



<p>1.0 Degree Title Specify the two degrees for concurrent degree programs</p> <p>B.Science</p> <p>1.1 Major (Legacy= Subject) (30-char. max.)</p> <p>Environment</p> <p>1.2 Concentration (Legacy = Concentration/Option) If applicable (30 char. max.)</p> <p>Food Production and Environment</p> <p>1.3 Minor (with Concentration, if applicable) (30 char. max.)</p> <p></p> <p>1.4 Category</p> <table border="0"> <tr> <td><input type="checkbox"/> Faculty Program (FP)</td> <td><input type="checkbox"/> Honours (HON)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Major</td> <td><input type="checkbox"/> Joint Honours Component (HC)</td> </tr> <tr> <td><input type="checkbox"/> Joint Major</td> <td><input type="checkbox"/> Internship/Co-op</td> </tr> <tr> <td><input type="checkbox"/> Major Concentration (CON)</td> <td><input type="checkbox"/> Thesis (T)</td> </tr> <tr> <td><input type="checkbox"/> Minor</td> <td><input type="checkbox"/> Non-Thesis (N)</td> </tr> <tr> <td><input type="checkbox"/> Minor Concentration (CON)</td> <td><input type="checkbox"/> Other</td> </tr> </table> <p>Please specify</p> <p></p> <p>1.5 Complete Program Title</p> <p>B.Sc. Environment Major, Food Production and Environment domain</p>	<input type="checkbox"/> Faculty Program (FP)	<input type="checkbox"/> Honours (HON)	<input checked="" type="checkbox"/> Major	<input type="checkbox"/> Joint Honours Component (HC)	<input type="checkbox"/> Joint Major	<input type="checkbox"/> Internship/Co-op	<input type="checkbox"/> Major Concentration (CON)	<input type="checkbox"/> Thesis (T)	<input type="checkbox"/> Minor	<input type="checkbox"/> Non-Thesis (N)	<input type="checkbox"/> Minor Concentration (CON)	<input type="checkbox"/> Other	<p>2.0 Administering Faculty/Unit</p> <p>Faculty of Agricultural & Environmental Sciences</p> <p>Offering Faculty/Department</p> <p>McGill School of Environment</p> <p>3.0 Effective Term of revision or retirement Please give reasons in 8.0 "Rationale" in the case of retirement (Ex. Sept. 2004 = 200409)</p> <p>Term</p> <p>Fall 2013</p> <p>4.0 Existing Credit Weight Proposed Credit Weight</p> <p>63 credits 63 credits</p> <p>5.0 Description (Maximum 150 words)</p> <p></p>
<input type="checkbox"/> Faculty Program (FP)	<input type="checkbox"/> Honours (HON)												
<input checked="" type="checkbox"/> Major	<input type="checkbox"/> Joint Honours Component (HC)												
<input type="checkbox"/> Joint Major	<input type="checkbox"/> Internship/Co-op												
<input type="checkbox"/> Major Concentration (CON)	<input type="checkbox"/> Thesis (T)												
<input type="checkbox"/> Minor	<input type="checkbox"/> Non-Thesis (N)												
<input type="checkbox"/> Minor Concentration (CON)	<input type="checkbox"/> Other												

6.0 List of existing program and proposed program	
<p>Existing program (list courses as follows: Subj Code/Crse Num, Title, Credit weight, under the headings of: Required Courses, Complementary Courses, Elective Courses)</p> <p>See :</p> <p>bsc_bscagenvsc_food_19 dec 2012.doc</p>	<p>Proposed program (list courses as follows: Subj Code/Crse Num, Title, Credit weight, under the headings of: Required Courses, Complementary Courses, Elective Courses)</p> <p></p>

7.0 Consultation with
Related Units

Yes No

Financial Consult Yes No

Attach list of consultations.

8.0 Rationale

Minor revisions are needed to bring the domain up-to-date (to add new courses, to remove courses that are retired or have not been offered recently, and to structure the domain so as to provide more focus). See Page 5.

9.0 Approvals

Routing Sequence	Name	Signature	Date
Department	<input type="text"/>	<input type="text"/>	<input type="text"/>
Curric/Acad Committee	<input type="text"/>	<input type="text"/>	<input type="text"/>
Faculty 1	<input type="text"/>	<input type="text"/>	<input type="text"/>
Faculty 2	<input type="text"/>	<input type="text"/>	<input type="text"/>
Faculty 3	<input type="text"/>	<input type="text"/>	<input type="text"/>
SCTP	<input type="text"/>	<input type="text"/>	<input type="text"/>
GS	<input type="text"/>	<input type="text"/>	<input type="text"/>
APPC	<input type="text"/>	<input type="text"/>	<input type="text"/>
Senate	<input type="text"/>	<input type="text"/>	<input type="text"/>

Submitted by

Name
Phone
Email
Submission Date

To be completed by ARR:

CIP Code

To be appended to Program Change Proposals for:

BSc; Environment; Food Production and Environment

(bsc_environment_food_revision_2012.doc)

BSc (AgEnvSc); Environment; Food Production and Environment

(bscagenvsc_environment_food_revision_2012.doc)

Course list

Deleted courses shown as ~~strikeout~~, added courses or other changes are shown as underlined italics. Courses at Macdonald Campus are shown with (M). Numbers in ¹superscript refer to comments in the rationale.

<p>This domain (63 credits including core) is open only to students in the B.Sc. (Ag.Env.Sc.) Major in Environment or B.Sc. in Environment program.</p> <p>The business of food production is an area of human activity with a large and intimate interaction with the environment. Modern agriculturalists must strike a delicate balance between trying to provide food for themselves, their families and urban dwellers while trying to minimize environmental damage. When negative effects due to agricultural activities do occur, they are not usually the classic point source effects that we have come to associate with industry of large cities. Rather, the effects are over extremely large land areas cumulating, perhaps, in pollution of river systems or lakes some distance away. As world populations grow, and as diets change, potentially negative interactions between agricultural systems and other facets of the environment will become more frequent. In the same way, urban sprawl will make conflicts between agriculture and urbanites more common.</p> <p>With a judicious choice of courses, graduates of this domain may be eligible to apply for membership in the Order des agronomes du Quebec (OAQ) and the Agricultural Institute of Canada (AIC).</p> <p>Program Pre-requisites or Co-requisites One of the following courses or CEGEP equivalent (e.g., CEGEP objective 00XU): BIOL 112 (3) Cell and Molecular Biology LSCI 211 (3) Biochemistry 1</p> <p>One of the following courses of CEGEP equivalent (e.g., CEGEP objective 00XV): CHEM 212 (4) Introductory Organic Chemistry 1 FDSC 230 (4) Organic Chemistry</p>	<p>This domain (63 credits including core) is open only to students in the B.Sc. (Ag.Env.Sc.) Major in Environment or B.Sc. in Environment program.</p> <p>¹ The business of food production is an area of human activity with a large and intimate interaction with the environment. As global population rises, the demand for food and food production increases. This demand must be met through a combination of increased productivity of existing agricultural land and by bringing new arable land into production. This is a serious challenge for two main reasons. Firstly, there are environmental impacts of agricultural activities which can be significant and which can be difficult to assess and contain, as the effects range from loss of biodiversity due to increasing farm size, production of biofuels versus food, non-point source pollution of rivers and lakes and a loss of arable land to urbanization. Secondly, a growing population needs support from a number of different land uses (eg. urban growth, transportation, water resource use, timber resources etc.), many of which conflict, and all of which compete with food production land requirements. As the available land resource decreases, land-use competition for what remains will grow more fierce, making increasingly critical the need for smart and informed decision-making related to food production.</p> <p>² With a judicious choice of courses, graduates of this domain may be eligible to apply for membership in the Order des agronomes du Quebec (OAQ) and the Agricultural Institute of Canada (AIC).</p> <p>Program Pre-requisites or Co-requisites One of the following courses or CEGEP equivalent (e.g., CEGEP objective 00XU): BIOL 112 (3) Cell and Molecular Biology LSCI 211 (3) Biochemistry 1</p> <p>One of the following courses of CEGEP equivalent (e.g., CEGEP objective 00XV): CHEM 212 (4) Introductory Organic Chemistry 1 FDSC 230 (4) Organic Chemistry</p>
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<p>Program Requirements Students are required to take a maximum of 34 credits at the 200 level and a minimum of 15 credits at the 400 level or higher in this program. This includes core and required courses, but does not include the domain pre-/co-requisites listed above.</p> <p>Core: Required Courses (18 credits) ENVR 200 (3) The Global Environment ENVR 201 (3) Society, Environment and Sustainability ENVR 202 (3) The Evolving Earth ENVR 203 (3) Knowledge, Ethics and Environment ENVR 301 (3) Environmental Research Design ENVR 400 (3) Environmental Thought</p> <p>Core: Complementary Course – Sr. Res. Project (3 credits) Only 3 credits will be applied to the program; extra credits will count as electives. AGRI 519 (6) Sustainable Development Plans ENVR 401 (3) Environmental Research ENVR 451 (6) Research in Panama</p> <p>Domain: Required Courses (9 credits) AEBI 210 (3) Organisms 1 AGRI 210 (3) Agro-Ecological History PLNT 300 (3) Cropping Systems</p> <p>Domain: Complementary Courses (33 credits) 33 credits of complementary courses as follows: (15 credits) - Basic Sciences (12 credits) - Applied Sciences (6 credits) - Social Sciences/Humanities</p> <p>Basic Sciences (15 credits): One of the following Statistics courses or equivalent: AEMA 310 (3) Statistical Methods 1 MATH 203 (3) Principles of Statistics 1</p> <p>One of: AGRI 340 (3) Principles of Ecological Agriculture ANSC 250 (3) Principles of Animal Science</p> <p>One of: BIOL 202 (3) Basic Genetics LSCI 204 (3) Genetics</p> <p>One of: ENVB 210 (3) The Biophysical Environment GEOG 305 (3) Soils and Environment</p>	<p>Program Requirements Students are required to take a maximum of 34 credits at the 200 level and a minimum of 15 credits at the 400 level or higher in this program. This includes core and required courses, but does not include the domain pre-/co-requisites listed above.</p> <p>Core: Required Courses (18 credits) ENVR 200 (3) The Global Environment ENVR 201 (3) Society, Environment and Sustainability ENVR 202 (3) The Evolving Earth ENVR 203 (3) Knowledge, Ethics and Environment ENVR 301 (3) Environmental Research Design ENVR 400 (3) Environmental Thought</p> <p>Core: Complementary Course – Sr. Res. Project (3 credits) Only 3 credits will be applied to the program; extra credits will count as electives. ³ <i>AEBI 427 (6) Barbados Interdisciplinary Project (Barbados)</i> ⁴ AGRI 519 (6) Sustainable Development Plans (<i>Barbados</i>) ENVR 401 (3) Environmental Research ⁴ ENVR 451 (6) Research in Panama (<i>Panama</i>)</p> <p>⁶ Domain: Required Courses (6 credits) AEBI 210 (3) Organisms 1 ⁵ AGRI 210 (3) Agro-Ecological History ⁷ PLNT 300 (3) Cropping Systems ⁷ AGRI 340 (3) Principles of Ecological Agriculture</p> <p>⁶ Domain: Complementary Courses (36 credits) 36 credits of complementary courses as follows: ^{6,10} (18 credits) - Basic Sciences <i>Fundamentals</i> (12 credits) - Applied Sciences (6 credits) - Social Sciences/Humanities ⁹ <i>The Applied and Social Sciences/Humanities courses are grouped according to sub-topics. Students can choose their courses from one sub-topic, or a combination of sub-topics.</i></p> <p>^{6,10} Basic Sciences Fundamentals (18 credits): One of the following Statistics courses or equivalent: AEMA 310 (3) Statistical Methods 1 MATH 203 (3) Principles of Statistics 1</p> <p>One of: ⁷ AGRI 340 (3) Principles of Ecological Agriculture ANSC 250 (3) Principles of Animal Science ⁷ PLNT 300 (3) Cropping Systems</p> <p>One of: BIOL 202 (3) Basic Genetics LSCI 204 (3) Genetics</p> <p>One of: ENVB 210 (3) The Biophysical Environment GEOG 305 (3) Soils and Environment</p>
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<p>One of: BIOL 308 (3) Ecological Dynamics ENVB 305 (3) Population & Community Ecology</p> <p>Applied Sciences (12 credits): Note: you may take BREE 217 or GEOG 322 but not both; you may take FDSC 200 or NUTR 207 but not both.</p> <p>AGRI 411 (3) Global Issues on Development, Food and Agriculture AGRI 435 (3) Soil and Water Quality Management AGRI 550 (3) Sustained Tropical Agriculture BIOL 465 (3) Conservation Biology BIOL 553 (3) Neotropical Environments BREE 217 (3) Hydrology and Water Resources BREE 322 (3) Organic Waste Management BREE 518 (3) Bio-Treatment of Wastes ENTO 466 (3) Apiculture ENVB 437 (3) Assessing Environmental Impact FDSC 200 (3) Introduction to Food Science FDSC 535 (3) Food Biotechnology GEOG 302 (3) Environmental Management 1 GEOG 322 (3) Environmental Hydrology GEOG 380 (3) Adaptive Environmental Management MICR 331 (3) Microbial Ecology NRSC 333 (3) Pollution and Bioremediation NUTR 207 (3) Nutrition and Health NUTR 403 (3) Nutrition in Society NUTR 420 (3) Toxicology and Health Risks PARA 410 (3) Environment and Infection PHAR 303 (3) Principles of Toxicology PLNT 434 (3) Weed Biology and Control SOIL 315 (3) Soil Fertility and Fertilizer Use SOIL 445 (3) Agroenvironmental Fertilizer Use SOIL 510 (3) Environmental Soil Chemistry SOIL 521 (3) Soil Microbiology and Biochemistry WILD 401 (4) Fisheries and Wildlife Management</p>	<p>One of: BIOL 308 (3) Ecological Dynamics ENVB 305 (3) Population & Community Ecology</p> <p>⁸ <i>One of:</i> AGEC 200 (3) Principles of Microeconomics ECON 208 (3) Microeconomic Analysis and Applications</p> <p>⁹ Applied Sciences (12 credits): ¹² <i>Note: you may take BREE 217 or GEOG 322 but not both; you may take FDSC 200 or NUTR 207 but not both.</i></p> <p>⁹ <u>Food and Human Health</u> ¹² <i>Note: you may take FDSC 200 or NUTR 207 but not both.</i> AGRI 411 (3) Global Issues on Development, Food and Agriculture FDSC 200 (3) Introduction to Food Science FDSC 535 (3) Food Biotechnology MICR 331 (3) Microbial Ecology NUTR 207 (3) Nutrition and Health NUTR 403 (3) Nutrition in Society NUTR 420 (3) Toxicology and Health Risks ¹³ <u>NUTR 501 (3) Nutrition in Developing Countries</u> PARA 410 (3) Environment and Infection PHAR 303 (3) Principles of Toxicology</p> <p>⁹ <u>Food Production</u> ³ <u>AEBI 421 (3) Tropical Horticultural Ecology (Barbados)</u> ³ <u>AEBI 425 (3) Tropical Energy and Food (Barbados)</u> <u>AGRI 215 (3) Agro-Ecosystems Field Course (Panama)</u> ⁴ AGRI 550 (3) Sustained Tropical Agriculture ¹³ <u>AGRI 325 (3) Sustainable Agriculture and Food Security (Cuba)</u> ¹³ <u>BIOL 385 (3) Plant Growth and Development</u> ¹³ <u>ENTO 352 (3) Biocontrol of Pest Insects</u> ⁵ ENTO 466 (3) Apiculture ¹³ <u>PLNT 302 (3) Forage Crops and Pastures</u> ¹³ <u>PLNT 307 (3) Agroecology of Vegetables and Fruits</u> ¹³ <u>PLNT 353 (3) Plant Structure and Function</u> PLNT 434 (3) Weed Biology and Control SOIL 315 (3) Soil Fertility and Fertilizer Use ⁵ SOIL 445 (3) Agroenvironmental Fertilizer Use</p> <p>⁹ <u>Natural Resources and Natural Resource Impacts</u> ¹² <i>Note: you may take BIOL 465 or WILD 421 but not both.</i> ¹² <i>Note: you may take BREE 217 or GEOG 322 but not both.</i> AGRI 435 (3) Soil and Water Quality Management ¹³ <u>AGRI 452 (3) Water Resources in Barbados (Barbados)</u> BIOL 465 (3) Conservation Biology</p>
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<p>Social Sciences/Humanities (6 credits): Note: you may take AGEC 200 or ECON 208 but not both; you may take AGEC 333 or ECON 405 but not both. If WILD 415 is taken 1 additional credit of complementary courses must be taken. AGEC 200 (3) Principles of Microeconomics AGEC 320 (3) Intermediate Microeconomic Theory AGEC 333 (3) Resource Economics AGEC 430 (3) Agriculture, Food and Resource Policy AGEC 442 (3) Economics of International Agricultural Development ANTH 418 (3) Environment and Development ECON 208 (3) Microeconomic Analysis and Applications ECON 225 (3) Economics of the Environment ECON 405 (3) Natural Resource Economics ENVR 465 (3) Environment and Social Change GEOG 404 (3) Environmental Management 2 GEOG 410 (3) Geography of Underdevelopment: Current Problems GEOG 498 (3) Humans in Tropical Environments GEOG 510 (3) Humid Tropical Environments SOCI 254 (3) Development and Underdevelopment SOCI 565 (3) Social Change in Panama WILD 415 (2) Conservation Law</p>	<p>⁴ BIOL 553 (3) Neotropical Environments (<i>Panama</i>) BREE 217 (3) Hydrology and Water Resources BREE 322 (3) Organic Waste Management BREE 518 (3) Bio-Treatment of Wastes ⁹ ENVB 437 (3) Assessing Environmental Impact ⁹ GEOG 302 (3) Environmental Management 1 GEOG 322 (3) Environmental Hydrology ⁵ GEOG 380 (3) Adaptive Environmental Management NRSC 333 (3) Pollution and Bioremediation SOIL 510 (3) Environmental Soil Chemistry SOIL 521 (3) Soil Microbiology and Biochemistry WILD 401 (4) Fisheries and Wildlife Management ¹³ <u>WILD 421 (3) Wildlife Conservation</u> ⁹ Social Sciences/Humanities (6 credits): ^{11, 12} Note: you may take AGEC 200 or ECON 208 but not both; you may take AGEC 333 or ECON 405 but not both. If WILD 415 is taken 1 additional credit of complementary courses must be taken. ⁹ <u>Economic and Resource Policy</u> ¹² Note: you may take AGEC 333 or ECON 405 but not both. ⁸ AGEC 200 (3) Principles of Microeconomics AGEC 320 (3) Intermediate Microeconomic Theory AGEC 333 (3) Resource Economics AGEC 442 (3) Economics of International Agricultural Development AGEC 430 (3) Agriculture, Food and Resource Policy ⁸ ECON 208 (3) Microeconomic Analysis and Applications ECON 225 (3) Economics of the Environment ECON 405 (3) Natural Resource Economics ⁹ <u>Social Change and Human Impacts</u> ⁵ ANTH 418 (3) Environment and Development ⁵ ENVR 465 (3) Environment and Social Change GEOG 406 (3) Human Dimensions of Climate Change GEOG 410 (3) Geography of Underdevelopment: Current Problems ⁴ GEOG 498 (3) Humans in Tropical Environments (Panama) GEOG 510 (3) Humid Tropical Environments ¹³ <u>HIST 510 (3) Environmental History of Latin America (Panama)</u> SOCI 254 (3) Development and Underdevelopment ⁵ SOCI 565 (3) Social Change in Panama ⁹ <u>Environmental Management</u> ¹² Note: Students may take only one of BREE 430, ENVB 430 and GEOG 201 ¹² Note: If WILD 415 is taken 1 additional credit of complementary courses must be taken. ³ <u>AEBI 423 (3) Sustainable Land Use (Barbados)</u> ¹³ <u>BREE 430 (3) GIS for Natural Resource Management</u> ¹³ <u>ENVB 430 (3) GIS for Natural Resource Management</u> ⁹ <u>ENVB 437 (3) Assessing Environmental Impact</u></p>
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	¹³ <u>GEOG 201 (3) Introductory Geo-Information Science</u> ⁹ <u>GEOG 302 (3) Environmental Management 1</u> ⁴ <u>GEOG 404 (3) Environmental Management 2 (Panama)</u> ¹³ <u>GEOG 530 (3) Global Land and Water Resources</u> ¹³ <u>MGPO 440 (3) Strategies for Sustainability</u> WILD 415 (2) Conservation Law
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RATIONALE FOR CHANGES:

- ¹ Wording of preamble needed to be updated.
- ² The requirements for membership in the Ordre des agronomes du Quebec have become increasingly prescriptive and it is no longer possible to accommodate enough of the requisite courses in this domain.
- ³ The courses in the B.I.T.S. (Barbados Interdisciplinary Tropical Studies) field study semester have been added as complementary courses in this domain.
- ⁴ To make courses more readily recognizable as being offered in Montreal, or elsewhere, off-campus locations have been added where appropriate.
- ⁵ Removed from complementary course lists because of they are retired courses or rarely offered: AGRI 210, ENTO 466, SOIL 445, GEOG 380, ANTH 418, ENVR 465, SOCI 565
- ⁶ With the deletion of AGRI 210 – the required course credits decreases to 6 credits, therefore, the complementary course credits (specifically in the Fundamentals section, see point #8) have been correspondingly increased.
- ⁷ AGRI 340 (Ecological Agriculture) now a required course, and which covers both plant and animal aspects. PLNT 300 moved to complementary courses to be an option to ANSC 250, providing a choice in the complementary courses between plant or animal.
- ⁸ Microeconomics added to the Fundamentals section of the domain (increasing the credit amount for fundamentals from 15 cr to 18 cr – which is compensated for by the decrease in required course credits (see point #6)).
- ⁹ The courses in the Applied Sciences section have been divided among three sub-sections: Food and Human Health; Food Production; and Natural Resources and Natural Resource Impacts. The Social Sciences/Humanities section was renamed to simply Social Sciences. The courses in the new Social Sciences section have been divided among three sub-sections: Economic & Resource Policy; Social Change and Human Impacts; and Environmental Management. This will provide more structure to the domain and will help students focus their studies. Only two courses (ENVB 437 and

GEOG 302) were moved from the old Applied Sciences section to the new Social Sciences section.

¹⁰ Basic Sciences, renamed: Fundamentals – to better reflect the variety of disciplines included in this 18 credit group.

¹¹ Condition of taking one or other of the microeconomics courses no longer needs to be stated, as courses have been moved to Fundamentals section.

¹² Condition of taking only one of two similar courses, added (for new course pairs, eg. BIOL 465 and WILD 421) or moved (for existing pairs, eg. BREE 217 and GEOG 322) as appropriate. In the case of WILD 415, condition about credit warning has been moved to follow the course.

¹³ In addition to the BITS courses added (see point #3) the following new courses were added to complementary course sections: AGRI 215, AGRI 325, AGRI 452, BIOL 385, BREE 430, ENTO 352, ENVB 430, GEOG 201, GEOG 530, HIST 510, MGPO 440, NUTR 501, PLNT 302, PLNT 307, PLNT 353, WILD 421

CONSULTATIONS:

This proposal was circulated to the following departments and the following comments were received:

APPROVED WITHOUT CHANGES:

- Department of Geography
- Department of Plant Science
- Department of Sociology

APPROVED WITH CHANGES:

- School of Dietetics and Human Nutrition

NO COMMENTS:

- Department of Anthropology
 - Department of Biology
 - Department of Bioresource Engineering
 - Department of History and Classical Studies
 - Department of Natural Resource Sciences
 - Faculty of Management
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