units No
Additional Resources There will be two years of budget implications related to transitioning from the old to the new program:For 2015-16, there will be a one-time only budget implication as we transition the second year course into the first year offerings (See OSAT 1 - 1310). Two sections of the course will have to be taught, which include risk management personnel and transportation. The cost of this will be \$13,000.For 2016-17, there will be a one-time only budget implication as we transition the third year Research Design course into second year. Two sections of this course will need to be taught, requiring a sessional stipend to cover off teaching of a third or fourth year elective.	Additional Resources There will be two years of budget implications related to transitioning from the old to the new program:For 2015-16, there will be a one-time only budget implication as we transition the second year course into the first year offerings (See OSAT 1 - 1310). Two sections of the course will have to be taught, which include risk management personnel and transportation. The cost of this will be \$13,000.For 2016-17, there will be a one-time only budget implication as we transition the third year Research Design course into second year. Two sections of this course will need to be taught, requiring a sessional stipend to cover off teaching of a third or fourth year elective.
Teaching Loads None	Teaching Loads None
TeachingSupport Services None	TeachingSupport Services None
Outside Support No	Outside Support No

5.	New Version of a Degree	HBSC.BIAN - Honours BSc (Biology Major) with Concentration in Animal Sciences
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Degree Details

CURRENT VERSION	PROPOSED VERSION
HBSC.BIAN - Honours BSc (Biology Major) with Concentration in Animal Sciences Start Term: 2015-16 End Term: No Specified End Date	HBSC.BIAN - Honours BSc (Biology Major) with Concentration in Animal Sciences Start Term: 2015 2016-16 17 End Term: No Specified End Date

<u>Required Information</u>	
CURRENT VERSION	PROPOSED VERSION
Institution Unit Faculty of Science and Environmental Studies	Institution Unit Faculty of Science and Environmental Studies
Degree Type HBSC	Degree Type HBSC
Major Biology	Major Biology
Minor	Minor
Specialization Concentration in Animal Sciences	Specialization Concentration in Animal Sciences
Rationale Feedback from Admissions and Recruitment and from potential Lakehead Biology students at events such as the Ontario Universities' Fair has shown a considerable interest in a Major Specialization in Animal Sciences. This specialization will be of interest to any student hoping to pursue professional school after graduating (e.g., veterinary school, medical school, pharmacy, dentistry, optometry, etc.). This will serve to increase the appeal of both the Lakehead Biology program and courses within it.	Feedback from Admissions and Recruitment and from potential Lakehead Biology students at events such as the Ontario Universities' Fair has shown a considerable interest in a Major Specialization in Animal Sciences. This specialization will be of interest to any student hoping to pursue professional school after graduating (e.g., veterinary school, medical school, pharmacy, dentistry, optometry, etc.). This will serve to increase the appeal of both the Lakehead Biology program and courses within it <i>This change is for (a) housekeeping and (b) to conform to the new ICR.</i>
Requirements Four Year program A student may in consultation with the department, enter the Honours BSc program in biology in any year providing an overall B average has been attained in the biology courses of the preceding years. An overall average of at least 70% in all biology courses taken in the fourth year must also be maintained. Accumulative average of 70% in Biology courses is required in both the major and	Requirements Four Year program A student may in consultation with the department, enter the Honours BSc program in biology in any year providing an overall B average has been attained in the biology courses of the preceding years.

<p>concentration. Should the B average not be attained, the student may apply for the BSc (Biology) with Concentration in Animal Sciences Four Year degree.</p> <p>At least ten Biology courses must be taken during the four years, six of which must be at the third year level or higher.</p> <p>The Biology programs permit students to select courses according to their career aspirations. In addition to a variety of elective courses there is a set of core courses. Each student is required to take each of the following compulsory courses:</p> <p>Biology 1110 - Animal Biology Biology 1130 - Plant Biology Biology 2171 - Genetics Biology 2210 - Introductory Ecology Biology 2230 - Cell Biology Biology 3671 - Evolutionary Concepts</p> <p>Students are encouraged to select elective courses that are congruent with one of the following two lists: (a) Cell and Molecular Biology, (b) Ecology, Evolution and Environmental Biology. Students are advised to contact the Chair of the Department regarding elective courses. See the Biology Elective Lists on the Biology Programs Information page.</p> <p>First Year: (a) Biology 1110, 1130 (b) Chemistry 1110, 1130 (c) A half-course elective (d) Mathematics 1151 and 1152 or Mathematics 1171 and 1172 (e) One FCE in Science other than Biology (f) A half-course non-Science elective Note: Students considering a career in the health sciences are advised to take Physics 1113 and 1133, or Physics 1211 and 1212.</p> <p>Second Year: (a) Biology 2171, 2210 and 2230 (b) A half-course elective in Biology (c) Mathematics 2310 and 2311 or Mathematics 3332 and 3334 (d) Two of: Chemistry 2111, 2211, 2231 (e) A half-course in Science other than Biology (f) A half-course elective</p> <p>Third Year: (a) Biology 3671 (b) One and one-half FCEs selected from courses in List A (c) One and one-half FCEs selected from courses in List B (d) A half-course in Biology</p>	<p>An overall average of at least 70% in all biology courses taken in the fourth year must also be maintained. Accumulative average of 70% in Biology courses is required in both the major and concentration. Should the B average not be attained, the student may apply for the BSc (Biology) with Concentration in Animal Sciences Four Year degree.</p> <p>At least ten Biology courses must be taken during the four years, six of which must be at the third year level or higher.</p> <p>The Biology programs permit students to select courses according to their career aspirations. In addition to a variety of elective courses there is a set of core courses. Each student is required to take each of the following compulsory courses:</p> <p>Biology 1110 - Animal Biology</p> <p>Biology 1130 - Plant Biology</p> <p>Biology 2171 - Genetics</p> <p>Biology 2210 - Introductory Ecology</p> <p>Biology 2230 - Cell Biology</p> <p>Biology 3671 - Evolutionary Concepts</p> <p>Students are encouraged to select <i>Biology</i> elective courses that are congruent with one of the following two lists: (a) <i>List A</i>: Cell and Molecular Biology, (b) <i>and List B</i>: Ecology, Evolution and Environmental Biology.</p> <p>Students are advised to contact the Chair of the Department regarding elective courses. See the Biology Elective Lists on the Biology Programs Information page.</p> <p>First Year:</p>
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<p>(e) A half-course non-Science elective (f) A half-course elective</p> <p>Fourth Year: (a) Three FCEs in Biology at the third year level or higher (b) One and one-half FCE electives in Science at the third year level or higher (c) A half-course non-Science elective</p> <p>Note: Students considering graduate school are strongly encouraged to take Biology 4101 as 1.0 FCE towards the degree requirement of "3 FCEs in Biology at the third year level or higher" in Fourth Year. Students must arrange for a faculty supervisor before the start of Fourth Year if they wish to register in Biology 4101.</p> <p>Concentration in Animal Sciences</p> <p>The Concentration in Animal Sciences consists of 5 FCEs chosen from the 2 lists below. Students must take 2.5 FCEs from each list to obtain a Concentration in Animal Sciences.</p> <p>1. Cell, System and Organism Animal Science</p> <ul style="list-style-type: none"> • Biology 2011 - Human Musculoskeletal Anatomy* • Biology 2012 - Human Internal Anatomy* • Kinesiology 3010/Biology 3010 - Physiology of Exercise I* • Kinesiology 3011/Biology 3011 - Physiology of Exercise II • Biology 3250 - Animal Physiology: Animal Communication and Control Systems* • Biology 3251 - Animal Physiology: Organ System Operation and Regulation* • Biology 3253 - Animal Physiology: Intracellular Communication and Coordination • Biology 3330 - Molecular Biology of Development • Biology 4212 - Biology of Fishes* • Biology 4230 - Cancer Biology • Biology 4231 - Ornithology* • Biology 4751 - Neurobiology I • Biology 4752 - Neurobiology II • Biology 4830 - Endocrinology • Biology 4850 - Neurochemistry • Biology 4855 - Pharmacology <p>2. Community and Ecosystem Animal Science</p> <ul style="list-style-type: none"> • Biology 3151 - Biogeography • Biology 3212 - Invertebrate Zoology* • Biology 3219 - The Evolution of Vertebrates* • Biology 3232 - Conservation Biology* • Biology 3313 - Ecological Structure in Northern Environments • Biology 4111 - Parasitology* • Biology 4113 - Community Ecology* • Biology 4117 - Advances in Contemporary 	<p>(a) Biology 1110, 1130</p> <p>(b) Chemistry 1110, 1130</p> <p>(c) A One-half course FCE elective</p> <p>(d) Mathematics 1151 and 1152 or 1152, or Mathematics 1171 and 1172</p> <p>(e) One FCE in Science other than Type C course not in Biology</p> <p>(f) A half-course non-Science elective <i>One-half FCE elective that is not Type C</i></p> <p>Note:</p> <p>Students considering a career in the health sciences are advised to take Physics 1113 and 1133, or Physics 1211 and 1212.</p> <p>Second Year:</p> <p>(a) Biology 2171, 2210 and, 2230</p> <p>(b) A half-course elective <i>One-half FCE</i> in Biology</p> <p>(c) Mathematics 2310 and 2311 or Mathematics 3332 <i>2311, or Mathematics 3332</i> and 3334</p>
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- Ecology
- Biology 4152 - Aquatic Biology Field Course*
- Biology 4211 - Mammalogy*
- Biology 4273 - Bioethics Issues for the Life Sciences
- Biology 4435 - Herpetology*

Note:

Courses with asterisks* have labs.

(d) Two of: Chemistry 2111, 2211, 2231

(e) ~~A half course in Science other than~~ *One-half FCE Type C course not in* Biology

(f) ~~A~~ *One-half FCE* elective

Third Year:

(a) Biology 3671, *3XXX (Aboriginal Plant Biology)*

(b) ~~One-and-one-half~~ FCEs selected from courses in *Biology Electives* List A

(c) ~~One-and-one-half~~ FCEs selected from courses in *Biology Electives* List B

(d) ~~A half course~~ *One-half FCE Type C course not in* Biology

(e) ~~A half course non-Science elective~~ (f) ~~A half course elective~~ *One-half FCE elective*

Fourth Year:

(a) Three FCEs in Biology at the third year level or higher

(b) One-and-one-half ~~FCE~~ *FCEs Type C* electives ~~in Science~~ at the third year level or higher

(c) ~~A half course non-Science elective~~ *Note:* ~~One-half FCE elective that is not Type C~~

Notes:

1. Students considering graduate school are strongly encouraged to take Biology 4101 as 1.0 FCE towards the degree requirement of "3 FCEs in Biology at the third year level or higher" in Fourth Year. Students must arrange for a faculty supervisor before the start of Fourth Year if they wish ~~to register~~ *to register* in Biology 4101.

2. This program fulfills the Indigenous Content Requirement by including Biology 3XXX.

Concentration in Animal Sciences

The Concentration in Animal Sciences consists of 5 FCEs chosen from the 2 lists below. Students must take 2.5 FCEs from each list to obtain a Concentration in Animal Sciences.

1. Cell, System and Organism Animal Science

Biology 2011 - Human Musculoskeletal Anatomy*

Biology 2012 - Human Internal Anatomy*

Kinesiology 3010/Biology 3010 - Physiology of Exercise I*

Kinesiology 3011/Biology 3011 - Physiology of Exercise II

Biology 3250 - Animal Physiology: Animal Communication and Control Systems*

Biology 3251 - Animal Physiology: Organ System Operation and Regulation*

Biology 3253 - Animal Physiology: Intracellular Communication and Coordination

Biology 3330 - Molecular Biology of Development

Biology 4212 - Biology of Fishes*

Biology 4230 - Cancer Biology

Biology 4231 - Ornithology*

Biology 4751 - Neurobiology I

Biology 4752 - Neurobiology II

Biology 4830 - Endocrinology

Biology 4850 - Neurochemistry

Biology 4855 - Pharmacology

2. Community and Ecosystem Animal Science

Biology 3151 - Biogeography

Biology 3212 - Invertebrate Zoology*

Biology 3219 - The Evolution of Vertebrates*

Biology 3232 - Conservation Biology*

Biology 3313 - Ecological Structure in Northern
Environments

Biology 4111 - Parasitology*

	<p>Biology 4113 - Community Ecology*</p> <p>Biology 4117 - Advances in Contemporary Ecology</p> <p>Biology 4152 - Aquatic Biology Field Course*</p> <p>Biology 4211 - Mammalogy*</p> <p>Biology 4273 - Bioethics Issues for the Life Sciences</p> <p>Biology 4435 - Herpetology*</p> <p>Note:</p> <p>Courses with asterisks* have labs.</p> <p>-</p>
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<u>Budgetary Considerations</u>	
CURRENT VERSION	PROPOSED VERSION
Student Enrolment No	Student Enrolment No
Student Enrolment Other Units Unknown. The appeal of this program may serve to motivate students to switch from other programs into Biology.	Student Enrolment Other Units Unknown. The appeal of this program may serve to motivate students to switch from other programs into Biology.

<p>Additional Resources No</p>	<p>Additional Resources No</p>
<p>Teaching Loads No effect, will be managed with existing faculty members.</p>	<p>Teaching Loads No effect, will be managed with existing faculty members.</p>
<p>TeachingSupport Services Teaching support needs may increase if there is a significant increase in enrolment. It is not currently anticipated that increased resources will be needed over the short term to support this specialization.</p>	<p>TeachingSupport Services Teaching support needs may increase if there is a significant increase in enrolment. It is not currently anticipated that increased resources will be needed over the short term to support this specialization.</p>
<p>Outside Support No</p>	<p>Outside Support No</p>

6.	New Version of a Degree	HBSC.BIOL - Honours BSc (Biology Major)
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Degree Details

CURRENT VERSION	PROPOSED VERSION
HBSC.BIOL - Honours BSc (Biology Major) Start Term: Fall 2013 End Term: No Specified End Date	HBSC.BIOL - Honours BSc (Biology Major) Start Term: Fall 2013 2016-17 End Term: No Specified End Date

<u>Required Information</u>	
CURRENT VERSION	PROPOSED VERSION
Institution Unit Faculty of Science and Environmental Studies	Institution Unit Faculty of Science and Environmental Studies
Degree Type HBSC	Degree Type HBSC
Major BIOL	Major BIOL
Minor	Minor
Specialization	Specialization
Rationale A more detailed note is added to inform students considering graduate studies in Biology that an Honours Thesis (Biology 4101) is recommended and that they need to find a faculty supervisor if they wish to take this course.	Rationale A more detailed note is added to inform students considering graduate studies in Biology that an Honours Thesis (Biology 4101) is recommended and that they need to find a faculty supervisor if they wish to take this course This change is for (a) housekeeping and (b) to conform to the new ICR.
Requirements Four Year program A student may in consultation with the department, enter the Honours BSc program in biology in any year providing an overall B average has been attained in the biology courses of the preceding years. An overall average of at least 70% in all biology courses taken in the fourth year must be maintained. Should the B average not be attained, the student may apply for the BSc (Biology) Four Year degree. At least ten Biology courses must be taken during the four years, six of which must be at the third year level or higher. Year One through Three: The first three years of the Honours BSc program are	Requirements Four Year program A student may in consultation with the department, enter the Honours BSc program in biology in any year providing an overall B average has been attained in the biology courses of the preceding years. An overall average of at least 70% in all biology courses taken in the fourth year must be maintained.

the same as the first three years of the BSc (Biology Major) Three Year Program.

Fourth Year:

- (a) Three FCEs in Biology at the third year level or higher
- (b) One and one-half FCE electives in Science at the third year level or higher
- (c) A half-course non-Science elective

Note:

Students considering graduate school are strongly encouraged to take Biology 4101 as 1.0 FCE towards the degree requirement of "3 FCEs in Biology at the third year level or higher" in Fourth Year. Students must arrange for a faculty supervisor before the start of Fourth Year if they wish to register in Biology 4101.

Should the B average not be attained, the student may apply for the BSc (Biology) Four Year degree.

At least ten Biology courses must be taken during the four years, six of which must be at the third year level or higher.

Year One through Three:

The first three years of the Honours BSc ~~program are~~ *program are* the same as the first three years of the BSc (Biology Major) Three Year Program.

Fourth Year:

(a) Three FCEs in Biology at the third year level or higher

(b) One and one-half ~~FCE electives in Science~~ *FCEs Type C courses* at the third year level or higher

(c) ~~A half-course non-Science elective~~ *Note: One-half FCE elective that is not Type C*

	<p><i>Notes:</i></p> <p>1. Students considering graduate school are strongly encouraged to take Biology 4101 as 1.0 FCE towards the degree requirement of "3 FCEs in Biology at the third year level or higher" in Fourth Year. Students must arrange for a faculty supervisor before the start of Fourth Year if they wish to register <i>to register</i> in Biology 4101.</p> <p>2. <i>This program fulfills the Indigenous Content Requirement by including Biology 3XXX.</i></p>
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<u>Budgetary Considerations</u>	
CURRENT VERSION	PROPOSED VERSION
Student Enrolment	Student Enrolment x
Student Enrolment Other Units	Student Enrolment Other Units x
Additional Resources	Additional Resources x
Teaching Loads	Teaching Loads x
TeachingSupport Services	TeachingSupport Services x
Outside Support	Outside Support x

7.	New Version of a Degree	HBSC.BIOLCHEM - Honours BSc (Biology and Chemistry Majors)
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Degree Details

CURRENT VERSION	PROPOSED VERSION
HBSC.BIOLCHEM - Honours BSc (Biology and Chemistry Majors) Start Term: Fall 2014 End Term: No Specified End Date	HBSC.BIOLCHEM - Honours BSc (Biology and Chemistry Majors) Start Term: Fall 2014 2016-17 End Term: No Specified End Date

<u>Required Information</u>	
CURRENT VERSION	PROPOSED VERSION
Institution Unit Faculty of Science and Environmental Studies	Institution Unit Faculty of Science and Environmental Studies
Degree Type HBSC	Degree Type HBSC
Major BICH	Major BICH
Minor	Minor
Specialization	Specialization
Rationale Change to the first year CHEM courses reflecting the new required courses specific to BIOL/CHEM majors	Rationale Change to the first year CHEM courses reflecting the new required courses specific to BIOL/CHEM majors This change is for (a) housekeeping and (b) to conform to the new ICR.
Requirements Four Year program First Year: (a) Biology 1110, 1130 (b) Chemistry 1111, 1131 (c) One FCE in humanities or social sciences, excluding Mathematics and Computer Science (see the list of Group I and Group II subjects) (d) Mathematics 1171 and 1172 (e) Physics 1211 and 1212 Second Year: (a) Biology 2171, 2210 and 2230 (b) A half-course elective in Biology (c) Chemistry 2211, 2231, 2351, 2411 (d) Mathematics 2111 (e) One half-course elective	Requirements Four Year program First Year: (a) Biology 1110, 1130 (b) Chemistry 1111, 1131 (c) One FCE in humanities or social sciences Type A

Third Year:

- (a) Biology 3671
- (b) One FCE elective in Biology
- (c) Biology 3252/Chemistry 3251 and Biology 3272/Chemistry 3271
- (d) Chemistry 2111, 2412
- (e) A half-course in Chemistry (see note 2 below)
- (f) Mathematics 2310 and 2311

Fourth Year:

- (a) One FCE in Biology
- (b) Two FCE electives in either Biology or Chemistry (see note 3)
- (c) One FCE in Chemistry (see note 2)
- (d) One FCE elective

Notes:

1. The 1.5 FCE electives in Chemistry in the third and fourth years must be taken from the following list: Chemistry 3131, 3231, 3371, 3451 and 3711.
2. It is strongly recommended that the 2.0 FCEs in Fourth Year in either Chemistry or Biology include a research thesis if the student is considering graduate school. Students must have arranged for a faculty supervisor by the end of their third year if they wish to enroll in thesis courses (Biology 4101 or Chemistry 4111, 4901).
3. An overall average of at least 70% must be maintained through the degree. Should the B average not be attained, the student may apply for the BSc (Biology and Chemistry) Four Year degree.
4. A maximum of 2.0 FCEs in project-based courses (Biology 3990, 3991, 4101, and Chemistry 4111, 4901) is allowed.

and/or Type B course(s), excluding Mathematics and Computer Science

(~~see the list of Group I and Group II subjects~~)(d) Mathematics 1171 ~~and~~, 1172

(e) Physics 1211 ~~and~~, 1212

Second Year:

(a) Biology 2171, 2210 ~~and~~, 2230

(b) ~~A half-course elective~~ *One-half FCE* in Biology

(c) Chemistry 2211, 2231, 2351, 2411

(d) Mathematics 2111

(e) One-half ~~course~~ *FCE* elective

Third Year:

(a) Biology 3671, *3XXX (Aboriginal Plant Biology)*

(b) One ~~half~~ FCE ~~elective~~ in Biology *at the third year level or higher*

(c) Biology 3252/Chemistry 3251 and Biology 3272/Chemistry 3271

(d) Chemistry 2111, 2412

(e) ~~A One-half course~~ FCE in Chemistry (see note 2 below)

(f) Mathematics 2310 ~~and~~, 2311

Fourth Year:

(a) One FCE in Biology *at the third year level or higher*

(b) Two FCE electives in either Biology or Chemistry (see note 3)

(c) One FCE in Chemistry (see note 2)

(d) One FCE elective

Notes:

1. The 1.5 FCE electives in Chemistry in the third and fourth years must be taken from the following list: Chemistry 3131, 3231, 3371, 3451 and 3711.

2. It is strongly recommended that the 2.0 FCEs in Fourth Year in either Chemistry or Biology include a research thesis if the student is considering graduate school. Students must have arranged for a faculty supervisor by the end of their third year if they wish to enroll in thesis courses (Biology 4101 or Chemistry 4111, 4901).

3. An overall average of at least 70% must be

	<p>maintained through the degree. Should the B average not be attained, the student may apply for the BSc (Biology and Chemistry) Four Year degree.</p> <p>4. A maximum of 2.0 FCEs in project-based courses (Biology 3990, 3991, 4101, and Chemistry 4111, 4901) is allowed.</p> <p><i>5. This program fulfills the Indigenous Content Requirement by including Biology 3XXX.</i></p>
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<u>Budgetary Considerations</u>	
CURRENT VERSION	PROPOSED VERSION
Student Enrolment approximately 25 per year	Student Enrolment approximately 25 per year
Student Enrolment Other Units This is not relevant	Student Enrolment Other Units This is not relevant
Additional Resources No additional resources will be requested other than increased teaching loads	Additional Resources No additional resources will be requested other than increased teaching loads
Teaching Loads Teaching loads will be increased as per decanal request.	Teaching Loads Teaching loads will be increased as per decanal request.
TeachingSupport Services There are no required teaching support services.	TeachingSupport Services There are no required teaching support services.
Outside Support There is no outside support being requested.	Outside Support There is no outside support being requested.