### 1.0 Degree Title
Specify the two degrees for concurrent degree programs

| B.Sc. |

### 1.1 Major (Legacy= Subject) (30-char. max.)

| Physiology and Physics |

### 1.2 Concentration (Legacy = Concentration/Option)
If applicable (30 char. max.)

| |

### 1.3 Minor (with Concentration, if applicable)
(30 char. max.)

| |

### 1.4 Category

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<td>Internship/Co-op</td>
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<td>Major Concentration (CON)</td>
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<td>Non-Thesis (N)</td>
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### 1.5 Complete Program Title

| B.Sc. Major Physiology and Physics |

### 2.0 Administering Faculty/Unit

| Faculty of Science |

### 3.0 Effective Term of revision or retirement
Please give reasons in 5.0”Rationale” in the case of retirement

<table>
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<th>Term: 201601</th>
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### 4.0 Existing Credit Weight

| 80 |

### 4.0 Proposed Credit Weight

| 80 |

### 5.0 Rationale for revised program

PHYS 413, a required course in the program, is not being currently offered (the instructor who taught it retired this past summer), but there are plans to offer it again in the future. Until then PHYS 519 will be offered as a replacement to be taken in the U3 winter term. Once PHYS 413 is offered the students will have the option between PHYS 413 and PHYS 519.

**See attached for the rest of the Rationale.**

### 6.0 Revised Program Description (Maximum 150 words)

PHYS 413, a required course in the program, is not being currently offered (the instructor who taught it retired this past summer), but there are plans to offer it again in the future. Until then PHYS 519 will be offered as a replacement to be taken in the U3 winter term. Once PHYS 413 is offered the students will have the option between PHYS 413 and PHYS 519.
Major Physiology and Physics (80 credits)

**U1 Required Courses (26 credits)**

*The corequisite BIOL 200, BIOL 201 is waived for this program.

- MATH 222 Calculus 3 (3 credits)
- PHGY 209 Mammalian Physiology 1 (3 credits)
- PHGY 210 Mammalian Physiology 2 (3 credits)
- PHGY 212 Introductory Physiology Laboratory 1 (1 credit) *
- PHGY 213 Introductory Physiology Laboratory 2 (1 credit) *
- PHYS 230 Dynamics of Simple Systems (3 credits)
- PHYS 232 Heat and Waves (3 credits)
- PHYS 241 Signal Processing (3 credits)
- PHYS 257 Experimental Methods 1 (3 credits)
- PHYS 258 Experimental Methods 2 (3 credits)

**U2 Required Courses (18 credits)**

- MATH 326 Nonlinear Dynamics and Chaos (3 credits)
- PHGY 311 Channels, Synapses & Hormones (3 credits)
- PHGY 312 Respiratory, Renal, & Cardiovascular Physiology (3 credits)
- PHGY 313 Blood, Gastrointestinal, & Immune Systems Physiology (3 credits)
- PHGY 314 Integrative Neuroscience (3 credits)
- PHYS 339 Measurements Laboratory in General Physics (3 credits)

**U2 or U3 Required Courses (6 credits)**

- MATH 437 Mathematical Methods in Biology (3 credits) *
- PHYS 413 Physical Basis of Physiology (3 credits) *
  * Note: these courses are offered in alternate years

**U3 Required Courses (21 credits)**

- BMDE 519 Biomedical Signals and Systems (3 credits)
- PHYS 461D1 Experimental Physiology (4.5 credits)
- PHYS 461D2 Experimental Physiology (4.5 credits)
- PHYS 339 Measurements Laboratory in General Physics (3 credits)

**U1 Complementary Courses (6 credits)**

- 3 credits, one of:
  - MATH 351 Ordinary Differential Equations (3 credits)
  - MATH 325 Honours Ordinary Differential Equations (3 credits)
- 3 credits, one of:
  - MATH 223 Linear Algebra (3 credits)
  - MATH 247 Honours Applied Linear Algebra (3 credits)

**U2 Complementary Courses (3 credits)**

- 3 credits, one of:
  - MATH 248 Honours Advanced Calculus (3 credits)
  - MATH 314 Advanced Calculus (3 credits)

**Major Physiology and Physics (80 credits)**

**U1 Required Courses (26 credits)**

*The corequisite BIOL 200, BIOL 201 is waived for this program.

- MATH 222 Calculus 3 (3 credits)
- PHGY 209 Mammalian Physiology 1 (3 credits)
- PHGY 210 Mammalian Physiology 2 (3 credits)
- PHGY 212 Introductory Physiology Laboratory 1 (1 credit) *
- PHGY 213 Introductory Physiology Laboratory 2 (1 credit) *
- PHYS 230 Dynamics of Simple Systems (3 credits)
- PHYS 232 Heat and Waves (3 credits)
- PHYS 241 Signal Processing (3 credits)
- PHYS 257 Experimental Methods 1 (3 credits)
- PHYS 258 Experimental Methods 2 (3 credits)

**U2 Required Courses (21 credits)**

- MATH 326 Nonlinear Dynamics and Chaos (3 credits)
- PHGY 311 Channels, Synapses & Hormones (3 credits)
- PHGY 312 Respiratory, Renal, & Cardiovascular Physiology (3 credits)
- PHGY 313 Blood, Gastrointestinal, & Immune Systems Physiology (3 credits)
- PHGY 314 Integrative Neuroscience (3 credits)
- PHYS 333 Thermal and Statistical Physics (3 credits)
- PHYS 339 Measurements Laboratory in General Physics (3 credits)

**U3 Required Courses (21 credits)**

- BMDE 519 Biomedical Signals and Systems (3 credits)
- PHYS 461D1 Experimental Physiology (4.5 credits)
- PHYS 461D2 Experimental Physiology (4.5 credits)
- PHYS 339 Measurements Laboratory in General Physics (3 credits)

**U1 Complementary Courses (6 credits)**

- 3 credits, one of:
  - MATH 351 Ordinary Differential Equations (3 credits)
  - MATH 325 Honours Ordinary Differential Equations (3 credits)
- 3 credits, one of:
  - MATH 223 Linear Algebra (3 credits)
  - MATH 247 Honours Applied Linear Algebra (3 credits)

**U2 Complementary Courses (3 credits)**

- 3 credits, one of:
  - MATH 248 Honours Advanced Calculus (3 credits)
  - MATH 314 Advanced Calculus (3 credits)

**U2 or U3 Required Complementary Courses (3 credits)**

- 3 credits, one of:
  - MATH 437 Mathematical Methods in Biology (3 credits) *
  - PHYS 413 Physical Basis of Physiology (3 credits)

* Note: these courses are offered in alternate years
8.0 Consultation with Related Units
☐ Yes  ☐ No
Financial Consult  ☐ Yes  ☐ No

Attach list of consultations

9. Approvals

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<th>Signature</th>
<th>Date</th>
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<tr>
<td>Department</td>
<td>Dr. John Orlowski</td>
<td></td>
<td>October 14, 2015</td>
</tr>
<tr>
<td>Curric/Acad Committee</td>
<td></td>
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<tr>
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Submitted by

Name: Sonia Viselli
Phone: 514-398-3689
Email: sonia.viselli@mcgill.ca
Submission Date: October 14, 2015

To be completed by ARR:

CIP Code

10. FQRSC (Research) Indicator (for GPS): Yes  No
MATH 437, which used to be offered in alternate years, is now being offered every year. It will be taken in the winter U2 term rather than in either the U2 or U3 fall term as in the past. MATH 326, which is presently listed as a co-requisite for MATH 437 and which is offered in the fall term only, will thus now be taken by all students as a pre-requisite to MATH 437. In the past, students who would have to take MATH 437 in their U2 year (since MATH 437 was offered only every other year) had to take MATH 326 as a co-requisite, while students who took MATH 437 in their U3 year would have taken MATH 326 as a prerequisite in their U2 year. Students taking MATH 326 as a co-requisite to MATH 437 in the past have occasionally observed that it would have been much more valuable to them had they taken MATH 326 as a pre-requisite.

In the past PHYS 339, a lab course, has been taken in U2, while PHYS 333, a lecture course, has been taken in U3. We have exchanged the order in which these two courses are to be taken, since some students have found that it has been hard to start the PHYS lecture courses again in U3 not having taken any such courses in U2. In addition, PHYS 333 is technically a prerequisite for PHYS 519, which will be taken in U3.
APPENDIX 1

CONSULTATION REPORT FORM
RE PROGRAM PROPOSAL

DATE: October 14, 2015

TO: Professor Bill Coish
Department of Physics

FROM: Sonia Viselli, Student Affairs Officer
Department of Physiology

The attached proposal has been submitted to our Curriculum Committee, and it has been decided that your department should be consulted.

Complete Program Title: Joint Major Physiology and Physics

Would you be good enough to review this proposal and let me know as soon as possible, on this form, whether or not your department has any objections to, or comments regarding, the proposal. Specifically, a course [or courses] taught by your department that has [have] been included in the program’s list of courses. Thank you.

X NO OBJECTIONS

SOME OBJECTIONS

COMMENTS:
The proposed changes to the Physiology and Physics joint Major program are the result of substantial discussion between the two departments over the past year. We have no objections and welcome the changes.

Signature: [W. A. Coish, undergraduate curriculum committee chair, Physics]

Date: 2015 October 14