

THE UNIVERSITY OF BRITISH COLUMBIA



OKANAGAN SENATE SECRETARIAT

Enrolment Services
Senate and Curriculum Services

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May 19, 2011

To: Okanagan Senate
From: Curriculum Committee
Subject: May Curriculum Proposals (approval)

The Curriculum Committee has reviewed the material forwarded to it by the Faculties and encloses those proposals it deems ready for approval.

As such, the following is recommended to Senate:

Motion: *That Senate approve the new courses and the new program brought forward by the Faculty of Arts and Sciences as set out in the attached proposals.*

For the Committee,
Dean Marvin Krank
Chair, Curriculum Committee

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May 19, 2011

To: Okanagan Senate
From: Curriculum Committee
Subject: May Curriculum Proposals (approval)

Enclosed please find the following for your consideration:

From the Faculty of Arts and Sciences

1. The following new courses:
 - a. EESC 436 (3)/GEOG 436 (3) Coastal Geomorphology
 - b. PSYO 451 (3) Social Psychology of Intergroup Relations
 - c. PSYO 462 (3) Evolutionary Psychology of Aggression and the Blind Movement
2. The following new program:
 - a. B.Sc. Combined Major in Physics and Mathematics



THE UNIVERSITY OF BRITISH COLUMBIA

Curriculum Proposal Form New Course – Okanagan Campus

Category: 1

<p>Faculty: Arts & Sciences Unit: Units 2&3 Faculty Approval Date: March 29, 2011 Effective Session: 2011W</p>	<p>Date: February 17, 2011 Contact Person: Dr. Bernard Bauer Phone: 250.807.9595 Email: bernard.bauer@ubc.ca</p>
<p>Proposed Calendar Entry:</p> <p><u>EESC 436 (3) Coastal Geomorphology</u> <u>Geomorphic forms and processes</u> <u>along coasts; waves and currents;</u> <u>sediment transport mechanics;</u> <u>beach and nearshore</u> <u>morphodynamics; aeolian forms</u> <u>and processes. May include one</u> <u>or more local field trips. Credit</u> <u>will not be granted for both</u> <u>EESC 436 and GEOG 436. [3-3-</u> <u>0]</u> <u>Prerequisite: One of EESC 222,</u> <u>GEOG 222.</u> <u>Equivalency: GEOG 436.</u></p> <p><u>GEOG 436 (3) Coastal Geomorphology</u> <u>Geomorphic forms and processes</u> <u>along coasts; waves and currents;</u> <u>sediment transport mechanics;</u> <u>beach and nearshore</u> <u>morphodynamics; aeolian forms</u> <u>and processes. May include one</u> <u>or more local field trips. Credit</u> <u>will not be granted for both</u> <u>GEOG 436 and EESC 436. [3-3-</u> <u>0]</u> <u>Prerequisite: One of EESC 222,</u> <u>GEOG 222.</u> <u>Equivalency: EESC 436.</u></p>	<p>Draft Calendar URL: N/A</p> <p>Present Calendar Entry: N/A</p>

	<p>Type of Action: New cross-listed course.</p> <p>Rationale: Expand the fourth-year offerings to Earth & Environmental Sciences students and Physical Geography students interested in geomorphology and the dynamics of Earth's surface. The course builds on the introductory-level Geomorphology course (EESC 222/GEOG 222), which covers a broad spectrum of traditional topics from a dominantly geological perspective stressing structure and form. In contrast, EESC436/GEOG436 adopts a strong process-based approach that is complementary, and it demands that students be able to synthesize complex principles into rational explanations of how coastal features evolve. The course takes advantage of the fact that we have several major lakes in the region for which the coastline is becoming increasingly developed and therefore requires greater scientific understanding.</p> <p>The course also offers a remedial opportunity for graduate students wishing to undertake studies in process geomorphology, for which there is faculty expertise at the UBC Okanagan campus.</p>
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THE UNIVERSITY OF BRITISH COLUMBIA

Curriculum Proposal Form New Course – Okanagan Campus

Category: 1

<p>Faculty: Arts & Sciences Unit: 4, Psychology & Computer Science Faculty Approval Date: March 29, 2011 Effective Session: 2011W</p>	<p>Date: 2011.03.11 Contact Person: Jan Cioe Phone: 250.807.8732 Email: jan.cioe@ubc.ca</p>
<p>Proposed Calendar Entry:</p> <p><u>PSYO 451 (3) Social Psychology of Intergroup Relations</u> <u>An in-depth exposure to the major theoretical and methodological issues within the domain of intergroup relations. Some of the issues to be discussed: racism, sexism, ageism, sexual prejudice, and weight prejudice. [0-0-3]</u> <u>Corequisite: PSYO 372.</u></p>	<p>Draft Calendar URL: N/A</p> <p>Present Calendar Entry:</p> <p>Type of Action: New course.</p> <p>Rationale:</p> <p>One of the deficiencies in our Psychology offerings is the limited number of senior seminar classes.</p> <p>This fourth-year class is designed to provide senior students with a background in research methods and design the opportunity to engage in discussion and development of an in-depth understanding of a social psychological issue.</p> <p>This course was offered in the Fall and was successful in attracting students who were prepared to engage in informed discussion based on empirical research.</p>



THE UNIVERSITY OF BRITISH COLUMBIA

Curriculum Proposal Form New Course – Okanagan Campus

Category: 1

<p>Faculty: Arts & Sciences Unit: 4, Psychology & Computer Science Faculty Approval Date: March 29, 2011 Effective Session: 2011W</p>	<p>Date: 2011.03.11 Contact Person: Jan Cioe Phone: 250.807.8732 Email: jan.cioe@ubc.ca</p>
<p>Proposed Calendar Entry:</p> <p><u>PSYO 462 (3) Evolutionary Psychology of Aggression and the Blind Movement</u> <u>Compares and contrasts ecological, evolutionary, and social aspects of the maintenance and control of violence in chimpanzees, bonobos, and humans. With this background, psychological aspects of adaptation to conflict are considered, with a focus on the Blind Movement. [3-0-0]</u> <u>Prerequisite: 6 credits of 200-level PSYO.</u></p>	<p>Draft Calendar URL: N/A</p> <p>Present Calendar Entry:</p> <p>Type of Action: New course.</p> <p>Rationale:</p> <p>This course has been offered four times as a Special Topics and will now be offered on a regular basis. As such, it is time to seek approval for the course as part of the regular Psychology offerings.</p> <p>This is a unique course which capitalizes the special knowledge and background of one of faculty members. Dr. Gabias has both personal knowledge of, and experience with, the Canadian Blind Movement in its efforts to advance the interests of those with visual impairments. The University of Victoria conferred an Honorary degree on him in recognition of his contributions to this effort.</p>



THE UNIVERSITY OF BRITISH COLUMBIA

Curriculum Proposal Form New Program – Okanagan Campus

Category: 1

<p>Faculty: Arts & Sciences Unit: 5, Mathematics, Statistics & Physics Faculty Approval Date: March 1, 2011 Effective Session: 2011W</p>	<p>Date: January 17, 2011 Contact Person: Erik Rosolowsky Phone: 250.807.9623 Email: erik.rosolowsky@ubc.ca</p>
<p>Proposed Calendar Entry: Homepage (draft) Faculties, Schools, and Colleges Faculty of Arts and Sciences Bachelor of Science Programs Physics and Astronomy</p> <p>Physics and Astronomy</p> <p>[12260] Major in Physics</p> <p>[12250] This program aims to provide a comprehensive physics education with considerable emphasis on both theoretical foundations and laboratory practice. The theoretical and mathematical components develop the intellectual skills and versatility needed either to pursue physics professionally at the post-graduate level, or to cross over into other professions such as medicine, actuarial science, meteorology, and secondary education, in which a physics background is strongly preferred. The senior laboratory components consist of long-range projects rather than prescribed exercises, to encourage initiative on the part of the student and to prepare him or her for the inventive atmosphere of modern high-tech industry. Graduates of this program have attained success in high-tech industry, computer software</p>	<p>Draft Calendar URL: http://www.calendar.ubc.ca/okanagan/proof/edit/index.cfm?tree=18,282,858,995</p> <p>Present Calendar Entry: Homepage (draft) Faculties, Schools, and Colleges Faculty of Arts and Sciences Bachelor of Science Programs Physics and Astronomy</p> <p>Physics and Astronomy</p> <p>[12260] Major in Physics</p> <p>[12250] This program aims to provide a comprehensive physics education with considerable emphasis on both theoretical foundations and laboratory practice. The theoretical and mathematical components develop the intellectual skills and versatility needed either to pursue physics professionally at the post-graduate level, or to cross over into other professions such as medicine, actuarial science, meteorology, and secondary education, in which a physics background is strongly preferred. The senior laboratory components consist of long-range projects rather than prescribed exercises, to encourage initiative on the part of the student and to prepare him or her for the inventive atmosphere of modern high-tech industry. Graduates of this program have attained success in high-tech industry, computer software development, secondary education,</p>

development, secondary education, and post-graduate studies.

[12251]

First Year	Credits
CHEM 111, 113; or CHEM 121, 123	6
Two of ENGL 112, 113, 114, 150, 151, 153	6
MATH 100, 101	6
PHYS 102, 111; or PHYS 112 ¹ , 122 ¹	6
Electives ²	6
Total Credits	30
Second Year	
ASTR 210, or one of PHYS 225, 305, 320	3
MATH 200, 221 ³ , 225, 317 ⁴	12
PHYS 200, 215, 216, 231, 232	15
Total Credits	30
Third and Fourth Years	
MATH 319	3
PHYS 301, 304, 331, 328, 332	15
12 credits chosen from: PHYS 303, 308, 314, 315, 324, 400, 401, 402, 407, 413, 418, 431, 432, 474	12
6 credits chosen from: PHYS 303, 305, 308, 314, 315, 320, 321, 324, 360, 400, 401, 402, 407, 413, 418, 431, 432, 448 ⁵ , 474	6
Electives ^{2,6}	24
Total Credits	60
Minimum credits for degree	120

¹ Minimum grade of 68% is required in each of PHYS 112 and PHYS 122.

² COSC 111 and 121 are strongly

and post-graduate studies.

[12251]

First Year	Credits
CHEM 111, 113; or CHEM 121, 123	6
Two of ENGL 112, 113, 114, 150, 151, 153	6
MATH 100, 101	6
PHYS 102, 111; or PHYS 112 ¹ , 122 ¹	6
Electives ²	6
Total Credits	30
Second Year	
ASTR 210, or one of PHYS 225, 305, 320	3
MATH 200, 221 ³ , 225, 317 ⁴	12
PHYS 200, 215, 216, 231, 232	15
Total Credits	30
Third and Fourth Years	
MATH 319	3
PHYS 301, 304, 331, 328, 332	15
12 credits chosen from: PHYS 303, 308, 314, 315, 324, 400, 401, 402, 407, 413, 418, 431, 432, 474	12
6 credits chosen from: PHYS 303, 305, 308, 314, 315, 320, 321, 324, 360, 400, 401, 402, 407, 413, 418, 431, 432, 448 ⁵ , 474	6
Electives ^{2,6}	24
Total Credits	60
Minimum credits for degree	120

¹ Minimum grade of 68% is required in each of PHYS 112 and PHYS 122.

² COSC 111 and 121 are strongly recommended. Students considering a

recommended. Students considering a career in geosciences should take EESC 111, 121, and 350. Students considering a career in astronomy should take ASTR 111 and 121. At least 18 credits (including the 6 credits in first-year English) must be Arts courses.

³ MATH 221 may be taken in the second term of the first year.

⁴ MATH 317 may be taken in the third year.

⁵ Capable students are advised to consider selecting the directed studies course PHYS 448, which grants either 2, 3, 4, or 6 upper-level credits in Physics. Particularly well-qualified students should consider taking the Physics Honours Program (PHYS 449). Further information can be obtained from the Physics and Astronomy program advisor.

⁶ At least 36 of 120 credits must be Science course credits from courses numbered 300 or higher (upper-level courses), and at least an additional 6 upper-level courses which may be from Arts or Sciences.

Combined Major in Physics and Mathematics

Provides students with a rich background in both theoretical physics and mathematics. The program consists of core training in both disciplines and electives that highlight common ground between the two fields. Graduates of the program will be well prepared for post-graduate studies in theoretical physics or applied mathematics. The combined major will also prepare students for further training and careers in education, finance, computer software development, or industrial research.

career in geosciences should take EESC 111, 121, and 350. Students considering a career in astronomy should take ASTR 111 and 121. At least 18 credits (including the 6 credits in first-year English) must be Arts courses.

³ MATH 221 may be taken in the second term of the first year.

⁴ MATH 317 may be taken in the third year.

⁵ Capable students are advised to consider selecting the directed studies course PHYS 448, which grants either 2, 3, 4, or 6 upper-level credits in Physics. Particularly well-qualified students should consider taking the Physics Honours Program (PHYS 449). Further information can be obtained from the Physics and Astronomy program advisor.

⁶ At least 36 of 120 credits must be Science course credits from courses numbered 300 or higher (upper-level courses), and at least an additional 6 upper-level courses which may be from Arts or Sciences.

First Year	Credits
<u>CHEM 121, 123; or CHEM 111, 113</u>	<u>6</u>
<u>MATH 100, 101</u>	<u>6</u>
<u>Two of ENGL 112, 113, 114, 150, 151, 153</u>	<u>6</u>
<u>PHYS 102, 111; or PHYS 112¹, 122¹</u>	<u>6</u>
<u>COSC 111, 121</u>	<u>6</u>
<u>Total Credits</u>	<u>30</u>
Second Year	
<u>PHYS 200, 215, 216, 231, 232</u>	<u>15</u>
<u>MATH 200, 220, 221, 225, 317²</u>	<u>15</u>
<u>Total Credits</u>	<u>30</u>
Third and Fourth Years	
<u>MATH 307, 311, 319, 327; STAT 303</u>	<u>15</u>
<u>PHYS 301, 304, 328</u>	<u>9</u>
<u>One of PHYS 401³, 402³, 418³</u>	<u>3</u>
<u>6 credits chosen from: MATH 350, 408, 459, 461; COSC 302</u>	<u>6</u>
<u>9 credits chosen from: PHYS 303, 308, 314, 331, 332, 401³, 402³, 407, 418³, 431, 432, 474</u>	<u>9</u>
<u>Electives⁴</u>	<u>18</u>
<u>Total Credits</u>	<u>60</u>
<u>Minimum credits for degree</u>	<u>120</u>
<u>¹ Minimum grade of 68% is required in each of PHYS 112 and PHYS 122.</u>	
<u>² MATH 317 may be taken in the third year but is a requirement for PHYS 301.</u>	
<u>³ Each of PHYS 401, 402, 418 may only fulfill one requirement.</u>	
<u>⁴ At least 12 credits of electives must be from Arts.</u>	
<p>[12259] Minor in Physics</p> <p>[12263] A student must successfully complete 18 credits in Physics courses selected from PHYS 301, 303, 304, 305, 308, 314, 315, 320, 321, 324, 328, 331, 332, 360, 400, 401, 402, 407, 418, 431, 432.</p> <p>[...]</p>	

<p>Proposed Calendar Entry: Homepage (draft) Faculties, Schools, and Colleges Faculty of Arts and Sciences Bachelor of Science Programs Mathematical Sciences</p> <p>Mathematical Sciences</p> <p>[14631] Major in Mathematical Sciences</p> <p>[14635] Note: The UBC Okanagan campus also offers a B.A. Major in Mathematics, a B.Sc. Major in Mathematics, and a B.Sc. Combined Major in Physics and Mathematics.</p> <p>[...]</p> <p>Proposed Calendar Entry: Homepage (draft) Faculties, Schools, and Colleges Faculty of Arts and Sciences Bachelor of Science Programs Mathematics (B.Sc.)</p> <p>Mathematics (B.Sc.)</p> <p>[12320] B.Sc. Major in Mathematics</p> <p>[14634] Note: The UBC Okanagan campus also offers a B.A. Major in Mathematics, a B.Sc. Major in Mathematical Sciences, and a B.Sc. Combined Major in Physics and Mathematics.</p> <p>[...]</p>	<p>Draft Calendar URL: http://www.calendar.ubc.ca/okanagan/proof/edit/index.cfm?tree=18,282,858,1257</p> <p>Present Calendar Entry: Homepage (draft) Faculties, Schools, and Colleges Faculty of Arts and Sciences Bachelor of Science Programs Mathematical Sciences</p> <p>Mathematical Sciences</p> <p>[14631] Major in Mathematical Sciences</p> <p>[14635] Note: The UBC Okanagan campus also offers a B.A. Major in Mathematics and a B.Sc. Major in Mathematics.</p> <p>[...]</p> <p>Draft Calendar URL: http://www.calendar.ubc.ca/okanagan/proof/edit/index.cfm?tree=18,282,858,994</p> <p>Present Calendar Entry: Homepage (draft) Faculties, Schools, and Colleges Faculty of Arts and Sciences Bachelor of Science Programs Mathematics (B.Sc.)</p> <p>Mathematics (B.Sc.)</p> <p>[12320] B.Sc. Major in Mathematics</p> <p>[14634] Note: The UBC Okanagan campus also offers a B.A. Major in Mathematics and a B.Sc. Major in Mathematical Sciences.</p> <p>[...]</p>
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<p>Proposed Calendar Entry: Homepage (draft) Faculties, Schools, and Colleges Faculty of Arts and Sciences Bachelor of Arts Programs Mathematics (B.A.)</p> <p>Mathematics (B.A.)</p> <p>[12828] B.A. Major in Mathematics</p> <p>[14636] Note: The UBC Okanagan campus also offers a B.Sc. Major in Mathematics, a B.Sc. Major in Mathematical Sciences, and a B.Sc. Combined Major in Physics and Mathematics.</p> <p>[...]</p>	<p>Draft Calendar URL: http://www.calendar.ubc.ca/okanagan/proof/edit/index.cfm?tree=18,282,857,1125</p> <p>Present Calendar Entry: Homepage (draft) Faculties, Schools, and Colleges Faculty of Arts and Sciences Bachelor of Arts Programs Mathematics (B.A.)</p> <p>Mathematics (B.A.)</p> <p>[12828] B.A. Major in Mathematics</p> <p>[14636] Note: The UBC Okanagan campus also offers a B.Sc. Major in Mathematics and a B.Sc. Major in Mathematical Sciences.</p> <p>[...]</p> <p>Type of Action: Add new combined major program.</p> <p>Rationale: Physics and Mathematics are tightly-linked disciplines. Every topic of physics is enabled through mathematics and the study of physical systems inspires development of new fields of mathematics. The physics and mathematics programs are intertwined at the Okanagan campus of UBC, and many students take several courses in both programs. With the exception of mathematics majors, completing a physics major requires far more mathematics than any other program on campus. However, it is onerous to complete a double major in mathematics and physics, as a double major requires 135 credits at the minimum. Inspired by Combined Major programs in the B.Sc. program at the Vancouver campus, we propose a Combined Major in Mathematics and Physics. The new program will support students' interest in a more balanced program</p>
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	<p>than a major/minor allows and more physics-focused than the Mathematical Science program. The target audience for this program is students interested in theoretical physics training or mathematics students with an intention to work in applied mathematics disciplines.</p> <p>In the first two years of the program, students complete their B.Sc. requirements, and the core courses present in the Mathematics and Physics Majors. The program omits the second-year physics elective course in favour of more mathematics. The second year of the program is particularly regimented, but represents a typical course-load for current students interested in pursuing upper-level courses in both mathematics and physics.</p> <p>The third- and fourth-year program consists of the core courses from each major. The mathematics component contains advanced courses in three fundamental areas of the field: linear algebra (307), abstract algebra (311) and analysis (327) plus probability (STAT 303). The program is supplemented by partial differential equations (319), which is an essential tool in advanced physics and a requirement for the current physics major. Statistics and computer science are omitted from the mathematics requirements in favour of the training in related topics through the physics program. The physics core theory courses consist of electrodynamics (301), quantum mechanics (304), and classical mechanics (328) plus one additional advanced course, which serves as a mathematically intensive extension of these topics.</p> <p>The core program is supplemented by two lists of elective courses, providing additional background in mathematics and physics respectively. The mathematics list consists of complex analysis (350), differential geometry (408) and continuous optimization (461), all of which serve as critical</p>
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	<p>background for mathematicians interested in applications to physics. The list is supplemented by the mathematical biology course (459) as the course shares a common theme with physics, namely the application of mathematical modelling to complex systems. The mathematics elective list also includes numerical analysis course (COSC 302) since these courses contain material used in several subfields of physics like numerical modelling or particle physics. The physics list consists of the additional capstone courses not used in the core program (401, 402, 418) and several mathematically intensive theory courses: thermal physics (303), optics (308), fluids (314), general relativity (407) and solid-state physics (474). These physics courses demonstrate advanced mathematical techniques that have inspired development in mathematics. The experimental physics track (331, 332, 431, 432) is also included as these courses present the statistical analysis of data and numerical modelling. Note that these course numbers reflect proposed course enumeration based on a pending proposal. The current course numbers are PHYS 327, 329, 419, 429 respectively.</p>
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