Carleton University

Office of the Vice-Provost and Associate Vice-President (Academic)

memorandum

DATE: April 14, 2022

TO: Senate

FROM: Dr. Dwight Deugo, Vice-Provost and Associate Vice-President (Academic), and Chair, Senate Quality Assurance and Planning Committee

RE: 2023-24 Calendar Curriculum Proposals
Graduate Major Modifications

Background

Following Faculty Board approval and, as part of academic quality assurance, major curriculum modifications are considered by the Senate Quality Assurance and Planning Committee (SQAPC) before being recommended to Senate. Major curriculum modifications are also considered by the Senate Committee on Curriculum, Admissions and Studies Policy (SCCASP).

Documentation

Recommended calendar language is provided for consideration and approval.

Major Modifications

1. **Physics Undergraduate Program**
   SCCASP approval: April 5, 2022
   SQAPC approval: April 14, 2022

Senate Motion April 22, 2022

THAT Senate approve the introduction of the 15.0 credit BSc program in Physics as presented with effect from Fall 2023.

Program Change Request

New Program Proposal

Date Submitted: 03/23/22 12:07 pm

Viewing: **GBS-68 : Physics (15.0 credits)**

Last edit: 03/23/22 12:07 pm

Last modified by: kevingraham

Changes proposed by: kevingraham

In Workflow

1. **PHYS ChairDir UG**
2. **SCI Dean**
3. **SCI FCC**
4. **SCI FBoard**
5. **PRE SCCASP**
6. **SCCASP**
7. **SQAPC**
8. Senate
9. PRE CalEditor
10. CalEditor

Approval Path

1. 03/03/22 11:11 am Natalie Phelan (nataliephelan): Rollback to Initiator
2. 03/23/22 12:09 pm Kevin Graham (kevingraham): Approved for PHYS ChairDir UG
3. 03/23/22 12:35 pm Julia Wallace (juliawallace): Approved for SCI Dean
4. 03/31/22 9:12 am Julia Wallace (juliawallace): Approved for SCI FCC
5. 03/31/22 7:22 pm Julia Wallace (juliawallace): Approved for SCI FBoard
6. 04/01/22 11:57 am Natalie Phelan (nataliephelan): Approved for PRE SCCASP
7. 04/05/22 10:23 am Erika Strathearn (erikastrathearn): Approved for SCCASP

Effective Date	2023-24

Workflow	majormod
Program Code	GBS-68
Level	Undergraduate
Faculty	Faculty of Science
Academic Unit	Department of Physics
Degree	Bachelor of Science
Title	Physics (15.0 credits)

Program Requirements

Physics

B.Sc. (15.0 credits)

A. Credits Included in the Major CGPA (6.0 credits)

1. 1.0 credit from:		1.0
PHYS 1001 [0.5]	Foundations of Physics I	
& PHYS 1002 [0.5]	Foundations of Physics II (recommended)	
PHYS 1003 [0.5]	Introductory Mechanics and Thermodynamics	
& PHYS 1004 [0.5]	Introductory Electromagnetism and Wave Motion	
PHYS 1007 [0.5]	Elementary University Physics I	
& PHYS 1008 [0.5]	Elementary University Physics II (with an average grade of B- or higher)	
2. 3.5 credits in:		3.5
PHYS 2202 [0.5]	Wave Motion and Optics	
PHYS 2305 [0.5]	Electricity and Magnetism	
PHYS 2401 [0.5]	Thermal Physics	
PHYS 2604 [0.5]	Modern Physics I	
PHYS 3308 [0.5]	Electromagnetism	
PHYS 3701 [0.5]	Elements of Quantum Mechanics	
PHYS 3802 [0.5]	Advanced Dynamics	
3. 0.5 credit from:		0.5
PHYS 3007 [0.5]	Third Year Physics Laboratory: Selected Experiments and Seminars	
PHYS 3606 [0.5]	Modern Physics II	
or PHYS 3608 [0.5]	Modern Applied Physics	
4. 1.0 credit in PHYS at the 3000-level or above		1.0

B. Credits Not Included in the Major CGPA (9.0 credits)

5. 2.5 credits in:		2.5
MATH 1004 [0.5]	Calculus for Engineering or Physics	
MATH 1005 [0.5]	Differential Equations and Infinite Series for Engineering or Physics	
MATH 1104 [0.5]	Linear Algebra for Engineering or Science	
MATH 2004 [0.5]	Multivariable Calculus for Engineering or Physics	

MATH 3705 [0.5]	Mathematical Methods I	
6. 1.0 credit from:		1.0
BIOL 1103 [0.5] & BIOL 1104 [0.5]	Foundations of Biology I Foundations of Biology II	
CHEM 1001 [0.5] & CHEM 1002 [0.5]	General Chemistry I General Chemistry II	
CHEM 1005 [0.5] & CHEM 1006 [0.5]	Elementary Chemistry I Elementary Chemistry II	
ERTH 1006 [0.5] & ERTH 1009 [0.5]	Exploring Planet Earth The Earth System Through Time	
7. 1.0 credit in Science Continuation Courses (not PHYS)		1.0
8. 1.5 credit in Science Faculty Electives and/or Science Continuation Courses		1.5
9. 2.0 credits in NSCI 1000 or approved courses outside the faculties of Science and Engineering and Design		2.0
10. 1.0 credit in free electives		1.0
Total Credits		15.0

New Resources	No New Resources
Summary	March 8/22: following a meeting with Physics, adjusted sub-requirements 6-10 so that students are funneled into the correct number of Science Continuation credits (2.0 required to meet the BSc breadth, 1.0 credit of which comes from MATH 2004 and 3705, thus needing a subrequirement which seeks the remaining 1.0 credit). This also preserves the 2.0 credits outside Science and FED - the second element of the BSc degree breadth requirements, and then allows flexibility for students to pick between Science Faculty Electives (can be taken at the 1000-level) and further Science Continuation (at 2000-level or higher, if they want to go deeper into a subject). March 17/22: divided the major credits into 4 sub-requirements, and adjusted credit totals, per email from Physics.
Rationale	To give more options to students not wanting to do a 20.0 credit Program
Transition/Implementation	N/A
Program reviewer comments	**nataliephelan (03/03/22 11:11 am):** Rollback: To change effective date to 23-24, as per separate email.

Key: 2147