FACULTY OF SCIENCE

COUNCIL OF THE FACULTY OF SCIENCE

Notice of Meeting
Tuesday, December 9, 2014
at 3:00pm – 4:30pm
306 Lumbers

Agenda

1. Call to Order and Approval of Agenda
2. Chair’s Remarks
3. Minutes of November 11, 2014 meeting
4. Business Arising
5. Dean’s Report to Council
6. Associate Deans’ and Bethune Master’s Remarks
7. Reports from Science Representatives on Senate Committees
8. Reports from Standing Committees of Council
   • Executive Committee
     ➢ Executive Committee’s Vacancies Report on Senate and FSc Committees (item for information)
     ➢ Curriculum Committee (consent agenda items)
9. Inquiries and Communications
10. Any Other Business

1. Call to Order and Approval of Agenda

The Chair of Council, Alex Mills called the meeting to order and the Agenda was adopted as presented.

2. Chair’s Remarks

The Chair welcomed Council members to the meeting.

3. Minutes of October 14, 2014 meeting

The Minutes of October 14, 2014 were approved.

4. Business Arising

There was no Business Arising.
5. **Dean’s Report to Council**

In the absence of Dean Jayawardhana, Alex Mills delivered the Dean’s message. He informed members that with the AAPR task force reports being released on November 7, 2014, the Dean will be leading some members of the faculty at a day-long retreat on December 8, 2014 where the approach to the Response will be discussed.

6. **Associate Deans’ and Bethune Master’s Remarks**

Associate Dean Robert Tsushima announced the awardee’s for the Faculty Research Awards as follows:

- **Established Research Award** – Scott Menary: Department of Physics and Astronomy
- **Early Career Research Award** – Amro Zayed: Department of Biology
- **Graduate Mentorship Award** – Gerald Audette: Department of Chemistry

AD – R. Tsushima informed members that in the spring federal budget, the government proposed to create the Canada First Research Excellence Fund with $1.5 billion in funding over the next decade to help Canadian post-secondary research institutions leverage their key strengths into world-leading capabilities that will generate benefits for Canadians. Economic Action Plan 2014 proposes to provide the Canada First Research Excellence Fund with $50 million in 2015-16, growing to $100 million in 2016-17, $150 million in 2017-18, and reaching a steady-state level of $200 million annually in 2018-19 and beyond. Within the next decade, the Canada First Research Excellence Fund will provide an additional $1.5 billion to advance the global research leadership of Canadian institutions.

Associate Dean – P. Cribb informed member that the Fall Campus Day held on 8th November was very well received and thanked Katrina Angel and the many Faculty members who attended and engaged potential students.

AD – P. Cribb announced the Excellence in Teaching Awards as follows:

- Senior Faculty – Alex Mills: Department of Biology
- Teaching Assistant – Scott Tarof: Department of Biology

He encouraged the members to attend the annual Honours and Awards evening scheduled for November 13, 2014 at 7pm.

AD - Cribb informed members of the Call for Proposals for AIF Phase Two will be made on November 18, 2014. The focus is on eLearning and Experiential Education. He further informed members that a total of $1.5 will be available annually over each of the next three years and encouraged faculty members to start thinking of projects within their respective programs.

Associate Dean – E. J. Janse van Rensburg reminded members of the anomalies exercise which has a deadline of Friday, November 14, 2014. He also reminded members to submit an updated CV’s to the Dean’s Office as per the Collective Agreement.

Bethune College Master – M. Hamadeh informed members that his office has been extremely busy organizing more than 30 workshops and the need for services has grown precipitously so much so that the Master’s office is now facing space problems. He further informed members that Dean Jayawardhana presentation last week was a great success. Additionally, he informed members that the
Master’s Office will be sending an email about the Fellows Luncheon themed ‘Science and Society’ and encouraged members to contribute to student engagement and success.

7. Reports from Science Representatives on Senate Committees

There were no reports.

8. Reports from Standing Committees of Council

Executive Committee’s Vacancies Report on Senate and FSc Committees

Council noted and approved Jacqueline Kreller-Vanderkooy to the Curriculum Committee.

Council noted and approved Dov Lungu’s move from the Petitions Committee to the Appeals Committee.

Curriculum Committee
Mathematical Biology Program (item for action)

A motion was moved to approve the program.

- Other curriculum matters (consent agenda items)
  - Approved.

9. Inquiries and Communications

9.1 Five-minute Presentation on Helix Call for proposals, by Justin Chan, Associate Director, K-12 Enrichment Program

Justin Chan introduced himself to the members and informed members that Helix is high school enrichment program designed exclusively for high performing high school students who have a strong interest in science and mathematics. Last summer, about 240 high school students participated in the inaugural summer of the Helix Summer Science program. The students who participated in the program come from the top schools in the GTA and to be admitted have to submit:

i. An application form
ii. Statement of Intent
iii. Teacher letter of reference
iv. Copy of most recent report card

The application process is very similar to the DEEP program at U of T and is open to students who have a +80% average.

J. Chan made a call for proposals from Faculty / Grad students to develop and teach courses in Neurodevelopmental disorders, Astrophysics, Biotechnology, Pharmaceutical Chemistry, Neuroscience, Photonics etc. He further informed members that all activities / experiments performed during the camp are vetted by the Health & Safety Managers.

10. Other Business

There was no other business.

Chair of Council, A. Mills
Assistant Secretary of Council, J. Sequeira
2014 - 2015 Executive Committee Report of Vacancies on Senate and FSc Committees

*Vacancies still outstanding as of December 4, 2014*

**Science Curriculum Committee**

1 vacancy for an elected member

**Committee on Examinations and Academic Standards**

- 1 alternate vacancy for Chemistry
- 1 alternate vacancy for Student Representative

**Appeals Committee**

1 vacancy for Natural Science

**Committee on Teaching and Learning**

- 1 vacancy for Natural Science
- 1 vacancy for Physics & Astronomy
- 1 vacancy for a graduate student
The Faculty of Science Curriculum Committee has reviewed proposals for changes to course information and degree requirements and recommends to the Executive Committee that the following changes be submitted to Council for approval.

Details regarding these proposals (and regarding other minor changes to Calendar/Repository course descriptions and prerequisites which were approved by the Committee but are not reported here) are included in the working papers at the November 26th, 2014 meeting of the Curriculum Committee, which are on file for your inspection in the Office of the Dean, with all members of the Curriculum Committee or by contacting the Secretary of the Committee at jpearson@yorku.ca

I) Program Changes

SC/PHYS Specialized Honours Physics and Astronomy, Astronomy Stream
SC/PHYS Specialized Honours Physics and Astronomy, Applied Physics Stream
SC/PHYS Specialized Honours Physics and Astronomy, Physics Stream
SC/PHYS Bachelor Physics and Astronomy, Physics Stream

II) New Courses

SC/BIOL 4710 3.0 Integrative Environmental Physiology

II) Course Changes

SC/Math 1131 3.0 Introduction to Statistics I
SC/Math 2560 3.0 Elementary Statistics I
SC/Math 2570 3.0 Elementary Statistics II
SC/Math 2930 3.0 Introductory Probability and Statistics for Engineers
SC/PHYS 4210 3.0 Advanced Experimental Physics I
SC/PHYS 4211 3.0 Advanced Experimental Physics II
SC/PHYS 4310 3.0 Physics or Astronomy Project
SC/BPHS 4310 3.0 Biophysics Research Project
COMMITTEE ON ACADEMIC STANDARDS, CURRICULUM AND PEDAGOGY
TEMPLATE

NEW COURSE PROPOSAL FORM

Faculty:
Indicate all relevant Faculty(ies)

Science

Department:
Indicate department and course prefix (e.g. Languages, GER)

Biology, BIOL

Date of Submission:
October 2014

Course Number:
Special Topics courses Include variance (e.g. HUMA 3000C 6.0, Variance is "C")

BIOL 4710 3.0

Var:

Academic Credit Weight:
Indicate both the fee, and MTCU weight if different from academic weight (e.g. AC=6, FEE=8, MET=6)

3.0

Course Title:
The official name of the course as it will appear in the Undergraduate Calendar and on the Repository

Integrative Environmental Physiology

Short Title:
Appears on any documents where space is limited - e.g. transcripts and lecture schedules - maximum 40 characters

Integrative Environmental Physiology

With every new course proposal it is the Department’s responsibility to ensure that new courses do not overlap with existing courses in other units. If similarities exist, consultation with the respective departments is necessary to determine degree credit exclusions and/or cross-listed courses.
This course explores the influence of the environment on the physiology of animals, from the gene level to the population level, with an emphasis on evolutionary adaptations. Experimental design and data analysis will be stressed. Three lecture hours per week. One term. Three credits. Prerequisites: SC/BIOL 2030 4.00; and one of SC/BIOL 2070 4.00 or SC/BIOL 2050 4.00; and one of SC/BIOL 3170 4.00 or 3110 3.00 or 3060 4.00.
### Course Description:

This course will introduce and/or combine knowledge across biological disciplines through engagement with the primary literature. Cutting-edge research techniques will be explored and students will be exposed to current experimental design, methodology, and analytical approaches. This class will present the effects of the surrounding environment on physiology across biological levels in both invertebrate and vertebrate animals. Beyond lecture material students will use primary literature to design their own experiment to explore an aspect of environmental physiology presented in class. Students will present their proposals both as a paper and a seminar.

**Topics:** The focus of the class will be on the physiological responses to environmental conditions which can include (but are not limited to) environmental temperature changes, alterations in environmental oxygen, exposure to pollutants, and changes in environmental salinity. Effects on gene and protein expression, solute and water transport across epithelia, and biochemical pathways, whole animal physiology and population levels will be explored. Adaptation and evolution will be discussed.

**Learning Objectives:** This class will include lecture material, critiques of current literature, research seminars, experiment design, and paper preparations for journal submission.

By the end of this course students should be able to:

1. Demonstrate an understanding of the influence of the surrounding environment on integrative physiology
2. Describe adaptation from gene to population levels
3. Demonstrate critical thinking and problem-solving skills
4. Demonstrate an understanding of experimental design, execution, and analysis within the field of environmental physiology
5. Demonstrate communication skills, both verbal and written
6. Demonstrate detailed knowledge of specific topics within environmental physiology
7. Prepare a written paper on a topic in environmental physiology including clear and appropriately formatted figures and tables.
**Course Design:**

Indicate how the course design supports students in achieving the learning objectives. For example, in the absence of scheduled contact hours what role does student-to-student and/or student-to-instructor communication play, and how is it encouraged?

Detail any aspects of the content, delivery, or learning goals that involve "face-to-face" communication, non-campus attendance or experiential education components.

Alternatively, explain how the course design encourages student engagement and supports student learning in the absence of substantial on-campus attendance.

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The course will include 3 hrs of lecture time a week dedicated to building knowledge in the area of physiology and it's responses to changes in the surrounding environment. Lecture material will review general topics such as molecular biology or population dynamics in the framework of environmental physiology so that students will be able to understand the influence of the environment on physiology across biological levels.

2 hrs of lecture time will be dedicated to introducing each topic to provide background knowledge and course content. The last 1 hr of lecture will present a research paper(s) pertaining to the topic being discussed. This research example will be critically explored, the design discussed, the analysis broken down, and the findings thoroughly discussed. This will in effect reinforce the knowledge gained about the course content information in a research based manner. This will allow students to understand the concepts being taught but also model critiquing literature, and give students experience in evaluating experimental design and result analysis. The students will be required to participate in the discussion and critiquing, and will be supplied with questions (clickers may be employed) to answer for a portion of their activities mark. A midterm and a cumulative final will be written on lecture material.

In addition to lecture hours, students will be given a group assignment to critically review scientific literature related to the class. This review will be presented to the class via a brief (5-10 min) presentation and include a brief written summary.

Finally, following the assignment, groups of students will be assigned one of the topics presented in the class. As a group they will have to prepare their own hypothesis related to course topics and design an experiment to test the hypothesis. They will have to predict their results and prepare a discussion pertaining to the theoretical results. This will be presented as a written paper in journal format and research seminar (10-15 min) to the class.
**Instruction:**

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<tr>
<td>1.</td>
<td>Planned frequency of offering and number of sections anticipated (every year, alternate years, etc.).</td>
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<td>2.</td>
<td>Number of department members currently competent to teach the course.</td>
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<td>3.</td>
<td>Instructor(s) likely to teach the course in the coming year.</td>
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<td>4.</td>
<td>An indication of the number of contact hours (defined in terms of hours, weeks, etc.) involved, in order to indicate whether an effective length of term is being maintained <strong>OR</strong> in the absence of scheduled contact hours a detailed breakdown of the estimated time students are likely to spend engaged in learning activities required by the course.</td>
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1. This course will be offered every year, with one section.
2. There are 4 current faculty members capable of teaching this course.
3. Specifically they are Carol Bucking, Andrew Donini, Scott Kelly, Jean-Paul Paluzzi.
4. Contact hours will include 3 hrs of lecture, the course will run for 12 weeks, for one term.
5. Expected enrolment: 30-50 students.
Evaluation:
A detailed percentage breakdown of the basis of evaluation in the proposed course must be provided.

If the course is to be integrated, the additional requirements for graduate students are to be listed.

If the course is amenable to technologically mediated forms of delivery please identify how the integrity of learning evaluation will be maintained. (e.g. will "on-site" examinations be required, etc.)

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<tr>
<th>Percentage</th>
<th>Component</th>
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<tr>
<td>25%</td>
<td>Midterm</td>
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<tr>
<td>30%</td>
<td>Final</td>
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<tr>
<td>15%</td>
<td>Activities and Assignments</td>
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<td>10%</td>
<td>Presentations</td>
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<tr>
<td>20%</td>
<td>Written Paper</td>
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Bibliography:
A READING LIST MUST BE INCLUDED FOR ALL NEW COURSES
The Library has requested that the reading list contain complete bibliographical information, such as full name of author, title, year of publication, etc., and that you distinguish between required and suggested readings. A statement is required from the bibliographer responsible for the discipline to indicate whether resources are adequate to support the course.

Also please list any online resources.

If the course is to be integrated (graduate/undergraduate), a list of the additional readings to be required of graduate students must be included. If no additional readings are to be required, a rationale should be supplied.

LIBRARY SUPPORT STATEMENT MUST BE INCLUDED.
Other Resources:
A statement regarding the adequacy of physical resources (equipment, space, etc.) must be appended. If other resources will be required to mount this course, please explain.

COURSES WILL NOT BE APPROVED UNLESS IT IS CLEAR THAT ADEQUATE RESOURCES ARE AVAILABLE TO SUPPORT IT.

There are adequate physical resources available to meet the demands of this class and no additional resources are required.
**Course Rationale:**

The following points should be addressed in the rationale:

- **How the course contributes to the learning objectives of the program / degree.**
- The relationship of the proposed course to other existing offerings, particularly in terms of overlap in objectives and/or content. If inter-Faculty overlap exists, some indication of consultation with the Faculty affected should be given.
- The expected enrolment in the course.

This course proposal results from a recent internal curriculum review that identified a need for more course offerings in physiology. The course will primarily contribute to physiology offerings, one of the core strengths of the Biology department. There is currently no available option to explore environmental physiology and adaptation at the undergraduate course level, and thus it fills a substantial gap in the curriculum. With a framework of “genome to biome” this course incorporates information from evolution, ecology and molecular biology. Hence, it will also serve other core strengths of the department, namely Ecology & Evolution, Environmental Biology and Molecular & Cellular biology. We expect the course to have a broad appeal and provide an opportunity for all students within all the departmental core strengths to increase and integrate their understanding of biological processes, both within and outside their field. Overall the course will give students an opportunity to improve communication and critical thinking skills, to explore modern cutting edge techniques, and to develop the ability to synthesize material and ideas from a variety of sources, all of which will increase their competitiveness post-graduation.

**Faculty and Department Approval for Cross-listings:**

If the course is to be cross-listed with another department, this section needs to be signed by all parties. In some cases there may be more than two signatures required (i.e. Mathematics, Women’s Studies). In the majority of the cases either the Undergraduate Director or Chair of a unit approves the agreement to cross-list. All relevant signatures must be obtained prior to submission to the Faculty curriculum committee.

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<tr>
<th>Dept: __________________________</th>
<th>Signature (Authorizing cross-listing)</th>
<th>Department</th>
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<tr>
<td>Course(s) Created x or Modified to X (check one)</td>
<td>Course(s) Retired or Modified from</td>
<td>Complete Course Designation</td>
<td>SC/Biol 4710 3.0 Integrative Environmental Physiology</td>
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<td>Enrolment (Estimate or Last Offering)</td>
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<td>Number of:</td>
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<td>Number of:</td>
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<td>Number of:</td>
<td>Course Coordinators (Tutor 1):</td>
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<tr>
<td>Number of:</td>
<td>Lab Demonstrators (Tutor 2):</td>
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<tr>
<td>Number of:</td>
<td>Mark/Graders (Tutor 3):</td>
<td>None unless enrolments exceed 50.</td>
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<td>Prerequisites (P)</td>
<td></td>
<td>Prerequisites: SC/Biol 2030 4.0; and one of SC/Biol 2070 4.00 or SC/Biol 2050 4.00; and one of SC/Biol 3170 4.00 or 3110 3.00 or 3060 4.00.</td>
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<td>Corequisites (C)</td>
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<tr>
<td>Credit Exclusions (E)</td>
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<td>For which degree program is this required (if applicable)?</td>
<td>None – it is an optional course.</td>
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<tr>
<td>Other resource implications (please specify)</td>
<td>0.5 teaching credit for faculty member per year.</td>
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<tr>
<td>Reason(s) for creation/ modification/ retirement</td>
<td>This course proposal results from a recent internal curriculum review that identified a need for more course offerings in physiology. The course will primarily contribute to physiology offerings, one of the core strengths of the Biology department. There is currently no available option to explore environmental physiology and adaptation at the undergraduate course level, and thus it fills a substantial gap in the curriculum. With a framework of “genome to biome” this course incorporates information from evolution, ecology and molecular biology. Hence, it will also serve other core strengths of the department, namely Ecology &amp; Evolution, Environmental Biology and Molecular &amp; Cellular biology. We expect the course to have a broad appeal and provide an opportunity for all students within all the departmental core strengths to increase and integrate their understanding of biological processes, both within and outside their field. Overall the course will give students an opportunity to improve communication and critical thinking skills, to explore modern cutting edge techniques, and to develop the ability to synthesize material and ideas from a variety of sources, all of which will increase their competitiveness post-graduation.</td>
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Changes to Existing Courses & Degree Programs

Department: MATHEMATICS & STATISTICS
Course Number: MATH 2930 3.00
Course Title: Introductory Probability and Statistics for Engineers

Date of Submission: November 1, 2014
Effective Session: FW2015

Type of Change:
- [x] in pre/co-requisite(s)
- [ ] in degree requirements
- [ ] in course number/level
- [ ] in credit value
- [ ] in title (max. 40 characters for short title)
- [ ] in Calendar description (max. 40 words or 200 characters)
- [ ] in cross-listing
- [ ] in degree credit exclusion(s)
- [ ] regularize course (from Special Topics)
- [ ] in course format/mode of delivery *
- [ ] retire/expire course
- [ ] other (please specify):

Change From:
Prerequisites: SC/MATH 1014 3.00 or equivalent; SC/MATH 1025 3.00 or equivalent

To:
Prerequisites: SC/MATH 1014 3.00 or equivalent; SC/MATH 1025 3.00 or equivalent; LE/EECS 1011 3.00 or equivalent.

Rationale:
MATLAB is to be used in the course. LE/EECS 1011 3.00 provides the necessary MATLAB prerequisite.

Note: For course proposals involving cross-listings, integrations and degree credit exclusions, approval from all of the relevant Faculties/department/divisions is required. Note: Since one change (such as a change in year level or credit value) may result in several other changes (e.g., to the course description, evaluation, instruction, bibliography, etc.), please submit as many details as possible. If there are several changes, please feel free to use a New Course Proposal Form (Form 1) in order to ensure that all the required information is included. * Note: If there is a technology component to the course, a statement is required from ATSG indicating whether resources are adequate to support the course.
### Faculty of Science

#### Curriculum Committee

352 Lumbers Building

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**Changes to Existing Courses & Degree Programs**

#### Department:
Mathematics & Statistics

#### Date of Submission:
November 1, 2014

#### Course Number: Effective Session:
Math 1131 3.00
FW2015-16

#### Course Title:
Introduction to Statistics I

#### Type of Change:

- [ ] in degree requirements
- [ ] in course number/level
- [ ] in credit value
- [ ] in title (max. 40 characters for short title)
- [ ] in Calendar description (max. 40 words or 200 characters)
- [X] in degree credit exclusion(s)
- [ ] regularize course (from Special Topics)
- [ ] in course format/mode of delivery *
- [ ] retire/expire course
- [ ] other (please specify):

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#### Change From:

Course credit exclusion: SC/MATH 2560 3.00, GL/MATH/MODR 1610 3.00, SC/BIOL 2060 3.00

#### To:

Course credit exclusion: SC/MATH 2560 3.00, SC/MATH 2930 3.00, GL/MATH/MODR 1610 3.00, SC/BIOL 2060 3.00.

#### Rationale:

There is significant overlap between SC/MATH 1131 3.00 and SC/MATH 2930 3.00.

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**Note:** For course proposals involving cross-listings, integrations and degree credit exclusions, approval from all of the relevant Faculties/department/divisions is required. Note: Since one change (such as a change in year level or credit value) may result in several other changes (e.g., to the course description, evaluation, instruction, bibliography, etc.), please submit as many details as possible. If there are several changes, please feel free to use a New Course Proposal Form (Form 1) in order to ensure that all the required information is included. *Note: If there is a technology component to the course, a statement is required from ATSG indicating whether resources are adequate to support the course.*
Faculty of Science
Curriculum Committee
352 Lumbers Building

Changes to Existing Courses & Degree Programs

Department: Mathematics & Statistics
Date of Submission: November 1, 2014

Course Number: Math 2570 3.00
Effective Session: FW2015-16

Course Title: Elementary Statistics II

Type of Change:

- in degree requirements
- in course number/level
- in credit value
- x in degree credit exclusion(s)
- regularize course (from Special Topics)
- in course format/mode of delivery *
- retire/expire course
- other (please specify):

Change From:
Course credit exclusions: AP/SC/GEOG 2420 3.00, HH/KINE 3150 3.00, GL/MATH/MODR 1620 3.00, AS/POLS 3300 6.00, GL/POLS 2620 3.00, HH/PSYC 2020 6.00, HH/PSYC 2022 3.00, GL/SOCI 2620 3.00.

To:
Course credit exclusions: SC/MATH 2565 3.00, SC/MATH 2930 3.00, AP/SC/GEOG 2420 3.00, HH/KINE 3150 3.00, GL/MATH/MODR 1620 3.00, AS/POLS 3300 6.00, GL/POLS 2620 3.00, HH/PSYC 2020 6.00, HH/PSYC 2022 3.00, GL/SOCI 2620 3.00.

Rationale:
There is significant overlap between SC/MATH 2570 3.00 and SC/MATH 2930 3.00. Similar rationale for SC/MATH 2565 3.00. Note that current calendar copy for SC/MATH 2565 3.00 lists SC/MATH 2570 3.00 as one of its CCE’s.

Note: For course proposals involving cross-listings, integrations and degree credit exclusions, approval from all of the relevant Faculties/department/divisions is required. Note: Since one change (such as a change in year level or credit value) may result in several other changes (e.g., to the course description, evaluation, instruction, bibliography, etc.), please submit as many details as possible. If there are several changes, please feel free to use a New Course Proposal Form (Form 1) in order to ensure that all the required information is included. * Note: If there is a technology component to the course, a statement is required from ATSG indicating whether resources are adequate to support the course.
Department: Physics and Astronomy  
Course Number: PHYS 4310 3.0  
Course Title: Physics or Astronomy Project  

Date of Submission: September 17, 2014  
Effective Session: FW2015-2016

Type of Change:  
- [x] in Calendar description (max. 40 words or 200 characters)  

Change From:  
A supervised research endeavour, either theoretical or experimental, in physics or astronomy. The project follows consultation with a faculty member who agrees to supervise.  

To:  
A faculty-supervised research endeavour, either experimental or theoretical, in physics or astronomy. Before enrolling, the student and faculty member must agree upon the project scope, background reading, milestones including student-faculty meeting schedule, and deliverables including final written report.

Rationale: The current course description is rather vague and has led to a wide range in the level of research effort deemed acceptable for credit in the course. The proposed changes make it clear that the course must include relevant background reading, regular meetings, and a final written report. Together with sample course outcomes which will be circulated to students prior to enrolment, the proposed changes will result in a more consistent student experience in the course.

Note: For course proposals involving cross-listings, integrations and degree credit exclusions, approval from all of the relevant Faculties/department/divisions is required. Note: Since one change (such as a change in year level or credit value) may result in several other changes (e.g., to the course description, evaluation, instruction, bibliography, etc.), please submit as many details as possible. If there are several changes, please feel free to use a New Course Proposal Form (Form 1) in order to ensure that all the required information is included. *Note: If there is a technology component to the course, a statement is required from ATSG indicating whether resources are adequate to support the course.
**Faculty of Science**  
**Curriculum Committee**  
**352 Lumbers Building**

### Changes to Existing Courses & Degree Programs

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<tr>
<th>Department:</th>
<th>Physics and Astronomy</th>
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<tbody>
<tr>
<td>Course Number:</td>
<td>PHYS 4211 3.0</td>
</tr>
<tr>
<td>Course Title:</td>
<td>Advanced Experimental Physics II</td>
</tr>
</tbody>
</table>

**Date of Submission:** November 12, 2014  
**Effective Session:** FW 2015-2016

**Type of Change:**
- [ ] in degree requirements  
- [ ] in course number/level  
- [ ] in credit value  
- [ ] in title (max. 40 characters for short title)  
- [x] in pre/co-requisite(s)  
- [ ] in cross-listing  
- [ ] in degree credit exclusion(s)  
- [ ] regularize course (from Special Topics)  
- [ ] in course format/mode of delivery *  
- [ ] retire/expire course  
- [ ] other (please specify):

**Change From:**

<table>
<thead>
<tr>
<th>SC/PHYS 4211 3.00 Advanced Experimental Physics II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected advanced experiments in physics related to topics in solid state physics, atomic spectroscopy, microwaves, low-noise measurements, superconductivity, and nuclear and particle physics. Open laboratory hours. Prerequisites: SC/PHYS 3220 3.00; registration in an Honours Program in physics and astronomy. Course credit exclusion: SC/PHYS 4210 6.00.</td>
</tr>
</tbody>
</table>

**To:**

<table>
<thead>
<tr>
<th>SC/PHYS 4211 3.00 Advanced Experimental Physics II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected advanced experiments in physics related to topics in solid state physics, atomic spectroscopy, microwaves, low-noise measurements, superconductivity, and nuclear and particle physics. Open laboratory hours. Prerequisites: SC/PHYS 3220 3.00; registration in a Bachelor or Honours Program in physics and astronomy or in biophysics. Co-requisite: SC/PHYS 3040 6.00.</td>
</tr>
</tbody>
</table>

**Rationale:**  
From a laboratory standpoint, PHYS 3220 3.00 (Experiments in Modern Physics) prepares students for this course. We thus remove the lab pre-requisite PHYS 4061 3.00 (Experimental Techniques in Laser Physics) but add that course's academic co-requisite of PHYS 3040 6.00 (Modern Physics) to this course. We also open this course to Biophysics Honours Program students and to Physics & Astronomy B.Sc. Bachelor students who wish to take it as an elective. These changes give students more flexibility in scheduling 4000-level lab courses, and will allow the Department to better balance enrolments between PHYS 4061 and PHYS 4210/4211. (PHYS 4210 and 4211 are independent of each other; they differ in the experiments undertaken.) Finally, we remove references to the retired courses PHYS 3210 6.00 and PHYS 4210 6.00.
Faculty of Science
Curriculum Committee
352 Lumbers Building

Changes to Existing Courses & Degree Programs

Department: Physics and Astronomy
Course Number: PHYS 4210 3.0
Course Title: Advanced Experimental Physics I

Date of Submission: November 12, 2014
Effective Session: FW 2015-2016

Type of Change:
- in pre/co-requisite(s) ✔

Change From:
SC/PHYS 4210 3.00 Advanced Experimental Physics I
Selected advanced experiments in physics related to topics in solid state physics, atomic spectroscopy, microwaves, low-noise measurements, superconductivity, and nuclear and particle physics. Open laboratory hours. Prerequisites: SC PHYS 3220 3.00 or SC PHYS 3210 6.00 and SC PHYS 4061 3.00; registration in an Honours Program in physics and astronomy. Course credit exclusion: SC/PHYS 4210 6.00.

Rationale: From a laboratory standpoint, PHYS 3220 3.00 (Experiments in Modern Physics) prepares students for this course. We thus remove the lab pre-requisite PHYS 4061 3.00 (Experimental Techniques in Laser Physics) but add that course's academic co-requisite of PHYS 3040 6.00 (Modern Physics) to this course. We also open this course to Biophysics Honours Program students and to Physics & Astronomy B.Sc. Bachelor students who wish to take it as an elective. These changes give students more flexibility in scheduling 4000-level lab courses, and will allow the Department to better balance enrollments between PHYS 4061 and PHYS 4210/4211. (PHYS 4210 and 4211 are independent of each other; they differ in the experiments undertaken.) Finally, we remove references to the retired courses PHYS 3210 6.00 and PHYS 4210 6.00.

To:
SC/PHYS 4210 3.00 Advanced Experimental Physics I
Selected advanced experiments in physics related to topics in solid state physics, atomic spectroscopy, microwaves, low-noise measurements, superconductivity, and nuclear and particle physics. Open laboratory hours. Prerequisites: SC/PHYS 3220 3.00; registration in a Bachelor or Honours Program in physics and astronomy or in biophysics. Co-requisite: SC/PHYS 3040 6.00.
Form 2
Faculty of Science
Curriculum Committee
352 Lumbers Building

Changes to Existing Courses & Degree Programs

Department: Physics and Astronomy
Date of Submission: September 17, 2014
Course Number: PHYS 4310 3.0
Effective Session: FW2015-2016
Course Title: Physics or Astronomy Project

Type of Change:
- [ ] in degree requirements
- [ ] in course number/level
- [ ] in credit value
- [ ] in title (max. 40 characters for short title)
- [x] in Calendar description (max. 40 words or 200 characters)
- [ ] in pre/co-requisite(s)
- [ ] in cross-listing
- [ ] in degree credit exclusion(s)
- [ ] regularize course (from Special Topics)
- [ ] in course format/mode of delivery *
- [ ] retire/expire course
- [ ] other (please specify):

Change From:
A supervised research endeavour, either theoretical or experimental, in physics or astronomy. The project follows consultation with a faculty member who agrees to supervise.

To:
A faculty-supervised research endeavour, either experimental or theoretical, in physics or astronomy. Before enrolling, the student and faculty member must agree upon the project scope, background reading, milestones including student-faculty meeting schedule, and deliverables including final written report.

Rationale:
The current course description is rather vague and has led to a wide range in the level of research effort deemed acceptable for credit in the course. The proposed changes make it clear that the course must include relevant background reading, regular meetings, and a final written report. Together with sample course outcomes which will be circulated to students prior to enrolment, the proposed changes will result in a more consistent student experience in the course.

Note: For course proposals involving cross-listings, integrations and degree credit exclusions, approval from all of the relevant Faculties/department/divisions is required. Note: Since one change (such as a change in year level or credit value) may result in several other changes (e.g., to the course description, evaluation, instruction, bibliography, etc.), please submit as many details as possible. If there are several changes, please feel free to use a New Course Proposal Form (Form 1) in order to ensure that all the required information is included. * Note: If there is a technology component to the course, a statement is required from ATSG indicating whether resources are adequate to support the course.
Changes to Existing Courses & Degree Programs

Department: Physics and Astronomy

Date of Submission: November 12, 2014

Course Title: Specialized Honours Physics and Astronomy, Physics Stream

Effective Session: FW 2015-2016

Type of Change:

- [x] in degree requirements
- [ ] in cross-listing
- [ ] in course number/level
- [ ] in degree credit exclusion(s)
- [ ] in credit value
- [ ] regularize course (from Special Topics)
- [ ] in title (max. 40 characters for short title)
- [ ] in course format/mode of delivery *
- [ ] in Calendar description (max. 40 words or 200 characters)
- [ ] retire/expire course
- [ ] other (please specify):
### Change From:

<table>
<thead>
<tr>
<th>Honours Programs</th>
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<tbody>
<tr>
<td>Specialized Honours Program</td>
</tr>
<tr>
<td>Physics Stream</td>
</tr>
<tr>
<td>• SC/MATH 1025 3.00;</td>
</tr>
<tr>
<td>• the program core, as specified above (24 credits including six credits at the 3000 level);</td>
</tr>
<tr>
<td>• SC/MATH 2015 3.00; SC/MATH 2271 3.00; SC/PHYS 2030 3.00; SC/PHYS 2213 3.00;</td>
</tr>
<tr>
<td>• SC/PHYS 3010 3.00; SC/PHYS 3020 3.00; SC/PHYS 3030 3.00; SC/PHYS 3090 3.00; SC/PHYS 3220 3.00;</td>
</tr>
<tr>
<td>• SC/PHYS 4010 3.00; SC/PHYS 4020 3.00; SC/PHYS 4061 3.00;</td>
</tr>
<tr>
<td>• two of SC/PHYS 4011 3.00, SC/PHYS 4040 3.00, SC/PHYS 4050 3.00;</td>
</tr>
<tr>
<td>• either SC/PHYS 4210 3.00 or SC/PHYS 4062 3.00;</td>
</tr>
<tr>
<td>• three additional credits in PHYS courses at the 3000 level or higher.</td>
</tr>
</tbody>
</table>

### To:

<table>
<thead>
<tr>
<th>Honours Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialized Honours Program</td>
</tr>
<tr>
<td>Physics Stream</td>
</tr>
<tr>
<td>• SC/MATH 1025 3.00;</td>
</tr>
<tr>
<td>• the program core, as specified above (24 credits including six credits at the 3000 level);</td>
</tr>
<tr>
<td>• SC/MATH 2015 3.00; SC/MATH 2271 3.00; SC/PHYS 2030 3.00; SC/PHYS 2213 3.00;</td>
</tr>
<tr>
<td>• SC/PHYS 3010 3.00; SC/PHYS 3020 3.00; SC/PHYS 3030 3.00; SC/PHYS 3090 3.00; SC/PHYS 3220 3.00;</td>
</tr>
<tr>
<td>• SC/PHYS 4010 3.00; SC/PHYS 4020 3.00; SC/PHYS 4061 3.00;</td>
</tr>
<tr>
<td>• two of SC/PHYS 4011 3.00, SC/PHYS 4040 3.00, SC/PHYS 4050 3.00;</td>
</tr>
<tr>
<td>• either SC/PHYS 4210 3.00 or SC/PHYS 4062 3.00;</td>
</tr>
<tr>
<td>• six credits from SC/PHYS 4062 3.00 or SC/PHYS 4210 3.00 or SC/PHYS 4211 3.00;</td>
</tr>
<tr>
<td>• three additional credits in PHYS courses at the 3000 level or higher.</td>
</tr>
</tbody>
</table>

### Rationale:

This degree requirements change in the Physics stream makes it official that students can take either SC/PHYS 4210 3.00 or SC/PHYS 4211 3.00 (Advanced Experimental Physics I or II) as part of their 4000-level lab credits. Those two courses are independent of each other, and differ in the experiments undertaken. Therefore either course can be taken before the other, and either course can be counted toward the degree along with SC/PHYS 4062 3.00 (Atom Trapping). The current requirements do not reflect this fact for purely historical reasons.
<table>
<thead>
<tr>
<th>Department:</th>
<th>Physics and Astronomy</th>
<th>Date of Submission:</th>
<th>November 12, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Number:</td>
<td></td>
<td>Effective Session:</td>
<td>FW 2015-2016</td>
</tr>
<tr>
<td>Course Title:</td>
<td>Specialized Honours Physics and Astronomy, Astronomy Stream</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Type of Change:**

- [x] in degree requirements
- [] in cross-listing
- [] in course number/level
- [] in degree credit exclusion(s)
- [] in credit value
- [] regularize course (from Special Topics)
- [] in title (max. 40 characters for short title)
- [] in course format/mode of delivery *
- [] in Calendar description (max. 40 words or 200 characters)
- [] retire/expire course
- [] other (please specify):
<table>
<thead>
<tr>
<th>Change From:</th>
<th>To:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honours Programs</td>
<td>Honours Programs</td>
</tr>
<tr>
<td>Specialized Honours Program</td>
<td>Specialized Honours Program</td>
</tr>
<tr>
<td>Astronomy Stream</td>
<td>Astronomy Stream</td>
</tr>
<tr>
<td>• SC/MATH 1025 3.00; SC/PHYS 1070 3.00;</td>
<td>• SC/MATH 1025 3.00; SC/PHYS 1070 3.00;</td>
</tr>
<tr>
<td>• the program core, as specified above (24 credits including</td>
<td>• the program core, as specified above (24 credits</td>
</tr>
<tr>
<td>six credits at the 3000 level);</td>
<td>including six credits at the 3000 level);</td>
</tr>
<tr>
<td>• SC/MATH 2015 3.00; SC/MATH 2271 3.00; SC/PHYS 2030</td>
<td>• SC/MATH 2015 3.00; SC/MATH 2271 3.00; SC/PHYS</td>
</tr>
<tr>
<td>3.00; SC/PHYS 2070 3.00; SC/PHYS 2213 3.00;</td>
<td>2030 3.00; SC/PHYS 2070 3.00; SC/PHYS 2213 3.00;</td>
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<td>• SC/PHYS 3010 3.00; SC/PHYS 3020 3.00; SC/PHYS</td>
</tr>
<tr>
<td>3.00; SC/PHYS 3070 3.00; SC/PHYS 3090 3.00; SC/PHYS</td>
<td>3030 3.00; SC/PHYS 3070 3.00; SC/PHYS 3090 3.00;</td>
</tr>
<tr>
<td>3220 3.00;</td>
<td>SC/PHYS 3220 3.00;</td>
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<tr>
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<td>• SC/PHYS 4010 3.00; SC/PHYS 4020 3.00; SC/PHYS</td>
</tr>
<tr>
<td>3.00; SC/PHYS 4070 3.00; SC/PHYS 4270 4.00;</td>
<td>4061 3.00; SC/PHYS 4070 3.00; <strong>SC/PHYS 4170 3.00;</strong></td>
</tr>
<tr>
<td>• SC/PHYS 4210 3.00 or SC/PHYS 4211 3.00;</td>
<td>SC/PHYS 4270 4.00;</td>
</tr>
<tr>
<td>• one of SC/PHYS 4011 3.00, SC/PHYS 4040 3.00, SC/PHYS</td>
<td>• one of SC/PHYS 4011 3.00, SC/PHYS 4040 3.00,</td>
</tr>
<tr>
<td>4050 3.00 or SC/PHYS 4120 3.00;</td>
<td>SC/PHYS 4050 3.00 or SC/PHYS 4120 3.00;</td>
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<td>• one of SC/PHYS 3280 3.00, SC/PHYS 4060 3.00, SC/PHYS</td>
<td>• one of SC/PHYS 3280 3.00, SC/PHYS 4060 3.00,</td>
</tr>
<tr>
<td>4110 3.00, SC/PHYS 4330 3.00 or LE/EATS 4630 3.00;</td>
<td>SC/PHYS 4110 3.00, SC/PHYS 4330 3.00 or LE/EATS</td>
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<td>• three additional credits from PHYS, EATS or MATH courses</td>
<td>4630 3.00;</td>
</tr>
<tr>
<td>at the 3000 level or higher.</td>
<td>• three additional credits from PHYS, EATS or MATH</td>
</tr>
<tr>
<td></td>
<td>courses at the 3000 level or higher.</td>
</tr>
</tbody>
</table>

**Rationale:** Modern developments in astronomy make it imperative that astronomy honours students be well-grounded in cosmology. The existing course plan is deficient in this area. A new course has been implemented, PHYS 4170 3.00 (Observational and Theoretical Cosmology), to fill the gap. The program change detailed above makes that course a requirement for all Specialized Honours students in the Astronomy Stream. That will be accomplished by reducing the pure lab credits of honours astronomy students from 16 to 13 (as compared to 15 for Physics students) through the removal of a physics laboratory requirement (PHYS 4210 3.00 or PHYS 4211 3.00, Advanced Experimental Physics I or II). Honours astronomy students will continue to gain 4000-level laboratory experiences through courses dedicated to laser physics (PHYS 4061 3.00 Experimental Techniques in Laser Physics) and the practice of astronomy (PHYS 4270 4.00 Astronomical Techniques).
<table>
<thead>
<tr>
<th>Department:</th>
<th>Physics and Astronomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Submission:</td>
<td>November 12, 2014</td>
</tr>
<tr>
<td>Course Number:</td>
<td></td>
</tr>
<tr>
<td>Effective Session:</td>
<td>FW 2015-2016</td>
</tr>
<tr>
<td>Course Title:</td>
<td>Specialized Honours Physics and Astronomy, Applied Physics Stream</td>
</tr>
</tbody>
</table>

**Type of Change:**

- [x] in degree requirements
- [ ] in course number/level
- [ ] in credit value
- [ ] in title (max. 40 characters for short title)
- [ ] in Calendar description (max. 40 words or 200 characters)
- [ ] in pre/co-requisite(s)
- [ ] in cross-listing
- [ ] in degree credit exclusion(s)
- [ ] regularize course (from Special Topics)
- [ ] in course format/mode of delivery *
- [ ] retire/expire course
- [ ] other (please specify):
### Change From:

<table>
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<tr>
<th>Honours Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialized Honours Program</td>
</tr>
<tr>
<td>Applied Physics Stream</td>
</tr>
<tr>
<td>• SC/MATH 1025 3.00;</td>
</tr>
<tr>
<td>• the program core, as specified above (24 credits including six credits at the 3000 level);</td>
</tr>
<tr>
<td>• SC/MATH 2030 3.00; SC/PHYS 2213 3.00;</td>
</tr>
<tr>
<td>• SC/PHYS 3010 3.00; SC/PHYS 3020 3.00;</td>
</tr>
<tr>
<td>• SC/PHYS 3030 3.00;</td>
</tr>
<tr>
<td>• SC/PHYS 3090 3.00; SC/PHYS 3150 3.00;</td>
</tr>
<tr>
<td>• SC/PHYS 3220 3.00;</td>
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<tr>
<td>• SC/PHYS 4010 3.00; SC/PHYS 4020 3.00;</td>
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<tr>
<td>• six credits from SC/MATH 3241 3.00, SC/PHYS 3250 3.00, SC/PHYS 3280 3.00, SC/PHYS 4120 3.00, or SC/PHYS 4250 3.00.</td>
</tr>
</tbody>
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### To:

<table>
<thead>
<tr>
<th>Honours Programs</th>
</tr>
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<tbody>
<tr>
<td>Specialized Honours Program</td>
</tr>
<tr>
<td>Applied Physics Stream</td>
</tr>
<tr>
<td>• SC/MATH 1025 3.00;</td>
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<tr>
<td>• the program core, as specified above (24 credits including six credits at the 3000 level);</td>
</tr>
<tr>
<td>• SC/MATH 2030 3.00; SC/PHYS 2213 3.00;</td>
</tr>
<tr>
<td>• SC/PHYS 3010 3.00; SC/PHYS 3020 3.00;</td>
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<td>• SC/PHYS 3030 3.00;</td>
</tr>
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<td>• SC/PHYS 3090 3.00; SC/PHYS 3150 3.00;</td>
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<td>• SC/PHYS 3220 3.00;</td>
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<tr>
<td>• SC/PHYS 4010 3.00; SC/PHYS 4020 3.00;</td>
</tr>
<tr>
<td>• six credits from SC/PHYS 4062 3.00 or SC/PHYS 4210 3.00 or SC/PHYS 4211 3.00;</td>
</tr>
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<td>• nine credits from SC/MATH 3241 3.00, SC/PHYS 3250 3.00, SC/PHYS 3280 3.00, SC/PHYS 4120 3.00, SC/PHYS 4250 3.00, or SC/PHYS 4310 3.00.</td>
</tr>
</tbody>
</table>

### Rationale:

This degree requirements change in the Applied Physics stream moves PHYS 4310 3.00 (Physics or Astronomy Project) from a required course to one course among several elective options. PHYS 4310 3.00 engages the student in a research project under the supervision of a faculty member. Although research experience is valuable to most students, at the moment this course must be taken by all students, including by those with little interest in academic research, by those whose research interests do not match those of our faculty members, and by even the weakest students in the stream. Students interested in research are, and will still be, encouraged to seek out faculty members who agree to supervise them in the course. Making this course an elective simply avoids placing an undue burden on the faculty members in our relatively small department by requiring them to supervise research projects outside their areas of expertise or with students who would prefer to enrol in — or who would likely benefit more from — a different 3000- or 4000-level course.

This degree requirements change also makes it official that students can take either SC/PHYS 4210 3.00 or SC/PHYS 4211 3.00 (Advanced Experimental Physics I or II) as part of their 4000-level lab credits. Those two courses are independent of each other, and differ in the experiments undertaken. Therefore either course can be taken before the other, and either course can be counted toward the degree along with SC/PHYS 4062 3.00 (Atom Trapping). The current requirements do not reflect this fact for purely historical reasons.
<table>
<thead>
<tr>
<th>Department:</th>
<th>Physics and Astronomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Number:</td>
<td></td>
</tr>
<tr>
<td>Course Title:</td>
<td>Batchelor Physics and Astronomy, Physics Stream</td>
</tr>
<tr>
<td>Date of Submission:</td>
<td>November 12, 2014</td>
</tr>
<tr>
<td>Effective Session:</td>
<td>FW 2015-2016</td>
</tr>
</tbody>
</table>

**Type of Change:**

- [x] in degree requirements
- [ ] in course number/level
- [ ] in credit value
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- [ ] in degree credit exclusion(s)
- [ ] regularize course (from Special Topics)
- [ ] in course format/mode of delivery *
- [ ] retire/expire course
- [ ] other (please specify):
<table>
<thead>
<tr>
<th>Change From:</th>
<th>To:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor Program</td>
<td>Bachelor Program</td>
</tr>
<tr>
<td>Physics Stream</td>
<td>Physics Stream</td>
</tr>
<tr>
<td>1) The program core:</td>
<td>1) The program core:</td>
</tr>
<tr>
<td>See ‘Program core’ subsection for further explanation.</td>
<td>See ‘Program core’ subsection for further explanation.</td>
</tr>
<tr>
<td>2) Additional required courses:</td>
<td>2) Additional required courses:</td>
</tr>
<tr>
<td>• CHEM 1000 3.00; CHEM 1001 3.00</td>
<td>• CHEM 1000 3.00; CHEM 1001 3.00</td>
</tr>
<tr>
<td>• SC/EECS 1541 3.00</td>
<td>• SC/EECS 1541 3.00</td>
</tr>
<tr>
<td>• SC/MATH 1013 3.00; SC/MATH 1014 3.00; SC/MATH 1025 3.00; SC/MATH 2015 3.00; SC/MATH 2271 3.00;</td>
<td>• SC/MATH 1013 3.00; SC/MATH 1014 3.00; SC/MATH 1025 3.00; SC/MATH 2015 3.00; SC/MATH 2271 3.00;</td>
</tr>
<tr>
<td>• SC/PHYS 2030 3.00; SC/PHYS 2213 3.00; SC/PHYS 3090 3.00, SC/PHYS 3220 3.00; SC/PHYS 4061 3.00;</td>
<td>• SC/PHYS 2030 3.00; SC/PHYS 2213 3.00; SC/PHYS 3090 3.00, SC/PHYS 3220 3.00;</td>
</tr>
<tr>
<td>• six credits from: SC/PHYS 3010 3.00, SC/PHYS 3020 3.00, SC/PHYS 3030 3.00.</td>
<td>• SC/PHYS 4061 3.00 or SC/PHYS 4210 3.00 or SC/PHYS 4211 3.00;</td>
</tr>
<tr>
<td>• six credits from: SC/PHYS 3010 3.00, SC/PHYS 3020 3.00, SC/PHYS 3030 3.00.</td>
<td>• six credits from: SC/PHYS 3010 3.00, SC/PHYS 3020 3.00, SC/PHYS 3030 3.00.</td>
</tr>
</tbody>
</table>

**Rationale:**
This degree requirements change in the Bachelor Physics stream removes PHYS 4061 3.00 (Experimental Techniques in Laser Physics) as a required course. Instead, it will become one of three elective 4000-level laboratory courses, along with PHYS 4210 3.00 & PHYS 4211 3.00 (Advanced Experimental Physics I & II). This change means that students in year 3 of the stream will not be required to take 15 physics credits in the fall and only 6 in the winter, which became the case this year (FW 14-15) due to a change in the semester in which PHYS 4061 3.00 is offered. This change will also give Bachelor Physics stream students more choice in the 4000-level physics experiments they will conduct as part of their education. Moreover, by removing PHYS 4061 3.00 as a requirement for the Bachelor Physics stream but keeping it as a requirement in our Honours streams, the expected increase in PHYS 4061 3.00 enrolments over the next few years will be kept to a manageable level.