MEMORIAL UNIVERSITY

Faculty of Science

Office of the Dean
St. John's, NL, Canada A1B 3X
T: 709 864 8154 Fax: 709 864 3316
deansci@mun.ca www.mun.ca/science

Meeting of the Faculty Council of the Faculty of Science

A regular meeting of the Faculty Council of the Faculty of Science will be held on Wednesday, December 3, 2025 at 1:00pm by WebEx and in-person (Room: C-2045).

AGENDA

1. Approval of Agenda
2. Adoption of the Minutes of November 19, 2025, (pages 4-8)
3. Business Arising from the Minutes
4. Reports of Standing Committees:
   - A. Undergraduate Studies Committee
     - (a) Department of Biology
       - (i) New special topics course, BIOL 4918 Microbiology and Human Society, for information only, Paper 4.A.(a). (i) (pages 9-13)
       - (ii) New special topics course, BIOL 4919 Special Topics in Mycology, for information only, Paper 4.A.(a). (ii) (pages 14-34)
     - (b) Department of Computer Science
       - (i) Proposal to amend course – COMP Concentration in Artificial Intelligence, Paper 4.A.(b). (i) (pages 35-41)
       - (ii) Proposal to amend course – COMP1001, COMP1003, 4.A.(b). (ii) (pages 42-53)
       - (iii) Proposal to amend course – Admission to Honours Program, 4.A.(b). (iii) (pages 54-63)
       - (iv) Proposal to amend course – Minor in computer Science, 4.A.(b). (iv) (pages 64-71)
       - (v) New Special Topics Course Proposal – COMP 4802 Explainable Machine Learning, for information only, 4.A.(b). (v) (pages 72-83)
       - (vi) Proposal to amend Computer Science and Geography Joint Honours, 4.A.(b). (vi) (pages 84-91)
       - (vii) Proposal to amend Computer Science and Geography Joint Major, 4.A.(b). (vii) (pages 92-100)
     - (c) Department of Earth Science

(i) Proposal to amend course - EASC 3905: Field Methods in Structural Geology and Stratigraphy, 4.A.(c). (i) (pages 101-108)

(ii) New program proposal - Minor in Geophysics, 4.A.(c). (ii) (pages 109-116)

(d) Department of Mathematics and Statistics,

(i) Proposal to amend- STAT 2500 Statistical Foundations for Data Analytics and STAT 2550 Statistics for Science Students, 4.A.(d). (i) (pages 117-137)

(e) Department of Physics and Physical Oceanography

(i) Proposal to amend supplementary exam regulations - PHYS 3000 Physics of Device Materials, 4.A.(e). (i) (pages 138-150)

(ii) New course proposal - PHYS 3055 Introduction to Health Physics, 4.A.(e). (ii) (pages 151-190)

(iii) New course proposal - PHYS 399W Physics Co-operative Internship, 4.A.(e). (iii) (pages 191-210)

B. Graduate Studies Committee:

a) Department of Mathematics and Statistics

(i) Request for Approval of a Special Topics Course, MATH 6114 Scientific Machine Learning as a special topics course, approve by the Faculty of Science Graduate Studies Committee and brought to Faculty Council for information only, 4.B.(a). (i) (pages 212-214)

(ii) Request for Approval of Graduate Course, STAT 6450 Reinforcement Learning, 4.B.(a). (ii) (pages 215-218)

(iii) Request for Approval of Graduate Course, STAT 6486 Neural Networks and Deep Learning, 4.B.(a). (iii) (pages 218-222)

(iv) Request for Approval of Graduate Course, STAT 6502 Applied Stochastic Processes, 4.B.(a). (iv) (pages 223-226)

(v) Request for Approval of Graduate Course, STAT6504 Biostatistics, 4.B.(a). (v) (pages 227-229)

(vi) Request for Approval of Graduate Course, STAT 6511 Bayesian Data Analysis, 4.B.(a). (vi) (pages 230-232)

(vii) Request for Approval of Graduate Course, STAT 6541 Statistics of Financial Markets 4.B.(a). (vii) (pages 233-236)

(viii) Course list calendar changes, 4.B.(a). (vii) (pages 237-240)

(ix) Motion to reduce the courses in the MSc Statistics, 4.B.(a). (ix) (pages 241)

b) Department of Physics and Physical Oceanography, Request for Approval of a Special Topics Graduate Course; PHYS 6914 Graduate Introduction to Astrophysics II: Galaxies & Cosmology, approved by the Faculty of Science Graduate Studies Committee and brought to Faculty Council for information only, 4.B.(b). (i) (pages 242-245)

C. Library Committee: no business

5. Report of the Dean
6. Question Period
7. Adjournment

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FACULTY OF SCIENCE
FACULTY COUNCIL OF SCIENCE
Minutes of Meeting of November 19, 2025

A meeting of the Faculty Council of the Faculty of Science was held on Wednesday, November 19, 2025, at 1:00 p.m. using a hybrid model of WebEx and in-person (CSF-1302).

FSC 3127 **Present**

Biology
A. Chaulk, H. Marshall, M. Rise

Human Biosciences
R. Bertolo, M. Berry, J. Brunton, S. Harding, S. Mayengbam, A. Todd

Chemistry
C. Bottaro, H. Grover, J. Stockmann

Computer Science
S. Bungay, D. Churchill, A. Fiech, J. Henderson, C. Hyde, A, Malcolm

Earth Sciences
G. Dunning

Mathematics & Statistics
J. Alam, I. Booth, D. Dyer, R. Haynes, M. Merkli, K. Nirmalkanna, D. Pike, T. Sheel, T. Stuckless, S. Sullivan

Ocean Sciences
P. Gagnon

Physics & Physical Oceanography
D. Coombs, S. Curnoe, I. Saika-Voivod

Psychology
S. Blandford, D. Hallett, K. Hourihan, C. Thorpe, D. Wilson

Dean of Science Office
J. Blundell, J. Bowering, J. Ceha, M. Fitzpatrick, S. Garasym, J. Gauld, C. Hussey, G. Jackson, J. Kavanagh, T. Mackenzie, N. Squires

Representatives from other Faculties
K. Chu (Economics)

Student Representatives
E. Chirinos, E. Gramm, A. Hammond, M. Kocela, K. Parsons

FSC 3135 Approval of the Agenda

Moved: Approved. (*Bungay, Berry*) **Carried**

Correction: An error was found in item 3.B.a: EASC 6901 should read EASC 6907.

Moved: Minutes of the meeting of October 15, 2025, be adopted. (*Sullivan, Berry*) **Carried.**

Note: A correction was made to the attendance: remove F. Kerton from Biochemistry.

FSC 3136 Business Arising: No Business

FSC 3137 Correspondence: No Report

FSC 3138 Reports of Standing Committees:

A. Undergraduate Studies Committee:

Presented by Shannon Sullivan, Chair of the Undergraduate Studies Committee:

a) Department of Biology, proposal to amend BIOL 2250, Principles of Genetics,

(*Sullivan, Chaulk*) **Carried**.

b) Department of Biology, proposal to regularize special topics course BIOL 4920 to BIOL 3532 Cell and Molecular Biology of Cancer, (Minor changes to be made, department will submit these changes to the Dean of Science office.)

(*Sullivan, Marshall*) **Carried**.

c) Departments of Earth Sciences and Geography, proposal to Cross-list GEOG 4190 Coastal Geomorphology and EASC 4710 Coastal Geomorphology

(*Sullivan, Marshall*) **Carried**.

d) Department of Physics and Physical Oceanography, proposal to amend PHYS 3550 Electric Circuits

(*Sullivan, Marshall*) **Carried**.

e) Department of Psychology, proposal to amend program regulations, new course proposals, amend PSYC course having PRs revised and deleted course proposals

(*Sullivan, Thorpe*) **Carried**.

B. Graduate Studies Committee:

Presented by Adrian Fiech, Chair of the Graduate Studies Committee:

a. Department of Earth Sciences, Request for Approval of a Graduate Course; EASC 6179 Advanced Digital Signal Processing

(*Fiech, Malcolm)* **Carried**.

b. Department of Earth, Request for Approval of a Graduate Course; EASC 6907 An introduction to Computer Earth Modelling

(*Fiech, Malcolm)* **Carried**.

c. Masters of Data Science, Proposed Calendar Changes

(*Fiech, Blundell)* **Carried**.

d. Department of Ocean Sciences, Calendar Changes, Deletion of the Interdisciplinary program in Aquaculture; New degree programs (PhD and MSc); Supervisory committee composition, (Minor changes to be made, department will submit these changes to the Dean of Science office.)

(*Fiech, Gagnon)* **Carried**.

C. Library Committee: No business

FSC 3139 Dean's Report

A sincere thank-you to President Janet Morrison for taking the time to introduce herself to our faculty and for thoughtfully addressing our questions during the special Faculty Council meeting on November 5, 2025.

Departmental Highlights

Biology

Dr. Sadri Znaidi has been awarded a Janeway Foundation Research Award to study microbial colonization in children with cystic fibrosis (CF), in collaboration with clinicians from the Janeway Children's Health and Rehabilitation Centre.
Dr. Amy Hurford's abstract "Importation models for travel-related SARS-CoV-2 cases reported in Newfoundland and Labrador during the COVID-19 pandemic" has been accepted for publication in Royal Society Open Science and will be released in the coming weeks.
Kathryn Cole received two School of Graduate Studies awards: the TD Graduate Bursary for Environmental Study and the F.A. Aldrich Graduate Award.
Josh Mack (MSc Biology) received the TD Environmental Bursary.
Dr. Amy Hurford's PhD student Abdou Fofana was awarded an AI4PH (Artificial Intelligence for Public Health) scholarship.

Dr. Jeanette Wheeler's PhD student Marcela Castaño Rodriguez was awarded a Research Mobilization Fellowship through Memorial's Research Innovation Office—one of only 17 awarded internationally this year from more than 120 applicants.

Chemistry

Lindsay Cahill was elected to the Royal Society of Canada, College of New Scholars, Artists and Scientists for 2025.

The Chemistry Graduate Society held its very first Annual Chemistry Research Symposium on October 24th, there was a full day of talks and posters. Congratulations to the organizers and participants.

Computer Science

Computer Science had three teams of undergraduate students compete in the International Collegiate Programming Contest (North American Northeast Regional Contest) on Nov 9, and one of their teams placed first among Atlantic Canadian universities.

Earth Sciences

Earth Sciences stratigraphers and geophysicists are involved in several major projects with Engineering in the field of carbon sequestration. These projects involve identifying suitable now- depleted reservoirs in which to inject liquid CO2 and test those reservoirs for their ability to hold CO2 long term without leakage.

Geophysicists in Earth Sciences with collaborators from UQAM and Yale University have deployed 20 solar-powered seismometers to cover the entire island of Newfoundland to measure natural earthquake seismic waves for the next 2 years. Each seismometer across rural Newfoundland has been adopted by a private citizen 'guardian' watching over it. The goal is to use this seismic data to develop a detailed deep crustal map of the island to identify important through-going faults, all to better understand the deep structure of the island.

Human Biosciences

Name change is official. They are HuBi
Kyle Warren (undergrad in Katie Wilson's group) was featured in the Picture Us 2025 Gallery.

Mathematics and Statistics

Mathematics and Statistics team came in second place at the Science Atlantic Math Competition this year. The top 3 teams were:
1st Place: Irina Xie and James Peterson (UNB)
2nd Place: Gavin Hull and Eric Goulding (MUN)
3rd Place: Leah Wilson and Phyllis O'Neill (SMU)
This is the 10th consecutive competition in which they placed first or second, and the 15th consecutive in which they placed in the top three.

Ocean Sciences

The Department of Ocean Sciences' graduate student society (OSGSA) proudly organized and hosted its first Annual Ocean Sciences Conference on 14 November 2025. The event, originally scheduled to be hosted at the Ocean Science Centre, was instead held on main campus to accommodate a larger than

expected audience! It was a great success, and the students and department are looking forward to hosting the 2nd edition in 2026.

Almost all DOS faculty have successfully completed field seasons and/or engaged in productive research collaborations with Indigenous peoples and communities across Newfoundland and Labrador or abroad.

Physics and Physical Oceanography

Teaching: Driven by student interest in job opportunities that were raised through the departmental review and the Academic Unit Planning process that was completed last year, the department have developed a co-op stream to the department's program offerings. This program option will provide physics students with a clear career pathway.

Research: The department brought in $500k in new research funding throughout the year; notably all three new faculty members received NSERC funding and, Dr. LeBlanc received a large NRC award in support of a quantum computing initiative.

Service: The department hosted the Atlantic Undergraduate Physics conference and, building on the strength of that regional undergraduate conference, they submitted a bid and were successful in being chosen as the site for the 2027 Canadian Association of Physics conference.

Psychology

On Halloween, PsyCentral organized a Trick or Treat event where students dressed up and collected snacks for Psyc Snacks. This is an initiative that we started last year in response to findings from "Food for Thought: Mental Health, Psychological Well-Being, Social Engagement and Campus Service Utilization of Students Experiencing Food Insecurity at a Large Atlantic Canadian University" by Dr. Hesson and Dr. Fowler. Their research revealed a concerning increase in food insecurity at the university — rising from 39.9% to 46.6% since 2015/2016. PsycSnacks was created to provide students with easy access to food in a welcoming, stigma-free environment. Anyone — students, faculty, and staff — can help themselves to snacks, heat up their lunch, or grab a tea or coffee. (And if anyone at Faculty Council would like to donate granola bars, fruit cups, yogurt, cheese sticks, etc., we would welcome any donations. Just drop them off to SN3071 or SN2065.)

FSC 3140 Questions

There was an inquiry regarding updates to the baseline budget and the budget for TAs. The Dean noted that, under the new budget model, changes are anticipated. Given the ongoing budget situation, we are continuing to evaluate various budget models and scenarios. We will keep you informed as more information becomes available.

FSC 3141 Adjournment:

Meeting adjourned at 1:54 p.m.

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- **X** New course(s): *BIOL 4918 – Special Topics: Microbiology and Human Society*
- ☐ Amended or deleted course(s):
- ☐ New program(s):
- ☐ Amended or deleted program(s):
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Courses

COURSE NUMBER AND TITLE

BIOL 4918 – Special Topics: Microbiology and Human Society

ABBREVIATED COURSE TITLE

Sp Top: Microbiol & Human Soc

RATIONALE

The proposed special topics course, developed by Dr. Kapil Tahlan, offers a new avenue of undergraduate instruction for the *Biology Department*. Among Biology majors, the *Biology for Health Professions* concentration is the most heavily subscribed, yet students currently have limited course options, all of which include labs. This course, to be offered in 2025–26, will be available to students in this and other concentrations, providing additional scheduling flexibility. The intent is to assess whether this or similar courses can be offered in the future to meet specific program needs.

CALENDAR CHANGES

No calendar change associated with a special topics course.

CALENDAR ENTRY AFTER CHANGES

No calendar change associated with a special topics course.

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS SOUGHT

Academic Unit	Email Address	Response Received?
St. John's Campus		
Humanities and Social Sciences	hss@mun.ca	
Business Administration	eoldford@mun.ca	
Education	efurey@mun.ca	
Engineering and Applied Science	engrconsult@mun.ca	
Human Kinetics and Recreation	hkrdean@mun.ca	
Medicine	deanofmedicine@med.mun.ca	
Music	musicdean@mun.ca	
Nursing	deanNurse@mun.ca	
Pharmacy	pharminfo@mun.ca	
Science	deansci@mun.ca	
Social Work	adeanugradswk@mun.ca	
Library	univlib@mun.ca	
Grenfell Campus		
Arts and Social Science	kjacobse@grenfell.mun.ca	
Science and the Environment	ssedean@grenfell.mun.ca	
Fine Arts	pride@grenfell.mun.ca	
Marine Institute		
	miugconsultations@mi.mun.ca	
Labrador Institute		
Arctic and Subarctic Studies	ashlee.cunsolo@mun.ca	

ENTER FEEDBACK HERE

LIBRARY REPORT

ENTER LIBRARY REPORT HERE

RESOURCE IMPLICATIONS

The proposed special topics course will allow for greater flexibility in assigning teaching resources in our department without requiring any additional resources. It may also present opportunities for faculty in related departments (e.g., Medicine, Biochemistry) to share teaching out this course, which will likely be of interest to students in various programs.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

BIOLXXXX: Special Topics: Microbiology and Human Society

Course Description: Explores the impact of microorganisms on human/veterinary health, society, and the environment.

Course Expectations: Through active engagement in lecture, via quizzes, discussions, presentations and examinations, students will gain broader knowledge of the impacts of microbiology on human society.

Textbook (recommended): There is no official textbook for this course; only recommended readings are provided. Some topics are covered in *Brock Biology of Microorganisms* and *Microbiology: An Evolving Science*, which are used in BIOL3050 (Introduction to Microbiology) and BIOL4404 (Microbial Physiology), respectively. However, this course will explore these topics in much greater depth. Most of the material will come from primary research papers and review articles. Key references will be cited on the lecture slides, and students are expected to access these articles through the library to deepen their understanding of the material.

Prerequisites: BIOL3050

Professor: Dr. Kapil Tahlan (ktahlan@mun.ca)

Location: XXX (lecture: TR: 10:30 to 11:45 AM)

Subject Areas:

1. Getting Started: What Is Applied Microbiology?
2. How Microbes Drive Fermentation and Useful Products
3. Finding and Improving Beneficial Microorganisms
4. Microbes as a Source of New Medicines
5. Antibiotics and the Challenge of Resistance
6. Microbes That Make Proteins and Enzymes
7. Vaccines: From Discovery to Technology
8. Emerging Infectious Diseases Around the World
9. New Ways to Fight Microbial Diseases
10. Microbiology in the Genomic Era
11. Microbiomes in Nature, Health, and Medicine
12. Synthetic and Applied Microbiology: What's Next?
13. Using Microbes in Agriculture and the Environment
14. Microbiology, Patents, and Regulations

[In the event of disruption, due to illness, adverse weather, or otherwise, steps to ensure instructional continuity will be communicated via the Brightspace course pages.]

Evaluation:

Midterm Test (30%):

Discussions/Participation and Assignments (10%):

Poster Presentation (20%):

Final Examination (40%): During final examination period

[Please note that dates are subject to change.]

Office Hours:

Tuesday 2:00-4:00 PM, Thursday 2:00-4:00 PM by appointment (ktahlan@mun.ca)

Lands acknowledgement: *We acknowledge that the lands on which Memorial University's campuses are situated are in the traditional territories of diverse Indigenous groups, and we acknowledge with respect the diverse histories and cultures of the Beothuk, Mi'kmaq, Innu, and Inuit of these territories. Importantly, we pledge to support Indigenous peoples, now and in the future.*

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- **X** New course(s): BIOL 49**19** – Special Topics in Mycology
- ☐ Amended or deleted course(s):
- ☐ New program(s):
- ☐ Amended or deleted program(s):
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Courses

COURSE NUMBER AND TITLE
BIOL 49**19** Special Topics in Mycology

introduces students to the biology of fungi with an emphasis on yeast model systems and human pathogenic fungi. Topics include fungal taxonomy/evolution, yeast genetics and metabolism, the mechanisms of fungal pathogenicity and antifungal drug resistance. The laboratory component provides hands-on experience with fungal molecular identification, yeast isolation and culture, yeast phenotypic assays and antifungal susceptibility testing.

PR: BIOL 2060, BIOL 3050
LH: 3

RATIONALE
The Department of Biology offered a Mycology course in the past. Following the retirement of the original course instructor, the course remained inactive and was eventually removed from our course listings. The proposed course will reintroduce topics in Mycology to the Biology curriculum, to be taught by Biology's newest faculty member – Dr. Sadri Znaidi, whose research program focuses on fungal biology and pathogenic fungi.

This course fills a clear gap in the undergraduate curriculum, by providing students with essential training in fungal biology, both from an ecological and biomedical perspective. Fungi are highly relevant to multiple disciplines, including biotechnology, ecology, agriculture, marine biology, medicine and public health. Students will benefit from exposure to experimental techniques in fungal species identification, yeast biology and antifungal drug resistance mechanisms; all of which complement their existing training in microbiology, genetics and cell biology.

The course also strengthens departmental offerings by aligning with existing expertise in microbiology and molecular biology, while introducing a unique focus on yeast model systems (*e.g*. *Saccharomyces cerevisiae*) and human pathogenic fungi (*e.g*. *Candida albicans*). Communication of this course offering will occur through Brightspace and program planning resources.

Pending approval, the course is intended to be offered beginning in Winter 2026, with the long-term goal of regularizing it after the first 1–2 offerings.

ABBREVIATED COURSE TITLE
Sp Top Mycology

ANTICIPATED EFFECTIVE DATE
Winter semester (Jan – April) 2026

CALENDAR CHANGES
No calendar change associated with a special topics course.

CALENDAR ENTRY AFTER CHANGES
No calendar change associated with a special topics course.

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Appendix Page

CONSULTATIONS SOUGHT

Academic Unit	Email Address
Humanities and Social Sciences	assocdeancphss@mun.ca
Business Administration	busihelp@mun.ca
Education	educdean@mun.ca
Engineering and Applied Science	engrconsult@mun.ca
Human Kinetics and Recreation	hkrdean@mun.ca
Medicine	DeanofMedicine@mun.ca
Music	kbulmer@mun.ca
Nursing	deanNurse@mun.ca
Pharmacy	pharminfo@mun.ca
Science	deansci@mun.ca
Social Work	adeanugradswk@mun.ca
Library	univlib@mun.ca
Grenfell Campus	
Arts and Social Science	gcsass@mun.ca
Science and the Environment	gcsse@mun.ca
Fine Arts	gcsofa@mun.ca
Marine Institute	
	miugconsultations@mi.mun.ca
Labrador Institute	
Arctic and Subarctic Studies	deanofsass@mun.ca

LIBRARY REPORT

[If any of the attached Calendar changes require a Library Report, the date of its receipt should be indicated here; otherwise, this section can be deleted in its entirety. The text of the request for feedback sent to the Library, and the text of the response from the Library, should be attached to this Appendix Page. For a list of Calendar changes which require a Library Report, see the Instructions.]

RESOURCE IMPLICATIONS

This course will utilize instructional resources of our newest faculty member. This assignment, in combination with assignments among our current course offerings, will make up the total teaching load for this ASM.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

Potential instructors: Dr. Sadri Znaidi

Biology 4919 Special Topics in Mycology; Winter 2026

Dr. Sadri Znaidi

Lecture Room: TBD

Laboratory: CSF4306 and/or CSF4320

Lecture: Monday, Wednesday and Friday, 12:00 – 12:50 pm.

The course will be delivered in-person. PDF lecture outlines will be posted on Brightspace (under ***Lecture course content***) for printing and note-taking. PowerPoint files will not be shared. *Students are not permitted to use phones or cameras in the classroom to take pictures of presentations, etc. without the instructor's prior consent.* Assigned readings (*e.g.* review/research articles, editorials or commentaries) will be posted on Brightspace to complement the lectures. In addition, a few assigned readings will be from books placed on 2-hour reserve in the library (see below, **Textbook**).

Laboratory: Friday, 2:00 - 5:00 pm.

Labs start on Friday January 9 and attendance during laboratory sessions is mandatory. The detailed schedule for the laboratory and other relevant information can be found on Brightspace (under ***Lab course content***). Students will require a clean, knee-length laboratory coat, a lock (for lockers) and will adhere to all other requirements based on the circumstances at the time. Please also review and familiarize yourself with University Regulation 6.12.4 on plagiarism as described in the MUN Calendar. If a student misses a lab due to illness or other acceptable cause (as described in the University Calendar), they must contact the instructor (Dr. Znaidi) by e-mail within 48 hours of the missed lab in order to receive credit for the corresponding lab and/or exercise. *Due to the nature of mycology experiments, some follow-up work outside the scheduled lab time may be required (e.g. checking cultures, transferring samples).*

Web page: Information and communication about the course is provided on Brightspace; go to https://online.mun.ca/d2l/home and you can then access to Biology 4919 (BIOL 4919).

Prerequisites for Biology 4919: BIOL 2060 (Principles of Cell Biology) and BIOL 3050 (Introduction to Microbiology).

Instructor: Dr. Sadri Znaidi, Assistant Professor, Department of Biology, MUN. You can contact me via Brightspace internal email (preferred) or at sznaidi@mun.ca. Meetings can be arranged by e-mail request. *Every effort will be made to respond to e-mails within 24h, except for evenings, weekends and holidays*. My office is located on the 4th floor, at the Core Science Facility, room CSF4343.

Textbook: There is no single required textbook for this course. Assigned readings will be from several sources including the books below and the primary literature (*e.g.* open access articles). Less than 10% of each book will be used as assigned reading (*e.g.* on Brightspace or on 2-hour reserve in the library).

- **Heitman**, J. *et al*. "**The Fungal Kingdom**" Washington, DC : ASM Press; **2018** (Queen Elizabeth II Library Stacks QK603 .F96 2018).
- **Kavanagh**, K. "**Fungi: biology and applications**" Hoboken, NJ : John Wiley & Sons, Inc.; **2018** (Queen Elizabeth II Library Stacks TP248.27.F86 F875 201).
- **Sullivan** D.J. & **Moran**, G. "**Human pathogenic fungi: molecular biology and pathogenic mechanisms**" Norfolk, UK : Caister Academic Press; **2014** (Queen Elizabeth II Library Stacks QR245 .H86 2014).

Biology 4919 course outline, schedule and method of evaluation

Course outline: This course introduces senior undergraduates to the biology of fungi with a strong emphasis on yeast model systems (*e.g.*, *Saccharomyces cerevisiae*) and human pathogenic fungi (*e.g.*, *Candida albicans*). Topics span fungal taxonomy/evolution, yeast life cycle/morphology, yeast genetics/metabolism and fungal pathogenicity mechanisms, with a focus on *Candida albicans* as a model organism. Through inquiry-based laboratory exercises, students will gain practical experience in fungal species identification, yeast developmental biology and the use of yeast as a model for antifungal susceptibility testing and for exploring the molecular mechanisms of antifungal drug resistance.

By the end of this course, students will be able to:

- Describe the diversity, taxonomy and evolutionary significance of fungi.
- Explain yeast genetics, metabolism, morphogenesis and cell biology.

- Discuss examples of pathogenic fungi, their pathogenicity mechanisms and antifungal treatment strategies.
- Apply laboratory techniques for fungal species identification, yeast culture and yeast phenotypic analysis.
- Critically analyze and communicate primary literature on fungal biology/pathogenicity.

Lecture course schedule: Please note that most research/review articles, commentaries or editorials that are included as assigned reading are **Open Access** papers. You can access these papers by querying PubMed with keywords (*e.g*. author name or article title/year) or from the journal homepage. The website for PubMed is: https://pubmed.ncbi.nlm.nih.gov/.

During each week of the semester, we will cover topics from the assigned readings (posted on Brightspace). Topics to be covered include:

Week 1 (Jan 7 & 9):	Introduction to fungi: definition, taxonomy (main phyla), evolutionary aspects. **Laboratories will start on Friday, January 9**.
Assigned reading:	Will be placed on Brightspace and/or book on 2-hour reserve in the library.
Week 2 (Jan 12–16):	Fungal diversity, morphological features and life cycles (with examples from each phylum).
Assigned reading	**On Brightspace and/or book on 2-hour reserve in the library.**
Week 3 (Jan 19–23):	Yeasts: definition, diversity and cellular structure/cell wall.
Assigned reading	**On Brightspace and/or book on 2-hour reserve in the library.**
Week 4 (Jan 26–30):	Yeast genetics: first sequenced eukaryotic genome, genome organization and genetic tools.

Assigned reading	**On Brightspace and/or book on 2-hour reserve in the library.**
Week 5 (Feb 2–6):	Yeast metabolism: nutrients, carbon metabolism, fermentation.
Assigned reading	**On Brightspace and/or book on 2-hour reserve in the library.**
Week 6 (Feb 9–13):	Yeast cell cycle, meiosis (sporulation), morphogenesis (filamentous growth).
Assigned reading	**On Brightspace and/or book on 2-hour reserve in the library.**

Feb 16: Midterm exam 1 (in class)

Week 7 (Feb 16–20):	Pathogenic fungi - overview of major pathogens, with a focus on fungi infecting humans (*Mucor*, *Aspergillus*, *Cryptococcus*, *Candida*).
Assigned reading	**On Brightspace and/or book on 2-hour reserve in the library.**

Week 8 (Feb 23–27): Winter semester break (no classes)

Week 9 (Mar 2–6):	*Candida albicans*: structure, morphogenesis and life cycle.
Assigned reading	**Open access papers will be posted on Brightspace.**
Week 10 (Mar 9–13):	*Candida* infections and treatments; overview of antifungal drugs.
Assigned reading	**Open access papers will be posted on Brightspace.**
Week 11 (Mar 16–20):	*Candida albicans* genome and annotation.
Assigned reading	**Open access papers will be posted on Brightspace.**

Mar 23: Midterm exam 2 (in class)

Week 12 (Mar 23–27): *Candida albicans* molecular genetics: mutant creation, tools and applications.

Assigned reading **Open access papers will be posted on Brightspace.**

Week 13 (Mar 30–Apr 3): Antifungal drug resistance: the molecular mechanisms.

Assigned reading **Open access papers will be posted on Brightspace.**

Week 14 (Apr 6–10): Emerging human pathogenic yeasts: *Candida (Candidozyma) auris*, including evolution, infections and therapeutic challenges.

Assigned reading **Open access papers will be posted on Brightspace.**

Final exam: Date, time, and location to be announced.

Laboratory course schedule: Labs will run Fridays (2:00 pm to 5:00 pm). Activities are organized into 5 **lab modules** (see Table 1) that will include topics such as fungal species identification, yeast culture (isolation from sourdough starter, growth kinetics), microscopy, phenotypic assays, antifungal testing and research article discussion and presentations. A reduced set of wet labs will be supplemented by data analysis/interpretation and literature-based discussion sessions. Details will be provided in the **Lab Manual** on Brightspace (under ***Lab course content***).

Table 1. Lab modules, content and key dates/deadlines.

Lab module #	Lab module title	Start-end dates	Lab report due or exam date
1	Fungal species identification using ITS sequencing.	Jan 9 – Feb 13	Feb 20
2	Introduction to yeast culture technique: Isolation of yeast from sourdough starter.	Feb 13 – Mar 13	Mar 20
3	Yeast phenotypic analysis 1: Yeast filamentous growth and agar invasion assays.	Mar 13 – Apr 3	Apr 10
4	Yeast phenotypic analysis 2: Antifungal susceptibility testing	Apr 3 – Apr 17	Apr 24

	and the genetic basis of antifungal drug resistance.		
5	Research article presentations and lab exam.	Apr 17 - Apr 24	Apr 24

Jan 9 (2-5 pm): Laboratory course introduction, lab module overview of content and directives on lab book maintenance, writing lab reports. Designation of student pairs and preparation of material for Jan 16 lab session, where student pairs will be assigned random plates containing one unknown fungal species to identify through ITS sequencing.

Jan 16 (2-5 pm): Extraction of genomic DNA from fungal species growing on agar medium (stop at the step of DNA precipitation and resuspension in TE and put tubes at 4ºC – stable for months).

Jan 23 (2-5 pm): PCR amplification of ITS regions (PCR reaction mix and PCR reaction).

Jan 30 (2-5 pm) PCR products will be electrophoretically separated on agarose gel for detection of ITS bands, followed by PCR cleanup. **During gel migration, student groups will be formed (groups of 4) and research articles will be assigned for a session on presentation and discussion (exam, Apr 24).** Students should then identify their tubes and primers which will be sent for Sanger sequencing (results are typically available within 2 weeks, consequently Feb 6/Feb 13 schedule will depend on Sanger sequencing data availability)

Feb 6 (2-5 pm): *Schedule subject to sequencing turnaround time.* Students will get their sequencing results and analyze them using BioEdit and BLAST analyses (approx. ~2 hours). **There will be 1 hour dedicated to prepare for Lab Module #2: Inoculate sourdough starter on YPD plate for isolating yeast cultures.**

Feb 13 (2-5 pm): 30-60 min discussion of sequencing results and 1st lab report to write (see lab report description below, the instructor will ask students to put species they discovered on fungal phylogenetic tree in their reports). **1st lab report for Module 1 is due Feb 20.** Start Lab module #2: Inoculation of yeast colonies obtained from sourdough starter in YPD liquid medium for growth.

Feb 20 (2-5 pm): Microscopic examination of yeast/bacteria from sourdough starter (methylene blue staining and observation of yeast or bacteria under a light microscope). Purification of yeast colonies and freezing in -80°C freezer for future culture kinetics and spot assay (compare sourdough starter yeast growth with growth of yeast they identified in Module #1).

Mar 6 (2-5 pm): Yeast growth assay using **spot assay** (qualitative) and **liquid growth assay** (quantitative) in 96-well plate format then generate growth curves and determine doubling times. Compare growth of yeast from ITS sequencing to yeast isolated from sourdough starter (lab coordinator will help in collecting plates, taking pictures for students and save their microplate reader values – they will be sent to them via Brightspace for analysis).

Mar 13 (2-5 pm): 30-60 min discussion of yeast culture results and 2nd lab report to write. **2nd lab report for Module #2 due Mar 20.** Start Lab Modules #3: students will be provided with *S. cerevisiae* strain Σ1278b for cultivation and preparation of SLAD growth medium for filamentation/invasion assay.

Mar 20 (2-5 pm): Students will perform filamentation/invasion assay with strain Σ1278b (spot cells on specific medium/streak for singles on SLAD medium). They will also prepare Module #4 lab session by preparing strains and media for antifungal susceptibility testing of *S. cerevisiae* mutant strain *PDR1*^{F479I} and *PDR3*^{T949A} together with the parental wild-type strain.

Week 8 (Feb 23–27): Winter semester break (no lab)

Apr 3 (2-5 pm): 30-60 min discussion of filamentation/invasion assay results and 3rd lab report to write, with **3rd lab report due Apr 10**. Students will then perform agar (solid) microdilution assays (*i.e.* spot assay) of strain *PDR1*^{F479I} *PDR3*^{T949A} with the equivalent wild-type strain on medium containing azole drug clotrimazole (which can be found in over-the-counter antifungal drugs) and Rhodamine 6G (qualitative colorimetric assay reflecting efflux pump activity).

Apr 10 (2-5 pm): Students will perform their liquid microdilution assay (drug dilutions, strain dilution and incubation) which will be extended to Apr 17 lab session for measuring optical density using a multiplate reader.

Apr 17 (2-5 pm): This lab session will be dedicated to acquisition of liquid microdilution assay data with a multiplate reader and meeting for 30-60 min for data discussion/interpretation and preparation of 4th lab report. **4th lab report is due Apr 24**.

Apr 24 (2-5 pm): This lab session will be entirely dedicated to presentations/article discussion exam (2 hours) and lab exam (1 hour from 4-5 pm).

Biology 4919 method of evaluation: Assessment in BIOL 4919 will be based on a combination of lecture-based exams and laboratory performance. Written exams (2 midterms and final) may include a mix of multiple choice, short answer, and problem-solving/essay questions. The laboratory component will be evaluated through written lab reports, a lab exam and participation in research article discussions and presentations. Students are expected to work in groups for some experimental activities, but lab reports and the lab exam will be assessed individually unless otherwise specified. The research article discussion and presentation component is designed to help students engage directly with primary literature in mycology. By working in small groups, students will develop critical skills in:

- Reading and interpreting experimental research.
- Summarizing and communicating complex scientific ideas clearly.
- Critically evaluating strengths, limitations and implications of research findings.
- Practicing oral presentation skills and teamwork in a scientific context.

The research article discussion and presentation will deepen understanding of course content and also prepare students for future graduate studies or professional opportunities where effective communication of scientific ideas is essential.

Mid Term Exam 1: 15%
Mid Term Exam 2: 15%
Final Exam: 30%
Laboratory Component: 40%

- **Lab reports: 20%**
- **Lab exam: 10%**
- **Research article discussion & presentations: 10%**

Lab Reports: Lab reports will be a maximum of 5 pages (excluding references and figures) and must follow the structure below:

Introduction (0.5 page): Clearly state the objective of the lab module and provide brief background context.

Materials and Methods (~2 pages): Describe the experimental procedures in your own words, noting any challenges encountered during the execution of the experiments.

Results (~2 pages): Present your data clearly and concisely, supported by a maximum of two key figures (*e.g.*, graphs, tables, or images). Provide written descriptions of your results in full sentences rather than bullet points.

Discussion (~1.5 pages): Interpret and analyze your results, linking them to the original objectives and relevant literature where appropriate. Discuss potential limitations, sources of error, and future directions.

Formatting guidelines: Arial, 11-point font, double-spaced, 2.5 cm margins. References (maximum of 10) should follow a standard citation style (see below) and do not count toward the page limit.

For citation styles, keep in mind these general rules:

- When listing authors, spell out the last name followed by first and middle names. A comma should separate the last name and initials.
- List out up to 3 authors. At 4 or more, you can use the first three names followed by *et al*.
- Include publication year between parentheses, before the reference title.
- For titles, capitalize only the first word and proper nouns.
- Anytime you are citing an online source you must add the [accessed date] and URL.

Books	Maslin, M. (2004) Global warming: a very short introduction. Oxford: Oxford University Press. 4th Edition.
Articles	Olabi, A. G., Maizak, D., Wilberforce, T. (2020) Review of the regulations and techniques to eliminate toxic emissions from diesel engine cars. Sci Total Environ. 748:1-18.
Websites	Available from: https://www.climate.gov/news-features/blogs/beyond-data/2010-2019-landmark-decade-us-billion-dollar-weather-and-climate. Accessed on [date].

Evaluation criteria (per report):

Component	Description	Weight
Scientific content and accuracy.	Correctness, completeness and depth of experimental science.	40%
Organization and clarity.	Report structure, flow, grammar, readability.	20%
Data presentation and analysis.	Quality of figures/tables, description and analysis.	20%
Interpretation and critical thinking.	Insightfulness, connection to theory and literature.	20%
Total		100%

Research article discussion & presentations: During the January 30 lab session, groups of four students will be formed. Each group will be assigned an Open Access research article in the field of mycology (distributed by the instructor). Each group will prepare a 20-minute PowerPoint presentation (followed by ~10 minutes of discussion/questions). Presentations should include:

- A clear outline of the research problem/question and its broader context.
- A summary of the major findings and conclusions.
- An overview of key mycological methods used in the study.

Each student will be responsible for presenting ~5 minutes (about 5 slides), ensuring equal contribution across the group. Presentations should consist of ~20 slides total (5 slides per presenter). The presentation component will account for 10% of the final course grade. Marks will be shared equally among the four group members.

Research article presentations: Evaluation criteria (10% of final grade): Each group presentation will be evaluated according to the following criteria:

Criteria	Excellent (100–90%)	Good (89–75%)	Satisfactory (74–60%)	Needs improvement (<60%)
Content and accuracy (40%)	Information is accurate, complete and demonstrates clear understanding of the article's research question, findings and significance.	Minor gaps or inaccuracies, but good overall understanding.	Some inaccuracies, limited explanation of findings or significance.	Major inaccuracies and/or poor grasp of article.

Criteria	Excellent (100–90%)	Good (89–75%)	Satisfactory (74–60%)	Needs improvement (<60%)
Organization and clarity (20%)	Presentation is logically structured, clear and easy to follow. Seamless flow between presenters.	Generally clear; minor lapses in organization or flow.	Somewhat disorganized and/or transitions between presenters uneven.	Difficult to follow and lacks logical organization.
Critical analysis (20%)	Goes beyond summary, discusses strengths, limitations and implications of the research.	Some critical analysis, but mostly descriptive.	Minimal critical analysis, mostly restates article content.	No critical analysis; only descriptive.
Delivery and engagement (10%)	Confident, clear delivery. All group members contribute equally, engages audience well.	Clear delivery, most members contribute equally.	Uneven contributions, delivery somewhat unclear.	Poor delivery; little participation from group members.
Visual quality (slides) (10%)	Slides are clear, professional, well-designed with appropriate figures/graphics.	Mostly clear slides with minor design issues.	Text-heavy or unclear figures.	Slides difficult to read and/or poor design.

n.b.: Marks will be shared equally among group members unless there is evidence of unequal contribution (in which case individual adjustments may be applied).

Additional Policies: Students should be made aware of other policies relating to the course, as well as applicable university-wide policies, including:

- Memorial University of Newfoundland is committed to fostering equitable and accessible learning environments for all students. Accommodations for students with disabilities are provided in accordance with the Accommodations for Students with Disabilities Policy (www.mun.ca/policy/site/policy.php?id=239) and its related procedures. Students who feel that they may require formal academic accommodations to address barriers or challenges they are experiencing related to their learning are encouraged to contact Accessibility Services (the Blundon Centre) at the earliest opportunity to ensure any required academic accommodations are

provided in a timely manner. You can contact Accessibility Services (Blundon Centre) by e-mailing blundon@mun.ca.

- Students are expected to adhere to those principles which constitute proper academic conduct. A student has the responsibility to know which actions, as described under Academic Offences in the University Regulations, could be construed as dishonest or improper. Students found guilty of an academic offence may be subject to a number of penalties commensurate with the offence including reprimand, reduction of grade, probation, suspension or expulsion from the University. For more information regarding this policy, students should refer to the University Regulations for Academic Misconduct (Section 6.12) in the University Calendar.
- Academic supports at MUN include, but are not limited to: Memorial University Libraries, The Commons (QEII Library), The Glenn Roy Blundon Centre, The Writing Centre, Online Learning (Center for Innovation in Teaching and Learning), Information Technology Services, Academic Advising, Academic Success Centre, and specific departmental help centres.
- Student life supports at MUN include, but are not limited to: Student Wellness and Counselling Centre, Supports for Students in Distress, Chaplaincy, Sexual Harassment Office, Indigenous Student Resource Centre, Disability Information Support Centre, Internationalization Office, Sexual and Gender Advocacy Resource Centre, Students Older Than Average, Intersections – A Resource Centre for Marginalized Genders, and specific departmental societies.
- Original work, completed wholly by students is expected to be submitted in this course. The use of an artificial intelligence tool like ChatGPT is not permitted.

Consultations for BIOL proposals (BIOL 2250, 3532, 4918, and 4919) are below.

Text sent requesting consultation:

From: scicalendar <scicalendar@mun.ca>
Sent: September 29, 2025 10:47
To: Business Undergrad Help <busihelp@mun.ca>; assocdeancphss <assocdeancphss@mun.ca>; Dean of Education <educdean@mun.ca>; Engineering <engrconsult@mun.ca>; HKR Dean <hkrdean@mun.ca>; University Librarian <univlib@mun.ca>; Dean of Medicine : McKeen, Dr. Dolores <deanofmedicine@mun.ca>; Karen Bulmer <kbulmer@mun.ca>; DeanNurse <DeanNurse@mun.ca>; Pharmacy <pharminfo@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>
Subject: FW: Biology for Consultation

Good Day,

Please see attached documents for consultation and provide any feedback you may have to bioapo@mun.ca

Many thanks

. . . . . .

MELANIE FITZPATRICK | COMMITTEE SECRETARY

Faculty of Science Undergratuate Committee (FoScUgs)

Memorial University of Newfoundland

T 709 864 8253
www.mun.ca/science

Facebook facebook.com/MemorialUScience | Twitter twitter.com/MemorialUSci
Instagram instagram.com/memorialuscience

We acknowledge that the lands on which Memorial University's campuses are situated are in the traditional territories of diverse Indigenous groups, and we acknowledge with respect the diverse histories and cultures of the Beothuk, Mi'kmaq, Innu, and Inuit of this province.

Responses:

Engineering & Applied Science

Thank you for the opportunity to comment on the proposed Calendar changes:

- BIOL 2250 – Principles of Genetics;
- BIOL 35XX – Cell and Molecular Biology of Cancer;
- BIOL 4918 – Special Topics: Microbiology and Human Society; and
- BIOL 4919 - Special Topics in Mycology.

At its meeting on 2025 Oct. 15, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science found no impact on our programs.

Yours sincerely,

Dr. Glyn George, Chair

Committee on Undergraduate Studies

Faculty of Engineering and Applied Science

Memorial University of Newfoundland

St. John's NL A1B 3X5

Nursing

Good afternoon,

Dr. April Pike, Dean of the Faculty of Nursing, has reviewed your calendar change proposals. She tells me that she does not see any implications for the Faculty of Nursing.

Thank you for your time, I hope you have a great day!

Jane

Medicine

Hi,

On behalf of the Faculty of Medicine, there are no concerns.

Thanks, Danielle

DANIELLE O'KEEFE MD CCFP FCFP MSc CCPE

Vice Dean, Education and Faculty Affairs

Associate Professor of Family Medicine

Faculty of Medicine

Memorial University of Newfoundland

Faculty of Medicine Building | Room M2M311

300 Prince Philip Drive
St. John's, NL, Canada A1B 3V6
T 709 864 6289 | F 709 864 6336

www.mun.ca/medicine

Computer Science

> **From:** Mark Hatcher <mhatcher@mun.ca>
> **Sent:** Thursday, September 11, 2025 12:03 PM
> **To:** scicalendar <scicalendar@mun.ca>
> **Subject:** Re: Biology for Consultation
>
> Hi Melanie,
>
> I noted a couple of small things:
>
> BIOL2250: is the lab component "LH: 3" supposed to be completely struck out of the revised description? The rationale speaks of retaining the labs, merged with tutorials for flexibility, but the calendar change as written would remove the lab component entirely.

Regularize BIOL4920 to BIOL3xxx: The course title is "*Cell* and molecular biology of cancer", yet the first sentence of the introduction says "*cellular* and molecular biology of cancer". It's a very minor thing but were those words supposed to be consistent?

Thanks,

Mark

Mark Hatcher
Deputy Head, Undergraduate Studies

Department of Computer Science
Memorial University of Newfoundland
St John's, Canada

HSS

Thank you for these proposals. No concerns from HSS.

Beyond the Calendar change process, I wonder if it might be useful for the instructor of the new special topics course, 4918, to have conversations with colleagues with expertise in related areas in the departments of Sociology, Philosophy, perhaps the Law and Public Policy Program in Political Science.

Pat Dold

Patricia Dold (she/her)

Associate Professor, Religion and Culture

Associate Dean, Curriculum and Programs

Faculty of Humanities and Social Sciences

St. John's Campus, Memorial University

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Regulations

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- ☐ New course(s):
- ☐ Amended or deleted course(s):
- ☐ New program(s):
- X Amended or deleted program(s): Concentration in Artificial Intelligence
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

RATIONALE

This course was intended to be an optional course for the Artificial Intelligence concentration that was rolled out fall 2025 however, due to an oversight this course was left off the calendar change proposal. We would now like to add this course as an option for the concentration.

ANTICIPATED EFFECTIVE DATE

Fall 2026

CALENDAR CHANGES

11.4.9.1 Artificial Intelligence
Students selecting an Artificial Intelligence concentration are required to complete 18 credit hours as follows:

a. Computer Science 3200, 3202
b. Twelve additional credit hours selected from Computer Science 3201, 3401, 3766, 4301, 4303, 4750, 4766, Mathematics 4250, Statistics 4486

CALENDAR ENTRY AFTER CHANGES

11.4.9.1 Artificial Intelligence
Students selecting an Artificial Intelligence concentration are required to complete 18 credit hours as follows:

a. Computer Science 3200, 3202
b. Twelve additional credit hours selected from Computer Science 3201, 3401, 3766, 4301, 4303, 4750, 4766, Mathematics 4250, Statistics 4486

Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS SOUGHT

Academic Advising Centre
Humanities and Social Sciences – no concerns
Business Administration
Education
Engineering and Applied Science – supports change
Grenfell Campus (Arts & Social Sciences)
Grenfell Campus (Science and the Environment)
Grenfell Campus (Fine Arts)
Human Kinetics and Recreation
Library—no impact on Library's collections
Marine Institute
Medicine – no concerns
Music
Nursing – no concerns
Pharmacy
Social Work
Science
• Biochemistry
• Biology
• Chemistry
• Earth Sciences
• Geography
• Mathematics and Statistics
• Ocean Sciences
• Physics and Physical Oceanography
• Psychology

ENGINEERING:
From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Wednesday, November 19, 2025 4:18 PM
To: 'Engineering Consult' <engrconsult@mun.ca>
Subject: RE: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Hi,

Thanks for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7 www.mun.ca/computerscience/

-----Original Message-----
From: Engineering Consult <engrconsult@mun.ca>
Sent: Wednesday, November 19, 2025 2:21 PM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Cc: Jayde Edmunds <edmundsj@mun.ca>; Vlastimil Masek <masek@mun.ca>; Adam Noel <adam.noel@mun.ca>
Subject: Re: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Thank you for the opportunity to comment on the proposed Calendar changes to . amend the Honours admissions regulations; and . add MATH 4250 to the electives for the Artificial Intelligence concentration.

At its meeting on 2025 Nov. 19, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science expressed support for these changes.

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science Memorial University of Newfoundland
St. John's NL A1B 3X5

HSS:

From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Monday, November 17, 2025 5:39 PM
To: 'assocdeancphss' <assocdeancphss@mun.ca>
Subject: RE: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Hi,

Thank you for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: assocdeancphss <assocdeancphss@mun.ca>
Sent: Monday, November 17, 2025 1:33 PM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Subject: Re: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

No concerns from HSS.

P Dold

Patricia Dold (she/her)
Associate Professor, Religion and Culture
Associate Dean, Curriculum and Programs
Faculty of Humanities and Social Sciences
St. John's Campus, Memorial University

MEDICINE:

From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Tuesday, November 4, 2025 12:30 PM
To: 'medvicedean' <medvicedean@mun.ca>
Subject: RE: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Hi,

Thanks for the feedback. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: medvicedean <medvicedean@mun.ca>
Sent: Tuesday, November 4, 2025 5:04 AM
To: cs-ugradadv@mun.ca
Cc: Dean of Medicine : McKeen, Dr. Dolores <deanofmedicine@mun.ca>
Subject: Re: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Hi,

On behalf of the Faculty of Medicine, there are no concerns.

Thanks, Danielle

DANIELLE O'KEEFE MD CCFP FCFP MSc CCPE
Vice Dean, Education and Faculty Affairs
Associate Professor of Family Medicine

Faculty of Medicine
Memorial University of Newfoundland
Faculty of Medicine Building | Room M2M311
300 Prince Philip Drive
St. John's, NL, Canada A1B 3V6
T 709 864 6289 | F 709 864 6336
www.mun.ca/medicine

NURSING:

From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Tuesday, November 4, 2025 12:30 PM
To: 'DeanNurse' <DeanNurse@mun.ca>
Subject: RE: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Hi,

Thanks for the feedback. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: DeanNurse <DeanNurse@mun.ca>
Sent: Monday, November 3, 2025 11:33 AM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Subject: RE: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Good morning, Cathy.

Dr. Pike, our dean at the Faculty of Nursing, has reviewed the proposed calendar change. She tells me that she sees no implication for our Faculty of Nursing.

Thank you for your time,
Jane

LIBRARY REPORT
NA

RESOURCE IMPLICATIONS
No resource implications since this added course is optional for the concentration (i.e. the concentration can be achieved without this course) and it is a regular offering.

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- ☐ New course(s):
- X Amended or deleted course(s): COMP 1001, COMP 1003
- ☐ New program(s):
- ☐ Amended or deleted program(s):
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Courses

COURSE NUMBER AND TITLE
COMP 1001 Introduction to Programming
COMP 1003 Foundations of Computing Systems

REVISED COURSE NUMBER AND TITLE
COMP 1001 Introduction to Programming – No change to number and title

COMP 1003 Introduction to Object Oriented Programming and the Theory of Computation

ABBREVIATED COURSE TITLE
Intro to OO & Theory of Comp

RATIONALE
We are proposing to make changes to the content of two of our 1000-level courses: 1001 and 1003, and the PR structure of COMP 2003.

COMP 1001 currently provides an introduction to programming in Python and object oriented (OO) programming concepts. We would like to remove the majority of the OO components of the course and focus on procedural programming. This will remove pressure for students new to programming having to learn programming fundamentals and OO concepts in rapid succession in a short amount of time. This will bring COMP1001 into line with introductory programming courses offered at several other institutions

We intend to move the OO content from COMP 1001 into COMP 1003. COMP1003 is currently split into three main areas, roughly four weeks of coverage each: OO programming, Theory of Computation and Machine Architecture (MA). There is currently an overlap in MA topics in COMP1003 and *COMP 2003 – Computer Architecture*. We plan to remove MA from 1003 entirely to allow the course to be split into two halves, the first focusing on OO in Python and the second focusing on Theory of Computation. The current coverage of the latter has been lightweight and needs to be expanded to serve CS curriculum needs.

On completion of these two courses students will have at least as much coverage in Python and OO as at present, but we expect they will have a better grasp of both the programming concepts and how to solve problems by writing code. For consistency both courses would use the current 1001 text to cover all programming.

On the theory side the expanded, deeper coverage would require that students complete COMP1002 or MATH2320 before attempting COMP1003; at present 1002/2320 and 1003 can be taken concurrently.

Currently, COMP 1003 Is a prerequisite for COMP 2003 however, since we are removing the MA content in COMP 1003, it will be safe to take COMP 1003 and COMP 2003 in any order. So, we are also proposing to remove the COMP 1003 prerequisite from COMP 2003 which will allow this new course and COMP 2003 to be taken together. That opens the possibility of students taking this course + COMP2003 in one semester, and COMP2001 + COMP2002 in a following semester. That alleviates the current bottleneck of students taking COMP1003 in isolation, often followed by taking COMP2001+2002+2003 in a single semester.

ANTICIPATED EFFECTIVE DATE
Fall 2026

CALENDAR CHANGES

COMP 1001 Introduction to Programming

covers fundamental programming concepts ~~and introduces object-oriented programming~~ using Python. Students learn how to use primitive data types, and create and use fundamental data structures. They learn problem solving techniques, and apply them by designing and implementing algorithms, including search and sort, and simple recursive functions. They learn how to use control constructs and implement file and exception handling.
CR: the former COMP 1710
LH: 3

~~COMP 1003 Foundations of Computing Systems~~

~~provides an in-depth introduction to foundational topics in computer science: algorithms and data structures, theory of computing, machine architecture and their historical context.~~
~~CO: COMP 1002 or Mathematics 2320~~
~~LH: 3~~
~~PR: COMP 1001~~

COMP 1003 Introduction to Object Oriented Programming and the Theory of Computation provides an introduction to object-oriented programming in Python followed by an introduction to formal languages, automata, computability and intractability.

LH: 3

PR: COMP1001, COMP1002 or Mathematics 2320

CALENDAR ENTRY AFTER CHANGES

COMP 1001 Introduction to Programming

covers fundamental programming concepts using Python. Students learn how to use primitive data types, and create and use fundamental data structures. They learn problem solving techniques, and apply them by designing and implementing algorithms, including search and sort, and simple recursive functions. They learn how to use control constructs and implement file and exception handling.
CR: the former COMP 1710
LH: 3

COMP 1003 Introduction to Object Oriented Programming and the Theory of Computation provides an introduction to object-oriented programming in Python followed by an introduction to formal languages, automata, computability and intractability.

LH: 3
PR: COMP1001, COMP1002 or Mathematics 2320

SECONDARY CALENDAR CHANGES

COMP 2003 prerequisites become: COMP1001, and COMP1002 or Mathematics 2320; minimum of 65% in COMP 1001 and in whichever of COMP 1002 or MATH 2320 has been completed.

COMP 2003 Computer Architecture
introduces computer architecture at the digital logic implementation level, at the instruction set level, and at the level where programming languages are translated into the underlying machine instructions.
CR: the former COMP 3724
LH: 3
PR: COMP 1001 with a minimum of 65% final grade; COMP 1002 or Mathematics 2320 with a minimum of 65% final grade; and acceptance into a major, minor or honours program in Computer Science or Computational Chemistry

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS SOUGHT

Academic Advising Centre
Humanities and Social Sciences – no concerns
Business Administration
Education
Engineering and Applied Science – supports change
Grenfell Campus (Arts & Social Sciences)
Grenfell Campus (Science and the Environment)
Grenfell Campus (Fine Arts)
Human Kinetics and Recreation
Library—no impact on Library's collections
Marine Institute
Medicine
Music
Nursing – no concerns
Pharmacy
Social Work
Science
• Biochemistry
• Biology
• Chemistry
• Earth Sciences
• Geography
• Mathematics and Statistics – supports change, see response below for details
• Ocean Sciences
• Physics and Physical Oceanography
• Psychology

ENGINEERING:
From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Wednesday, October 15, 2025 4:29 PM
To: 'CUGS Chair' <engrconsult@mun.ca>
Subject: RE: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Hi,

Thanks for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: CUGS Chair <engrconsult@mun.ca>
Sent: Wednesday, October 15, 2025 3:10 PM
To: 'Cathy Hyde' <cs-ugradadv@mun.ca>
Subject: RE: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Thank you for the opportunity to comment on the proposed Calendar changes to

- the Computer Science-Economics joint major;
- the Computer Science minor program; and
- the Computer Science courses COMP 1001 and 1003.

At its meeting on 2025 Oct. 15, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science found no impact on our programs. We are happy to support these changes.

Yours sincerely,

HSS:
From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Monday, October 27, 2025 9:31 AM
To: 'assocdeancphss' <assocdeancphss@mun.ca>
Subject: RE: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Hi,

Thanks for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: assocdeancphss <assocdeancphss@mun.ca>
Sent: Monday, October 27, 2025 9:15 AM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Subject: Re: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

No concerns from HSS

P Dold

Patricia Dold (she/her)
Associate Professor, Religion and Culture
Associate Dean, Curriculum and Programs
Faculty of Humanities and Social Sciences
St. John's Campus, Memorial University

LIBRARY:
From: Rose, Kathryn <kathrynr@mun.ca>
Sent: Thursday, October 16, 2025 9:12 AM
To: cs-ugradadv@mun.ca
Subject: FW: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Good Morning,

Thank you for the opportunity to provide feedback on the following changes to the Computer Science minor. These changes will have no impact on the library's collections.

Kathryn

Kathryn Rose, MLIS, PhD (she/her) | Head, Collections Strategies
Memorial University Libraries
St. John's, Newfoundland, A1B 3Y1
+1 709 864-3139
www.library.mun.ca

MATHEMATICS/DATA SCIENCE RESPONSE:
From: Mark Hatcher <mhatcher@mun.ca>
Sent: Tuesday, August 19, 2025 6:19 PM
To: Candemir Cigsar <ccigsar@mun.ca>
Cc: Hyde, Cathy <cathy@mun.ca>
Subject: Re: Proposed changes to COMP1001 and COMP1003

Hi Candemir,

Thanks for the feedback, that's great to hear.

Mark

Mark Hatcher
Deputy Head, Undergraduate Studies

Department of Computer Science
Memorial University of Newfoundland
St John's, Canada

From: Candemir Cigsar <ccigsar@mun.ca>
Sent: Tuesday, August 19, 2025 3:02 PM
To: Mark Hatcher <mhatcher@mun.ca>
Cc: Hyde, Cathy <cathy@mun.ca>
Subject: Re: Proposed changes to COMP1001 and COMP1003

Hi Mark,

Thanks for sharing the proposed changes. From the Data Science side, the revisions look good. The increased emphasis on Python, OO programming and Theory of Computation should benefit our students. Since our department usually offers MATH 2320 in all three semesters, students should be well-positioned to complete it before taking the revised COMP1003.

I have also forwarded your email and the attached documents to our Department Head, Deputy Head (Undergraduate), and Undergraduate Officer. They may reach out to you directly if they have any comments.

Best regards,

Candemir
Deputy Head – Statistics and Data Science

--
Candemir Cigsar, PhD
Associate Professor of Statistics
Dept. of Mathematics & Statistics
Memorial University of Newfoundland
St. John's, NL, Canada
A1C 5S7
Phone: (709) 864-8718
Fax: (709) 864-3010
Email: ccigsar@mun.ca

From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Tuesday, November 4, 2025 12:28 PM
To: 'Math Consult' <mathconsult@mun.ca>
Subject: RE: FW: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Hi,

Thanks for the feedback. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7 www.mun.ca/computerscience/

-----Original Message-----
From: Math Consult <mathconsult@mun.ca>
Sent: Friday, October 31, 2025 8:18 PM
To: cs-ugradadv@mun.ca
Subject: Fwd: FW: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Dear Cathy,

The Undergraduate Studies Committee of the Department of Mathematics and Statistics has discussed the proposed changes to the CS minor program and the courses COMP 1001 and 1003. We support both proposals.

Best regards,
Misha

Mikhail Kotchetov
Deputy Head (Undergraduate)
Department of Mathematics and Statistics

NURSING:

From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Wednesday, October 15, 2025 4:30 PM
To: 'DeanNurse' <DeanNurse@mun.ca>
Subject: RE: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Hi,

Thanks for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: DeanNurse <DeanNurse@mun.ca>
Sent: Wednesday, October 15, 2025 2:40 PM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Subject: RE: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Good afternoon, Cathy.

Dr. April Pike, our dean at the Faculty of Nursing, has reviewed the consultation request. She tells me that she does not see any implications for the Faculty of Nursing.

Thanks for your time!
Jane

LIBRARY REPORT

No impact on Library's collections.

RESOURCE IMPLICATIONS

No impact on resources since no new courses or change to current course offerings.

Check box as applicable (☑)

Courses that are part of load	*YES*	*NO*	*N/A*
Q1. Will the course be taught by a tenured or tenure track Academic Staff Member as part of load? *(if yes, complete 1a to 1c; if no, proceed to Q2)*		Not necessarily	
a) Required course: will it be taught every year?		Yes	
b) Elective course: will it be taught on a regular rotation depending on the academic unit's teaching plan?			
c) Elective course: will it hinder the academic unit's ability to offer its core program?			
Proceed to Q3.			

Q2. If the course will be taught as overload by an Academic Staff Member, or by a per-course instructor (PCI) or by any other contractual instructor, please answer each of the following.

a) Approximately how often will the course be taught? Every semester

b) Why can't the course be offered by a tenured or tenure track Academic Staff Member as part of normal load? It can be and will be sometimes

Q3. If the course is planned as a distance course, does DELTS support it and has DELTS confirmed that it will offer financial and administrative support? Not planning to offer it as a distance course right now

Q4. Will the course require any further resources (e.g. extra administrative supports)? Please explain and justify. No further resources will be required since these courses are already offered each semester. Nothing is changing in terms of offerings, only course content is changing.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

N/A

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- ☐ New course(s):
- ☐ Amended or deleted course(s):
- ☐ New program(s):
- ☐ Amended or deleted program(s): Minor in Computer Science
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- X New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Regulations

SECTION OF CALENDAR

Indicate the section of the Calendar impacted by the proposed change(s):

- ☐ Glossary of Terms Used in the Calendar
- ☐ Admission/Readmission to the University (Undergraduate)
- ☐ General Academic Regulations (Undergraduate)
- ☐ Faculty of:
- ☐ School of:
- X Department of: Computer Science
- ☐ Other:

RATIONALE

We are proposing a change to the honours eligibility requirements and admission process, and the removal of a reference to Honours admission in special circumstances.

The current system for admitting students to honours is selective based on ranking by cumulative average alone. It takes no account of match between students and potential supervisors. Students with honours standing have been denied admission even when a supervisor has identified them as a good fit for a project. Further the number of students we admit into the program is based on an estimate of supervision capacity 18 months from now. This leaves room for improvement.

The proposed admission process ensures a one-to-one match between supervisors and students, maximising program capacity and the match between student and supervisor.

Regarding courses required for eligibility, right now students are required to have completed all 1000-level and 2000-level core computer science courses in order to be eligible. We would like to require an additional six credit hours in 3000-level computer science courses for eligibility to ensure students are further along in the program before they are admitted to the honours program.

Finally, we are proposing to remove reference to students being admitted to the Honours program at other times of the year in special circumstances since with the new admission process students can be admitted any time of the year as long as they satisfy the eligibility requirements.

ANTICIPATED EFFECTIVE DATE

September 2026

CALENDAR CHANGES

11.4.2 Admission to Honours Programs

The Honours programs in the Department of Computer Science are designed for students who would like to concentrate their studies or pursue graduate work.

Students who wish to be admitted into a Computer Science honours program must:

i) have completed Computer Science 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
ii) have completed six credit hours in Computer Science courses at the 3000 level or higher
iii) have obtained a grade of "B" or better in each of the prescribed Computer Science courses excluding any 1000-level courses, or an overall average of 75% or higher in those courses (see Honours graduation requirements)
iv) have secured a project supervisor
v) secured approval of the department head

Students can be admitted at any time of year. The online application form is located on the Department of Computer Science's **website.**

~~Students who wish to be admitted to these programs must submit an Application for Admission to Honours Program Faculties of Humanities and Social Sciences or Science to the Department of Computer Science on or before 11:59 p.m. (Newfoundland time) on May 31 for Fall semester registration and on or before 11:59 p.m. (Newfoundland time) on August 31 for Winter semester registration. To be eligible for admission, students must have successfully completed all Computer Science core requirements (Computer Science 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008) and obtained in these courses a grade of "B" or better, or an average of 75% or higher. Students who fulfill the eligibility requirements compete for a limited number of available spaces. Selection is based on academic performance in the required courses. In special circumstances, students may be admitted to Honours Programs at times other than June.~~

Students are advised to consult the Bachelor of Arts (Honours) Degree Regulations or Degree Regulations for the Honours Degree of Bachelor of Science (as appropriate).

CALENDAR ENTRY AFTER CHANGES

11.4.2 Admission to Honours Programs

The Honours programs in the Department of Computer Science are designed for students who would like to concentrate their studies or pursue graduate work.

Students who wish to be admitted into a Computer Science honours program must:

i) have completed Computer Science 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
ii) have completed six credit hours in Computer Science courses at the 3000 level or higher
iii) have obtained a grade of "B" or better in each of the prescribed Computer Science courses excluding any 1000-level courses, or an overall average of 75% or higher in those courses (see Honours graduation requirements)
iv) have secured a project supervisor
v) secured approval of the department head

Students can be admitted at any time of year. The online application form is located on the Department of Computer Science's **website.**

Students are advised to consult the Bachelor of Arts (Honours) Degree Regulations or Degree Regulations for the Honours Degree of Bachelor of Science (as appropriate).

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS SOUGHT

Academic Advising Centre
Humanities and Social Sciences – no concerns
Business Administration
Education
Engineering and Applied Science – supports change
Grenfell Campus (Arts & Social Sciences)
Grenfell Campus (Science and the Environment)
Grenfell Campus (Fine Arts)
Human Kinetics and Recreation
Library—no impact on Library's collections
Marine Institute
Medicine – no concerns
Music
Nursing – no concerns
Pharmacy
Social Work
Science
• Biochemistry
• Biology
• Chemistry
• Earth Sciences
• Geography
• Mathematics and Statistics
• Ocean Sciences
• Physics and Physical Oceanography
• Psychology

ENGINEERING:

From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Wednesday, November 19, 2025 4:18 PM
To: 'Engineering Consult' <engrconsult@mun.ca>
Subject: RE: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Hi,

Thanks for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7 www.mun.ca/computerscience/

-----Original Message-----
From: Engineering Consult <engrconsult@mun.ca>
Sent: Wednesday, November 19, 2025 2:21 PM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Cc: Jayde Edmunds <edmundsj@mun.ca>; Vlastimil Masek <masek@mun.ca>; Adam Noel <adam.noel@mun.ca>
Subject: Re: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Thank you for the opportunity to comment on the proposed Calendar changes to . amend the Honours admissions regulations; and . add MATH 4250 to the electives for the Artificial Intelligence concentration.

At its meeting on 2025 Nov. 19, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science expressed support for these changes.

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science Memorial University of Newfoundland
St. John's NL A1B 3X5

HSS:

From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Monday, November 17, 2025 5:39 PM
To: 'assocdeancphss' <assocdeancphss@mun.ca>
Subject: RE: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Hi,

Thank you for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: assocdeancphss <assocdeancphss@mun.ca>
Sent: Monday, November 17, 2025 1:33 PM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Subject: Re: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

No concerns from HSS.

P Dold

Patricia Dold (she/her)
Associate Professor, Religion and Culture
Associate Dean, Curriculum and Programs
Faculty of Humanities and Social Sciences
St. John's Campus, Memorial University

MEDICINE:
From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Tuesday, November 4, 2025 12:30 PM
To: 'medvicedean' <medvicedean@mun.ca>
Subject: RE: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Hi,

Thanks for the feedback. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: medvicedean <medvicedean@mun.ca>
Sent: Tuesday, November 4, 2025 5:04 AM
To: cs-ugradadv@mun.ca
Cc: Dean of Medicine : McKeen, Dr. Dolores <deanofmedicine@mun.ca>
Subject: Re: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Hi,

On behalf of the Faculty of Medicine, there are no concerns.

Thanks, Danielle

DANIELLE O'KEEFE MD CCFP FCFP MSc CCPE
Vice Dean, Education and Faculty Affairs
Associate Professor of Family Medicine

Faculty of Medicine
Memorial University of Newfoundland
Faculty of Medicine Building | Room M2M311
300 Prince Philip Drive
St. John's, NL, Canada A1B 3V6
T 709 864 6289 | F 709 864 6336
www.mun.ca/medicine

NURSING:

From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Tuesday, November 4, 2025 12:30 PM

To: 'DeanNurse' <DeanNurse@mun.ca>
Subject: RE: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Hi,

Thanks for the feedback. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: DeanNurse <DeanNurse@mun.ca>
Sent: Monday, November 3, 2025 11:33 AM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Subject: RE: Consultation request for Computer Science--changes to Computer Science Honours admission and AI concentration

Good morning, Cathy.

Dr. Pike, our dean at the Faculty of Nursing, has reviewed the proposed calendar change. She tells me that she sees no implication for our Faculty of Nursing.

Thank you for your time,
Jane

LIBRARY REPORT
Not yet received.

RESOURCE IMPLICATIONS

Check box as applicable (☑)

Courses that are part of load	*YES*	*NO*	*N/A*
Q1. Will the course be taught by a tenured or tenure track Academic Staff Member as part of load? *(if yes, complete 1a to 1c; if no, proceed to Q2)*			X

a) Required course: will it be taught every year?			
b) Elective course: will it be taught on a regular rotation depending on the academic unit's teaching plan?			
c) Elective course: will it hinder the academic unit's ability to offer its core program?			
Proceed to Q3.			

Q2. If the course will be taught as overload by an Academic Staff Member, or by a per-course instructor (PCI) or by any other contractual instructor, please answer each of the following. NA

a) Approximately how often will the course be taught?

b) Why can't the course be offered by a tenured or tenure track Academic Staff Member as part of normal load?

Q3. If the course is planned as a distance course, does DELTS support it and has DELTS confirmed that it will offer financial and administrative support. NA

Q4. Will the course require any further resources (e.g. extra administrative supports)? Please explain and justify. NA

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- ☐ New course(s):
- ☐ Amended or deleted course(s):
- ☐ New program(s):

- X Amended or deleted program(s): Minor in Computer Science
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form
Senate Summary Page for Programs

PROGRAM TITLE
Minor in Computer Science

RATIONALE
COMP 1002 is a required course for the Computer Science Minor. Mathematics and Data Science students are required to complete Mathematics 2320 which has a one way credit restriction with COMP 1002. We are proposing to change the Computer Science minor program requirements to allow Mathematics and Data Science students to substitute a 2000-level or higher Computer Science course for COMP 1002.

ANTICIPATED EFFECTIVE DATE
Fall 2026

CALENDAR CHANGES

11.4.7 Minor in Computer Science

For a Minor in Computer Science, a student must complete at least 24 credit hours in Computer Science courses, including:

1. Computer Science 1001, 1002, 1003, 2001, 2002, 2003.
2. Six credit hours in Computer Science at the 3000 level or higher.

   Students enrolled in a major or honours program in Mathematics or Data Science who complete Mathematics 2320 may replace COMP 1002 with any other three credit hour Computer Science course at the 2000-level or higher.

CALENDAR ENTRY AFTER CHANGES

11.4.7 Minor in Computer Science

For a Minor in Computer Science, a student must complete at least 24 credit hours in Computer Science courses, including:

1. Computer Science 1001, 1002, 1003, 2001, 2002, 2003.

2. Six credit hours in Computer Science at the 3000 level or higher.

   Students enrolled in a major or honours program in Mathematics or Data Science who complete Mathematics 2320 may replace COMP 1002 with any other three credit hour Computer Science course at the 2000-level or higher.

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS SOUGHT

Academic Advising Centre
Humanities and Social Sciences – no concerns
Business Administration
Education
Engineering and Applied Science – supports change
Grenfell Campus (Arts & Social Sciences)
Grenfell Campus (Science and the Environment)
Grenfell Campus (Fine Arts)
Human Kinetics and Recreation
Library—no impact on Library's collections
Marine Institute
Medicine
Music
Nursing
Pharmacy
Social Work
Science
• Biochemistry
• Biology
• Chemistry
• Earth Sciences
• Geography
• Mathematics and Statistics – supports change
• Ocean Sciences
• Physics and Physical Oceanography
• Psychology

ENGINEERING:
From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Wednesday, October 15, 2025 4:29 PM
To: 'CUGS Chair' <engrconsult@mun.ca>
Subject: RE: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Hi,

Thanks for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: CUGS Chair <engrconsult@mun.ca>
Sent: Wednesday, October 15, 2025 3:10 PM
To: 'Cathy Hyde' <cs-ugradadv@mun.ca>
Subject: RE: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Thank you for the opportunity to comment on the proposed Calendar changes to

- the Computer Science-Economics joint major;
- the Computer Science minor program; and
- the Computer Science courses COMP 1001 and 1003.

At its meeting on 2025 Oct. 15, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science found no impact on our programs. We are happy to support these changes.

Yours sincerely,

HSS:
From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Monday, October 27, 2025 9:31 AM
To: 'assocdeancphss' <assocdeancphss@mun.ca>
Subject: RE: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Hi,

Thanks for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: assocdeancphss <assocdeancphss@mun.ca>
Sent: Monday, October 27, 2025 9:15 AM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Subject: Re: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

No concerns from HSS

P Dold

Patricia Dold (she/her)
Associate Professor, Religion and Culture
Associate Dean, Curriculum and Programs
Faculty of Humanities and Social Sciences
St. John's Campus, Memorial University

LIBRARY:
From: Rose, Kathryn <kathrynr@mun.ca>
Sent: Thursday, October 16, 2025 9:12 AM
To: cs-ugradadv@mun.ca
Subject: FW: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Good Morning,

Thank you for the opportunity to provide feedback on the following changes to the Computer Science minor. These changes will have no impact on the library's collections.

Kathryn

_____

Kathryn Rose, MLIS, PhD (she/her) | Head, Collections Strategies
Memorial University Libraries
St. John's, Newfoundland, A1B 3Y1
+1 709 864-3139
www.library.mun.ca

MATH/STATS:

From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Tuesday, November 4, 2025 12:28 PM
To: 'Math Consult' <mathconsult@mun.ca>
Subject: RE: FW: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Hi,

Thanks for the feedback. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7 www.mun.ca/computerscience/

-----Original Message-----
From: Math Consult <mathconsult@mun.ca>
Sent: Friday, October 31, 2025 8:18 PM
To: cs-ugradadv@mun.ca
Subject: Fwd: FW: Consultation Request--Computer Science minor, changes to COMP 1001 and 1003

Dear Cathy,

The Undergraduate Studies Committee of the Department of Mathematics and Statistics has discussed the proposed changes to the CS minor program and the courses COMP 1001 and 1003. We support both proposals.

Best regards,
Misha

Mikhail Kotchetov
Deputy Head (Undergraduate)
Department of Mathematics and Statistics

LIBRARY REPORT

No impact on Library's collections.

RESOURCE IMPLICATIONS

Check box as applicable (☑)

Courses that are part of load	*YES*	*NO*	*N/A*
Q1. Will the course be taught by a tenured or tenure track Academic Staff Member as part of load? *(if yes, complete 1a to 1c; if no, proceed to Q2)*			X
a) Required course: will it be taught every year?			
b) Elective course: will it be taught on a regular rotation depending on the academic unit's teaching plan?			
c) Elective course: will it hinder the academic unit's ability to offer its core program?			
Proceed to Q3.			

Q2. If the course will be taught as overload by an Academic Staff Member, or by a per-course instructor (PCI) or by any other contractual instructor, please answer each of the following. NA

a) Approximately how often will the course be taught?

b) Why can't the course be offered by a tenured or tenure track Academic Staff Member as part of normal load?

Q3. If the course is planned as a distance course, does DELTS support it and has DELTS confirmed that it will offer financial and administrative support. NA

Q4. Will the course require any further resources (e.g. extra administrative supports)? Please explain and justify. NA

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- **X** New course:
- Amended or deleted course(s):
- New program(s):
- Amended or deleted program(s):
- New, amended or deleted Glossary of Terms Used in the Calendar entries
- New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- New, amended or deleted General Academic Regulations (Undergraduate)
- New, amended or deleted Faculty, School or Departmental regulations
- Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Courses

COURSE NUMBER AND TITLE

COMP 4802 – Explainable Machine Learning

ABBREVIATED COURSE TITLE

Explainable ML

RATIONALE

Explainable Machine Learning is proposed as an advanced course that will explore the production of human-understandable explanations for the behaviour of Machine Learning models.

Machine Learning has become an integral part of a wide range of applications. It is well understood that often users of these applications need human understandable explanations of the behaviour of the underlying Machine Learning models; for example, to determine a model as trustworthy or ethical, to identify its strengths and weaknesses, or to gain knowledge of the complex phenomenon it represents. To do that users need to understand how and why a model has produced its outcomes; to build explanations.

A wide range of techniques and approaches exist to explain Machine Learning models in general, and this new course provides the knowledge and skills to build those explanations.

The prerequisite course COMP3202 Introduction to Machine Learning provides a necessary foundation in machine learning and explores the predictive capacities of models. This new course will explore the interpretive capacities of those models.

ANTICIPATED EFFECTIVE DATE

Spring 2026

CALENDAR CHANGES

4802 Special Topics-Introduction to Explainable Machine Learning is an advanced course that explores the production of human-understandable explanations for the behaviour of Machine Learning (ML) models. The course introduces and explores the

concepts of explainability and interpretability of ML models, and the notion of locality and globality of explanation. It explores the behaviour of ML models, ranging from fully interpretable models to absolutely non-interpretable models**.**

PR: COMP 3202

CALENDAR ENTRY AFTER CHANGES

4202 Special Topics-Introduction to Explainable Machine Learning is an advanced course that explores the production of human-understandable explanations for the behaviour of Machine Learning (ML) models. The course introduces and explores the concepts of explainability and interpretability of ML models, and the notion of locality and globality of explanation. It explores the behaviour of ML models, ranging from fully interpretable models to absolutely non-interpretable models**.**

PR: COMP 3202

SECONDARY CALENDAR CHANGES

None.

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS SOUGHT

Academic Advising Centre – no concerns
Humanities and Social Sciences
Business Administration
Education
Engineering and Applied Science – no concerns, additional comments included below
Grenfell Campus (Arts & Social Sciences)
Grenfell Campus (Science and the Environment)
Grenfell Campus (Fine Arts)
Human Kinetics and Recreation
Library
Marine Institute
Medicine
Music
Nursing – no concerns
Pharmacy
Social Work – no concerns
Science
• Biochemistry
• Biology
• Chemistry
• Earth Sciences
• Geography
• Mathematics and Statistics
• Ocean Sciences
• Physics and Physical Oceanography

ACADEMIC ADVISING CENTRE:
From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Monday, November 17, 2025 11:48 AM
To: 'Pittman, Echo' <echop@mun.ca>
Subject: RE: Consultation request for Computer Science--new special topics course COMP 4802 - Explainable Machine Learning

Hi Echo,

Thanks for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: Pittman, Echo <echop@mun.ca>
Sent: Monday, November 17, 2025 8:51 AM
To: cs-ugradadv@mun.ca
Cc: Academic Advising Centre <advice@mun.ca>; Skinner, Renee Amanda <renee.skinner@mun.ca>; Thomson, Jenny M <x67jmt@mun.ca>; Qi, Freya Ruifang <ruifangq@mun.ca>; Walsh, Linda <rlwalsh@mun.ca>; Herritt, Brandon Corey <bch111@mun.ca>; Spracklin, Natalie <natalie.spracklin@mun.ca>; Tracey Bishop <tbishop@mun.ca>
Subject: RE: Consultation request for Computer Science--new special topics course COMP 4802 - Explainable Machine Learning

Good morning, Cathy,
Thank you for sharing this course proposal with us. It looks like an interesting course. The AAC team has no concerns with the course proposal.

Echo

Echo Pittman, PhD (she/her)
Associate Registrar (Academic Advising & Outreach)
Academic Advising Centre (Science Building: 4053)
Tel: (709) 864-3528

ENGINEERING:
From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Wednesday, November 19, 2025 4:18 PM
To: 'Engineering Consult' <engrconsult@mun.ca>
Subject: RE: Consultation request for Computer Science--new special topics course COMP 4802 - Explainable Machine Learning

Hi,

Thank you for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: Engineering Consult <engrconsult@mun.ca>
Sent: Wednesday, November 19, 2025 2:36 PM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Cc: Jayde Edmunds <edmundsj@mun.ca>; Vlastimil Masek <masek@mun.ca>; Adam Noel <adam.noel@mun.ca>
Subject: Re: Consultation request for Computer Science--new special topics course COMP 4802 - Explainable Machine Learning

On the proposal for a special topics course COMP 4802 "Explainable Machine Learning", the head of the Department of Electrical and Computer Engineering states "It seems to be an interesting course. From the provided info, it will start in the Spring'26. If it is an intersession course, it may not be that feasible for most of our T7 students as an elective course, although some co-op students in town may consider it. In addition, the default setting of the course offering by non-tenured or non-tenure-track faculty members may reflect its limited sustainability at least now."

Yours sincerely,

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science
Memorial University of Newfoundland
St. John's NL A1B 3X5

NURSING:
From: Cathy Hyde <cs-ugradadv@mun.ca>
Sent: Friday, November 21, 2025 1:08 PM
To: 'DeanNurse' <DeanNurse@mun.ca>
Subject: RE: Consultation request for Computer Science--new special topics course COMP 4802 - Explainable Machine Learning

Hi,

Thanks for your response. You have a great weekend, too!

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: DeanNurse <DeanNurse@mun.ca>
Sent: Friday, November 21, 2025 10:24 AM
To: Cathy Hyde <cs-ugradadv@mun.ca>
Subject: RE: Consultation request for Computer Science--new special topics course COMP 4802 - Explainable Machine Learning

Good morning.

Dr. Pike, our dean at the Faculty of Nursing, tells me that she has reviewed the proposed calendar change and sees no implications for the Faculty of Nursing.

Thank you for your time! Wishing you a great weekend!
Jane

SOCIAL WORK:

From:CathyHyde<cs-ugradadv@mun.ca>
Sent:Thursday,November20,2025
To:<adeanugradswk@mun.ca>
Subject: RE: Consultation request for Computer Science--new special topics course COMP 4802 - Explainable Machine Learning

Hi,

Thank you for your response. Regards,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science

Memorial University of Newfoundland

220 Prince Philip Drive, St. John's, NL, A1C 5S7

www.mun.ca/computerscience/

From:adeanugradswk<adeanugradswk@mun.ca>
Sent:Tuesday,November18,2025
To:CathyHyde<cs-ugradadv@mun.ca>
Subject: RE: Consultation request for Computer Science--new special topics course COMP 4802 - Explainable Machine Learning

Having reviewed the rationale for the proposed change, I find no concerns for our social work programs. We support the proposal.

Take care.

Paul A. Issahaku (PhD)

Associate Professor, Acting Associate Dean of Undergraduate Programs

School of Social Work

Memorial University of Newfoundland

St. John's, Canada

Email: pissahaku@mun.ca

LIBRARY REPORT
Not yet received.

RESOURCE IMPLICATIONS

This course will be taught by a faculty member with expertise in explainable machine learning. This course will be offered as a special topics offering in Spring 2026 in order to determine suitability as a regular offering. We were already planning to offer a 4000-level course in Spring so there are no additional resource implications associated with this offering.

Check box as applicable ()

Courses that are part of load	*YES*	*NO*	*N/A*
Q1. Will the course be taught by a tenured or tenure track Academic Staff Member as part of load? *(if yes, complete 1a to 1c; if no, proceed to Q2)*		No	
a) Required course: will it be taught every year?			
b) Elective course: will it be taught on a regular rotation depending on the academic unit's teaching plan?			
c) Elective course: will it hinder the academic unit's ability to offer its core program?			
Proceed to Q3.			

Q2. If the course will be taught as overload by an Academic Staff Member, or by a per-course instructor (PCI) or by any other contractual instructor, please answer each of the following.

a) Approximately how often will the course be taught? Just once.

b) Why can't the course be offered by a tenured or tenure track Academic Staff Member as part of normal load? The course will be offered by one of our teaching faculty.

Q3. If the course is planned as a distance course, does DELTS support it and has DELTS confirmed that it will offer financial and administrative support? NA

Q4. Will the course require any further resources (e.g. extra administrative supports)? Please explain and justify. No further resources will be required.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

COMP 4802 – Explainable Machine Learning

Course Outline:

- Introduction
- Correlation versus Causation
- Inherent interpretability and model-agnostic explanation
- Locality and Globality of explanation
- Building explanations for the behaviour of interpretable or partially interpretable models, including:
    - Linear/Logistic Regression, Generalized Linear and Additive Models (GLMs and GAMs), Decision Trees, Decision Rules, RuleFit, Naive Bayes Classifier, K-Nearest Neighbours, Random Forest
- Global model-agnostic explanatory tools
    - Global Surrogate Models
    - Partial Dependence Plots (PDP)
    - Accumulated Local Effects (ALE)
    - H Statistic
    - Permutation Feature Importance
- Local model-agnostic explanatory tools
    - Local Interpretable Model-agnostic Explanations (LIME) / Anchors
    - Individual Conditional Expectation (ICE)
    - Ceteris Paribus Plots
    - Breakdown and Interaction Breakdown Plots
    - SHAP values
    - Example-Based Explanations
- Tools for explaining clusters
    - In Cluster Analysis
    - In Topological Data Analysis
- Feature engineering in Explainable Machine Learning
- An introduction to building explanations for Deep Learning models

Proposed Evaluation Scheme:

- Midterm exam / Quizzes – 20%
- Final exam – 30%
- Assignments / Project – 50%

Textbooks:

- Required:
  U. Kamath and J. Liu, *Explainable Artificial Intelligence: An Introduction to Interpretable Machine Learning*, Springer Nature Switzerland, 2021.
- Suggested:
    - L. Gianfagna and A. Di Cecco, *Explainable AI with Python, Springer Nature Switzerland*, 2021.
    - P. Mishra, *Explainable AI Recipes: Implement Solutions to Model Explainability and Interpretability with Python*, Apress, New York 2023.

- S. Masís, *Interpretable Machine Learning with Python*, Packt Publishing, Birmingham 2021.
- A. Thampi, *Interpretable AI*, Manning Publications Co. New York 2022.
- A. Nandi and A. K. Pal, *Interpreting Machine Learning Models Learn Model Interpretability and Explainability Methods*, Apress, New York 2022.
- A. Bhattacharya, *Applied Machine Learning Explainability Techniques*, Packt Publishing, Birmingham 2022.

Instructor:
Yashar Tavakoli

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- ☐ New course(s):
- ☐ Amended or deleted course(s):
- ☐ New program(s):
- ☑ Amended or deleted program(s): **Computer Science and Geography Joint Honours**
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Programs

PROGRAM TITLE
Computer Science and Geography Joint Honours

RATIONALE AND EXECUTIVE SUMMARY
The purpose of this proposal is to enable offering the Computer Science and Geography Joint Honours program once again. It is not currently possible for students to complete this program because of changes to course offerings within each department. We propose to update the program requirements given these changes to re-activate this program. The proposed changes reflect new relevant courses being offered in these departments and make the joint programs more accessible to students by broadening the selection of qualifying courses.

ANTICIPATED EFFECTIVE DATE
Fall 2026

CALENDAR CHANGES
10.2.15 Computer Science and Geography Joint Honours

As a component of the Degree Regulations for the Honours Degree of Bachelor of Science, the following courses are required:

1. Computer Science Requirements

Forty-eight credit hours in Computer Science courses are required for the Joint Honours:

a. 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3400~~, the former 4751~~.

b. ~~Nine~~ Six additional credit hours in courses at the 4000 level not including 499A/B.

c. ~~Twelve~~ Nine additional credit hours in courses at the 3000 level or beyond.

2. Geography Requirements

Thirty-nine ~~Forty-two~~ credit hours in Geography courses are required for the Joint Honours:

a. 1050, 2001, 2102, 2195, 2302, 2425, ~~3202~~, 3222, 3228 (or the former 2226 and the former 3226), ~~3250, 3260, 4202, 4250, 4261, the former 4291,~~ 490A and 490B.

b. ~~Three~~ Nine additional credit hours in courses at the 3000 level or beyond.

3. Additional Requirements

a. Mathematics 1000 or 1006, 1001, 2000, and 2050.

b. Statistics 2500 or 2550.

c. An Honours Dissertation (either Computer Science 499A/B or Geography 4999) with the topic chosen in consultation with both departments.

CALENDAR ENTRY AFTER CHANGES

10.2.15 Computer Science and Geography Joint Honours

As a component of the Degree Regulations for the Honours Degree of Bachelor of Science, the following courses are required:

1. Computer Science Requirements

Forty-eight credit hours in Computer Science courses are required for the Joint Honours:

a. 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3400.

b. Six additional credit hours in courses at the 4000 level not including 499A/B.

c. Nine additional credit hours in courses at the 3000 level or beyond.

2. Geography Requirements

Thirty-nine credit hours in Geography courses are required for the Joint Honours:

a. 1050, 2001, 2102, 2195, 2302, 2425, 3222, 3228 (or the former 2226 and the former 3226), 490A and 490B.

b. Nine additional credit hours in courses at the 3000 level or beyond.

3. Additional Requirements

a. Mathematics 1000 or 1006, 1001, 2000, and 2050.

b. Statistics 2500 or 2550.

c. An Honours Dissertation (either Computer Science 499A/B or Geography 4999) with the topic chosen in consultation with both departments.

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS

Faculty of Engineering and Applied Science

Thank you for the opportunity to comment on the proposed Calendar change to update the regulations for the joint major and joint honours in Computer Science and Geography.

At its meeting of 2025 Nov. 19, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science found no impact on our programs.

Yours sincerely,

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science Memorial University of Newfoundland
St. John's NL A1B 3X5

School of Social Work

Having reviewed the rationale for the proposed change, I find no concerns for our social work programs. We support the proposal.
Take care.

Paul A. Issahaku (PhD)
Associate Professor, Acting Associate Dean of Undergraduate Programs
School of Social Work
Memorial University of Newfoundland
St. John's, Canada
Email: pissahaku@mun.ca
Tel. 7098648688

Faculty of Humanities and Social Sciences

That’s great! Thank-you

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science

Memorial University of Newfoundland

220 Prince Philip Drive, St. John's, NL, A1C 5S7

www.mun.ca/computerscience/

Excellent! You have addressed all of my concerns and I can certainly see that the joint honours discussion is larger than this one proposal.

P Dold

Hi,

Thanks for your feedback.

Regarding your first concern, COMP 2006, 2007 and 2008 are one credit hour courses. With this in mind, I believe the total number of credit hours in the proposal is accurate.

Regarding your second concern, you are correct that the proposed joint honours program is very prescribed. The current joint honours program has 48 credit hours required each from Computer Science and Geography (plus the math, plus the thesis) and we kept the number of required credit hours in Computer Science the same, we just changed some of the specific course requirements.

Having such a prescribed joint honours program is the norm within Faculty of Science, there is no option under the Bachelor of Science regulations for a regular honours with a second major. I know that a few years before I started this role (2019) the Faculty of Science made changes to the joint honours programs where they cut out a lot of program requirements – I believe the joint honours programs used to be five-year degrees and they were cut down to four-year degrees. I think you bring up a good point that merits a discussion amongst the Faculty of Science as to whether joint honours programs should be further cut down to allow students to have more choice and more electives and I'm happy to bring this forward to a future Faculty Council meeting. That will be a much larger discussion than this single proposal.

Let me know your thoughts. Thanks,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science

Memorial University of Newfoundland

220 Prince Philip Drive, St. John's, NL, A1C 5S7

www.mun.ca/computerscience/

Hello,

HSS has two concerns, which I offer with apologies because Geography had circulated drafts of these to me earlier this Fall.

First, the numbers in both proposals seem to be incorrect. It appears that the requirements for Computer Science for the Joint honours add up to 51 CH not 48:

"As a component of the Degree Regulations for the Honours Degree of Bachelor of Science, the following courses are required:

1. Computer Science Requirements

Forty-eight credit hours in Computer Science courses are required for the Joint Honours:

a. 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3400.

b. Six additional credit hours in courses at the 4000 level not including 499A/B.

c. Nine additional credit hours in courses at the 3000 level or beyond.

In the major, please see the highlighted total for Computer Science, which differs from the stated number of CH. Also, please clarify regulation 1 (perhaps by breaking it down as done for the joint honours regulations):

As a component of the Degree Regulations for the General Degree of Bachelor of Science, the following courses are required:

1. Computer Science Requirements

Thirty-nine credit hours in Computer Science courses are required: 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3400, plus 6 further credit hours in Computer Science courses numbered 3000 or higher and 3 credit hours in Computer Science courses numbered 4000 or higher. = 36+6+3 = 45

Second concern is the rationale for the joint honours. The current proposal seeks to revive an existing program, but it would be helpful to know how such a program benefits students in ways that a regular honours, even one with a second major, does not. If I am seeing this correctly, the Joint Honours defines 102 credit hours, 108 if the student completes 499A/B. This allows students very little flexibility. Perhaps other Joint honours programs also prescribe the vast majority of CH for a degree. There too, perhaps we need to understand more clearly how these programs benefit students.

P Dold

Patricia Dold (she/her)

Associate Professor, Religion and Culture

Associate Dean, Curriculum and Programs

Faculty of Humanities and Social Sciences

St. John's Campus, Memorial University

Library

Date: November 25, 2025
To: Melanie Fitzpatrick, Dean of Science Office and Dr. Benjamin Misiuk, Department of Geography
From: Danial Duda, Map Librarian
Re: Library resources for the Geography-Computer Science Joint Honours Program
Cc: Kathryn Rose, Head Collection Strategies, QE II Library

Memorial Libraries have the resources needed to support the teaching, learning, and research needs for the Joint Honours Program in Geography and Computer Science. For materials we might not have, people can use our services whereby they can request and item for purchase or avail of our Document Delivery service.

From: Hyde, Cathy
To: deansciassistant
Subject: RE: Resources implications for CS courses
Date: Wednesday, November 26, 2025 2:52:10 PM

Hi,

There are no resource implications for CS since we are changing some old (no longer offered) required courses to courses that we do offer regularly—since we already offer the courses there is no impact on resources. Is this sufficient or do you need something more? Thanks

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: deansciassistant <deansciassistant@mun.ca>
Sent: Wednesday, November 26, 2025 2:09 PM
To: Hyde, Cathy <cathy@mun.ca>
Subject: Resources implications for CS courses

Hi Cathy,

GEOG/CS joint honours and majors are missing the resource implications. Can you send them along?

Thanks
Cherie

Cherie Hussey | DECANAL ASSISTANT
Faculty of Science C-2001
Memorial University of Newfoundland and Labrador
St. John's, NL A1B 3X7
709-864-8153
deansciassistant@mun.ca
chussey@mun.ca

We acknowledge that the lands on which Memorial University's campuses are situated are in the traditional territories of diverse Indigenous groups, and we acknowledge with respect the diverse histories and cultures of the Beothuk, Mi'kmaq,

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
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LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- ☐ New course(s):
- ☐ Amended or deleted course(s):
- ☐ New program(s):
- ☑ Amended or deleted program(s): **Computer Science and Geography Joint Major**
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Programs

PROGRAM TITLE
Computer Science and Geography Joint Major

RATIONALE AND EXECUTIVE SUMMARY
The purpose of this proposal is to enable offering the dormant Computer Science and Geography Joint Major. It is not currently possible for students to complete this program because of changes to course offerings within each department. We propose to update the program requirements given these changes to re-activate this program. The proposed changes to the program requirements reflect new relevant courses being offered in these departments and make the joint programs more accessible to students by broadening the selection of qualifying courses.

ANTICIPATED EFFECTIVE DATE
Fall 2026

CALENDAR CHANGES
10.1.2 Computer Science and Geography Joint Major

As a component of the Degree Regulations for the General Degree of Bachelor of Science, the following courses are required:

1. Computer Science Requirements

   Thirty-nine credit hours in Computer Science courses are required: 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, ~~2500~~ 3400, ~~the former 4751~~ plus 6 further credit hours in Computer Science courses numbered 3000 or higher and 3 credit hours in Computer Science courses numbered 4000 or higher.

2. Geography Requirements

   Thirty-nine credit hours in Geography courses are required: 1050, 2001, 2102, 2195, 2302, 2425, ~~3202~~, 3222, 3228, 490A, 490B, ~~3250, 3260, 4202, 4250, 4261~~, plus 9 credit hours in Geography courses numbered 3000 or higher.

3. Additional Requirements: Mathematics 1000 or 1006, 1001, 2000, 2050, and Statistics 2500 or 2550.

CALENDAR ENTRY AFTER CHANGES
10.1.2 Computer Science and Geography Joint Major

As a component of the Degree Regulations for the General Degree of Bachelor of Science, the following courses are required:

1. Computer Science Requirements

   Thirty-nine credit hours in Computer Science courses are required: 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3400, plus 6 further credit hours in Computer Science courses numbered 3000 or higher and 3 credit hours in Computer Science courses numbered 4000 or higher.

2. Geography Requirements

   Thirty-nine credit hours in Geography courses are required: 1050, 2001, 2102, 2195, 2302, 2425, 3222, 3228, 490A, 490B, plus 9 credit hours in Geography courses numbered 3000 or higher.

3. Additional Requirements: Mathematics 1000 or 1006, 1001, 2000, 2050, and Statistics 2500 or 2550.

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Undergraduate Calendar Change Proposal Form
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CONSULTATIONS

Faculty of Engineering and Applied Science

Thank you for the opportunity to comment on the proposed Calendar change to update the regulations for the joint major and joint honours in Computer Science and Geography.

At its meeting of 2025 Nov. 19, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science found no impact on our programs.

Yours sincerely,

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science Memorial University of Newfoundland
St. John's NL A1B 3X5

School of Social Work

Having reviewed the rationale for the proposed change, I find no concerns for our social work programs. We support the proposal.
Take care.

Paul A. Issahaku (PhD)
Associate Professor, Acting Associate Dean of Undergraduate Programs
School of Social Work
Memorial University of Newfoundland
St. John's, Canada
Email: pissahaku@mun.ca
Tel. 7098648688

Faculty of Humanities and Social Sciences

That’s great! Thank-you

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science

Memorial University of Newfoundland

220 Prince Philip Drive, St. John's, NL, A1C 5S7

www.mun.ca/computerscience/

Excellent! You have addressed all of my concerns and I can certainly see that the joint honours discussion is larger than this one proposal.

P Dold

Hi,

Thanks for your feedback.

Regarding your first concern, COMP 2006, 2007 and 2008 are one credit hour courses. With this in mind, I believe the total number of credit hours in the proposal is accurate.

Regarding your second concern, you are correct that the proposed joint honours program is very prescribed. The current joint honours program has 48 credit hours required each from Computer Science and Geography (plus the math, plus the thesis) and we kept the number of required credit hours in Computer Science the same, we just changed some of the specific course requirements.

Having such a prescribed joint honours program is the norm within Faculty of Science, there is no option under the Bachelor of Science regulations for a regular honours with a second major. I know that a few years before I started this role (2019) the Faculty of Science made changes to the joint honours programs where they cut out a lot of program requirements – I believe the joint honours programs used to be five-year degrees and they were cut down to four-year degrees. I think you bring up a good point that merits a discussion amongst the Faculty of Science as to whether joint honours

programs should be further cut down to allow students to have more choice and more electives and I'm happy to bring this forward to a future Faculty Council meeting. That will be a much larger discussion than this single proposal.

Let me know your thoughts. Thanks,

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science

Memorial University of Newfoundland

220 Prince Philip Drive, St. John's, NL, A1C 5S7

www.mun.ca/computerscience/

Hello,

HSS has two concerns, which I offer with apologies because Geography had circulated drafts of these to me earlier this Fall.

First, the numbers in both proposals seem to be incorrect. It appears that the requirements for Computer Science for the Joint honours add up to 51 CH not 48:

"As a component of the Degree Regulations for the Honours Degree of Bachelor of Science, the following courses are required:

1. Computer Science Requirements

Forty-eight credit hours in Computer Science courses are required for the Joint Honours:

a. 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3400.

b. Six additional credit hours in courses at the 4000 level not including 499A/B.

c. Nine additional credit hours in courses at the 3000 level or beyond.

In the major, please see the highlighted total for Computer Science, which differs from the stated number of CH. Also, please clarify regulation 1 (perhaps by breaking it down as done for the joint honours regulations):

As a component of the Degree Regulations for the General Degree of Bachelor of Science, the following courses are required:

1. Computer Science Requirements

Thirty-nine credit hours in Computer Science courses are required: 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3400, plus 6 further credit hours in Computer Science courses numbered 3000 or higher and 3 credit hours in Computer Science courses numbered 4000 or higher. = 36+6+3 = 45

Second concern is the rationale for the joint honours. The current proposal seeks to revive an existing program, but it would be helpful to know how such a program benefits students in ways that a regular honours, even one with a second major, does not. If I am seeing this correctly, the Joint Honours defines 102 credit hours, 108 if the student completes 499A/B. This allows students very little flexibility. Perhaps other Joint honours programs also prescribe the vast majority of CH for a degree. There too, perhaps we need to understand more clearly how these programs benefit students.

P Dold

Patricia Dold (she/her)

Associate Professor, Religion and Culture

Associate Dean, Curriculum and Programs

Faculty of Humanities and Social Sciences

St. John's Campus, Memorial University

Library

Date: November 25, 2025

To: Melanie Fitzpatrick, Dean of Science Office and Dr. Benjamin Misiuk, Department of Geography

From: Danial Duda, Map Librarian

Re: Library resources for the Geography-Computer Science Joint Major Program

Cc: Kathryn Rose, Head Collection Strategies, QE II Library

Memorial Libraries have the resources needed to support the teaching, learning, and research needs for the Joint Major Program in Geography and Computer Science. For materials we might not have, people can use our services whereby they can request and item for purchase or avail of our Document Delivery service.

From: Hyde, Cathy
To: deansciassistant
Subject: RE: Resources implications for CS courses
Date: Wednesday, November 26, 2025 2:52:10 PM

Hi,

There are no resource implications for CS since we are changing some old (no longer offered) required courses to courses that we do offer regularly—since we already offer the courses there is no impact on resources. Is this sufficient or do you need something more? Thanks

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

From: deansciassistant <deansciassistant@mun.ca>
Sent: Wednesday, November 26, 2025 2:09 PM
To: Hyde, Cathy <cathy@mun.ca>
Subject: Resources implications for CS courses

Hi Cathy,

GEOG/CS joint honours and majors are missing the resource implications. Can you send them along?

Thanks
Cherie

Cherie Hussey | DECANAL ASSISTANT
Faculty of Science C-2001
Memorial University of Newfoundland and Labrador
St. John's, NL A1B 3X7
709-864-8153
deansciassistant@mun.ca
chussey@mun.ca

We acknowledge that the lands on which Memorial University's campuses are situated are in the traditional territories of diverse Indigenous groups, and we acknowledge with respect the diverse histories and cultures of the Beothuk, Mi'kmaq,

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- ☐ New course(s):
- **X** Amended or deleted course(s): EASC 3905
- ☐ New program(s):
- ☐ Amended or deleted program(s):
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Courses

COURSE NUMBER AND TITLE
EASC 3905: Field Methods in Structural Geology and Stratigraphy

REVISED COURSE NUMBER AND TITLE
EASC 3905: Field Methods in Bedrock Mapping

ABBREVIATED COURSE TITLE
Field Meth. in Bedrock Mapping

RATIONALE

Following the recent introduction of EASC 2906 (replacing EASC 2905), EASC 3905 is no longer a required course, but remains an important field course for practical core geoscience skills, applications, and hands-on learning. It is a pre-requisite for EASC 3705, EASC 4400, and EASC 4905. Along with the recent proposal to increase the course from a 1h to a 3h credit is an increase in scope including a greater integration of both principles of stratigraphy and structural geology, and that is reflected by the addition of EASC 2702 (Sedimentology and Stratigraphy) as a pre-requisite. Revised language in the course description outlines the application of stratigraphic principles.

Additional language in the course description offers flexibility in terms of exactly when the course is offered (facilitating offering during the Spring/Summer semester, as needed) and to offer students accommodations for the field component. Although all students are required to participate in field-based studies, the scope of the field course allows for more accessible options (e.g., work on outcrops accessible by vehicle, and/or use of existing field datasets, digital outcrop models, etc.) that still meet the learning objectives of reinforcing and training in core stratigraphic and structural principles. The structural and stratigraphic skills that are developed in this course are necessary for most geoscience careers in the energy and mineral development fields focused on resource exploration, extraction, and CO_2 storage in the Earth's upper crust.

ANTICIPATED EFFECTIVE DATE
Winter 2026

CALENDAR CHANGES

EASC 3905: ~~Field Methods in Structural Geology and Stratigraphy~~ Field Methods in Bedrock Mapping: is based on approximately 7 ~~5~~ days of geological mapping in structurally-deformed stratified rocks ~~Precambrian rocks near St. John's~~. Emphasis is placed on the application of stratigraphic principles and techniques of structural

analysis. Evenings and approximately 2 laboratory days will be dedicated to data analysis and preparation of ~~structural~~ geologic maps**,** ~~and~~ cross-sections**,** and reports focused on aspects of stratigraphy and/or structural geology. ~~Students are advised to complete this course immediately following EASC 2401.~~ This course will normally be offered during a special session immediately following the examination period in a given semester.

AR: attendance for all of the field school days is required, with reasonable accommodations made upon request. Failure to attend field days or arrange alternate accommodations may result in a failing grade or withdrawal from the course.
CH: ~~1~~ 3
OR: field-based course
PR: ~~EASC~~ Earth Sciences 2401, 2702**,** and 2906 and an application to the Head of the Department.

CALENDAR ENTRY AFTER CHANGES

EASC 3905: Field Methods in Bedrock Mapping: is based on approximately 7 days of geological mapping in structurally-deformed stratified rocks. Emphasis is placed on the application of stratigraphic principles and techniques of structural analysis. Evenings and approximately 2 laboratory days will be dedicated to data analysis and preparation of geologic maps**,** cross-sections**,** and reports focused on aspects of stratigraphy and/or structural geology. This course will normally be offered during a special session immediately following the examination period in a given semester.

AR: attendance for all of the field school days is required, with reasonable accommodations made upon request. Failure to attend field days or arrange alternate accommodations may result in a failing grade or withdrawal from the course.
CH: 3
OR: field-based course
PR: Earth Sciences 2401, 2702**,** and 2906 and an application to the Head of the Department.

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS SOUGHT

- Department of Earth Sciences:
    - Discussion and vote: undergraduate matters committee
    - Discussion and vote: faculty meeting

LIBRARY REPORT

N/A no library resources are required

RESOURCE IMPLICATIONS

No significant new resource allocations will be required, beyond existing bus and/or vehicle rentals, GPS units, radios, mylar, and printing costs. In future, we may relocate 3905 to an area where accommodations are required (e.g., Port Au Port Peninsula). Costs are to be covered by student fees (in addition to tuition costs), and industry donations will be sought after to supplement costs.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

N/A

Memorial University of Newfoundland
Undergraduate Calendar Change
Consultation Form Appendix Page

[The text of the request for formal feedback will be sent to the below. If a response is received the text of the response is attached to this Appendix Page. If no response is received, this will be indicated here.]

Consultations Sought	Response Received (Yes or No)
Business	
Education	Yes
Engineering	Yes
Grenfell Campus *(Arts & Social Science)*	
Human Kinetics & Recreation	Yes
Humanities & Social Science	Yes
Labrador Institute	
Library	N/A
Marine Institute	
Medicine	Yes
Music	
Nursing	Yes
Pharmacy	
Registrar's Office	
Science	
Biochemistry	
Biology	
Chemistry	
Computer Science	
Earth Sciences	
Mathematics & Statistics	
Ocean Sciences	
Physics & Physical Oceanography	
Psychology	
Co-Op Office	

Social Work	

Consultation Feedback

No impact expected for the Faculty of Education.

Regards,

GARRETT MARTIN, B.Sc.

MANAGER OF ACADEMIC PROGRAMS

Office of Academic Programs

Faculty of Education

G.A. Hickman Building, ED 2020

Memorial University

St. John's NL A1B 3X8

Canada

T 709 864 7554

Dr. April Pike, our Dean at the Faculty of Nursing, has reviewed the calendar change proposal. She tells me that she does not see any implications for the Faculty of Nursing.

Thanks for your time,

Jane

Thank you for the opportunity to comment on the proposed revisions to the course EASC 3905 "Field Methods in Bedrock Mapping".

At its meeting on 2025 Oct. 15, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science found no impact on our programs.

Yours sincerely,

Dr. Glyn George, Chair

Committee on Undergraduate Studies

Faculty of Engineering and Applied Science

Memorial University of Newfoundland

St. John's NL A1B 3X5

No concerns from HSS.

P Dold

Patricia Dold (she/her)
Associate Professor, Religion and Culture
Associate Dean, Curriculum and Programs
Faculty of Humanities and Social Sciences
St. John's Campus, Memorial University

Thank you for the opportunity to review. There are no concerns or questions from the SHKR.

Anne-Marie

Anne-Marie Sullivan, PhD, CTRS

Professor and Dean

School of Human Kinetics and Recreation.

Home of the Memorial University Sea-Hawks

(p) 709-864-8129 (e) asulliva@mun.ca

https://mun.webex.com/meet/asulliva

On behalf of the Faculty of Medicine, there are no concerns.

Thanks, Danielle

DANIELLE O'KEEFE MD CCFP FCFP MSc CCPE

Vice Dean, Education and Faculty Affairs

Associate Professor of Family Medicine

Faculty of Medicine

Memorial University of Newfoundland

Faculty of Medicine Building | Room M2M311

300 Prince Philip Drive
St. John's, NL, Canada A1B 3V6
T 709 864 6289 | F 709 864 6336

www.mun.ca/medicine

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- ☐ New course(s):
- ☐ Amended or deleted course(s):
- ✓ New program(s): **Minor in Geophysics**
- ☐ Amended or deleted program(s):
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Programs

PROGRAM TITLE
Minor in Geophysics

RATIONALE
Geophysics as a discipline incorporates ideas, concepts and methodologies from Earth Sciences, Physics, Mathematics and Computer Science. The existing Earth Sciences Major and Honours programs provide pathways for students for whom an Earth Sciences-heavy version of Geophysics is the preferred degree program and career path. Having a Minor in Geophysics would provide a pathway for students following Majors or Honours programs other than Earth Sciences, especially those in Physics (including Ocean Physics and Environmental Physics), Mathematics and Computer Science, for whom a more quantitative, calculation- and computation-heavy version of Geophysics would be desirable.

ANTICIPATED EFFECTIVE DATE
Fall semester 2026.

CALENDAR CHANGES
A Minor in Geophysics will consist of the following:
1. Earth Sciences 1000.
2. Twenty-one credit hours chosen from: Earth Sciences 1002, 2906, 2100, 3170, 3172, 3179, 4105, 4179, 4171, 4173, Physics 2300, 3300, 4300.

A student cannot obtain a Minor in Geophysics in addition to a Major or Honours in Earth Sciences.

CALENDAR ENTRY AFTER CHANGES
A Minor in Geophysics will consist of the following:
1. Earth Sciences 1000.
2. Twenty-one credit hours chosen from: Earth Sciences 1002, 2906, 2100, 3170, 3172, 3179, 4105, 4179, 4171, 4173, Physics 2300, 3300, 4300.

A student cannot obtain a Minor in Geophysics in addition to a Major or Honours in Earth Sciences.

SECONDARY CALENDAR CHANGES
EASC 4179 Signal Processing in Geophysics
is an introduction to the theory and basic computational techniques of digital signal processing in geophysics. Topics covered include: sampling, Fourier transformation, design and application of digital filters, deconvolution, spectral analysis, and two dimensional signal processing, with emphasis on geophysical applications. This course

includes a lab component where students implement and apply various techniques to geophysical data.
LH: 3
PR: EASC 3170, 3172, 3179, and Physics 2820; non-majors may replace EASC 3179 with Mathematics 3202 or Physics 3820; non-majors may replace Physics 2820 with 3 credit hours in Computer Science

SECONDARY CALENDAR ENTRY AFTER CHANGES
EASC 4179 Signal Processing in Geophysics
is an introduction to the theory and basic computational techniques of digital signal processing in geophysics. Topics covered include: sampling, Fourier transformation, design and application of digital filters, deconvolution, spectral analysis, and two dimensional signal processing, with emphasis on geophysical applications. This course includes a lab component where students implement and apply various techniques to geophysical data.
LH: 3
PR: EASC 3170, 3172, 3179, and Physics 2820; non-majors may replace EASC 3179 with Mathematics 3202 or Physics 3820; non-majors may replace Physics 2820 with 3 credit hours in Computer Science

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS SOUGHT **RESPONSE** **DATE**

[The text of the request for formal feedback will be sent to these. If a response is received, note the date here and the text of the response is attached to this Appendix Page. If no response is received, this will be indicated here.]

Business	Yes/No
Education	Yes/No
Engineering	Yes/No
Grenfell Campus School of Arts & Social Science	Yes/No
Human Kinetics and Recreation	Yes/No
Humanities and Social Sciences	Yes/No
Labrador Institute	Yes/No
Library	Yes/No
Marine Institute	Yes/No
Medicine	Yes/No
Music	Yes/No
Nursing	Yes/No
Pharmacy	Yes/No
Registrar's Office	Yes/No
Science	Yes/No
Biochemistry	Yes/No
Biology	Yes/No
Chemistry	Yes/No
Computer Science	Yes/No
Earth Sciences	Yes/No
Mathematics & Statistics	Yes/No
Ocean Sciences	Yes/No
Physics & Physical Oceanography	Yes/No
Psychology	Yes/No
Co-op office	Yes/No
Social Work	Yes/No

Here, proposers should list each academic unit to which the attached Calendar changes (or a draft thereof) were sent for informal feedback. If you forsee any possible impact on courses or programs at Grenfell, ensure that the appropriate consultation is included.

LIBRARY REPORT

A Library Report is not required.

RESOURCE IMPLICATIONS

No new resources are required for this new program. All courses involved in the program are already being taught within the context of the existing Earth Sciences programs.

Title of Proposal: Minor in Geophysics

Checklist for Faculty of Science Course/Program Proposals

This checklist helps faculty to avoid errors and omissions in calendar change proposals. The completed checklist will be reviewed by the Dean's office in the Faculty of Science before being sent out for University-wide (and Faculty-wide) consultations. Proposals received after the deadline set (October 12, 2026) risk not making next year's University Calendar.

Faculty member: check boxes as applicable

	YES	N/A
1. Has the completed proposal been approved by your academic unit's undergraduate committee and/or by the unit as a whole, including the Head?	X	
2. Will the change impact the calendar entry of another unit/department, **including Grenfell Campus and/or interdisciplinary programs**? If so, this is identified in the "secondary change" section, and written consent should be appended.		X
3. Has a Word version of the proposal been submitted, not a pdf? (so that the Dean's Office can make edits as appropriate, if applicable. Authors will be consulted about any edits)	X	
4. Does the title on the front page of the proposal identify the name of the course/program?	X	
5. Are proposed deletions to existing Calendar language identified using strikethroughs, ~~like this~~, and proposed Calendar additions identified by underlining, like this?	X	
6. Have marks for all parts of the evaluation, and the approximate dates of evaluation, been identified? At least 20% of the final grade must be returned before the last day to drop courses without academic prejudice (roughly 2 weeks after the midterm break).		X
7. If a special topics course: has a course number been identified on the cover page of the proposal? (a number should be assigned by the Assistant Registrar for Science)		X

The person that the Dean's office should contact with any questions about the attached proposal:

Colin Farquharson — Name (print)

cgfarquh@mun.ca — Phone / email

Departmental Head Signature: _____

Hello,

This seems a sensible addition that will serve students well without requiring much in the way of additional resources.

HSS supports the proposal.

P Dold

Patricia Dold (she/her)

Associate Professor, Religion and Culture

Associate Dean, Curriculum and Programs

Faculty of Humanities and Social Sciences

St. John's Campus, Memorial University

……..

Good morning,

Dr. April Pike (Dean, Faculty of Nursing), has reviewed the calendar change proposal. She tells me that she sees no implications for our Faculty of Nursing.

Thanks for your time,

Jane

……

Thank you for the opportunity to comment on the proposed Calendar change to establish a minor in geophysics.

At its meeting of 2025 Nov. 19, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science found no impact on our programs.

Yours sincerely,

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science Memorial University of Newfoundland
St. John's NL A1B 3X5

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- ☐ New course(s):
- X Amended or deleted course(s):
- ☐ New program(s):
- ☐ Amended or deleted program(s):
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Courses

COURSE NUMBER AND TITLE
STAT 2500 Statistical Foundations for Data Analytics
STAT 2550 Statistics for Science Students

RATIONALE

Removal of credit restrictions for Psychology courses in Statistics 2500 and 2550

The Psychology 2910, 2925 and the former 2900 courses are not equivalent to Statistics 2500 and 2550. Following approval from the Department of Psychology, the Department of Mathematics and Statistics proposes the removal of the credit restrictions “Psychology 2910, 2925 and the former 2900” from the course descriptions of Statistics 2500 and 2550.

CALENDAR CHANGES under 13.9.2 Statistics Courses

STAT 2500 Statistical Foundations for Data Analytics

covers fundamental concepts such as population, sample, probability, random variables, and their distributions, enabling students to grasp modern data analytics. The course also includes various exploratory data analysis and visualization techniques using specialized statistical software such as R. Additional topics include point and interval estimation, hypothesis testing for one or more populations, and a brief overview of correlation and simple linear regression.

CR: STAT 2550, the former STAT 2510~~, Psychology 2910, 2925, and the former 2900~~

LH: one 90 minute lab per week. Lab computations are done with appropriate statistical software such as R, although no prior statistics computing experience is assumed.

PR: 3 credit hours in Mathematics or Statistics courses, or a combination of placement test and high school Mathematics scores acceptable to the Department

STAT 2550 Statistics for Science Students

is an introduction to basic statistics methods with an emphasis on applications to the sciences. Material includes descriptive statistics, elementary probability, binomial distribution, Poisson distribution, normal distribution, sampling distribution, estimation and hypothesis testing (both one and two sample cases), chi-square test, one way analysis of variance, correlation and simple linear regression.

CR: Engineering 4421, STAT 2500, the former STAT 2510~~, Psychology 2910, Psychology 2925, and the former Psychology 2900~~

LH: one 90 minute lab per week. Statistical computer package will be used in the laboratory, but no prior computing experience is assumed.

PR: MATH 1000 or MATH 1006 or the former 1081

CALENDAR ENTRY AFTER CHANGES

STAT 2500 Statistical Foundations for Data Analytics

covers fundamental concepts such as population, sample, probability, random variables, and their distributions, enabling students to grasp modern data analytics. The course also includes various exploratory data analysis and visualization techniques using specialized statistical software such as R. Additional topics include point and interval estimation, hypothesis testing for one or more populations, and a brief overview of correlation and simple linear regression.

CR: STAT 2550, the former STAT 2510

LH: one 90 minute lab per week. Lab computations are done with appropriate statistical software such as R, although no prior statistics computing experience is assumed.

PR: 3 credit hours in Mathematics or Statistics courses, or a combination of placement test and high school Mathematics scores acceptable to the Department

STAT 2550 Statistics for Science Students

is an introduction to basic statistics methods with an emphasis on applications to the sciences. Material includes descriptive statistics, elementary probability, binomial distribution, Poisson distribution, normal distribution, sampling distribution, estimation and hypothesis testing (both one and two sample cases), chi-square test, one way analysis of variance, correlation and simple linear regression.

CR: Engineering 4421, STAT 2500, the former STAT 2510

LH: one 90 minute lab per week. Statistical computer package will be used in the laboratory, but no prior computing experience is assumed.

PR: MATH 1000 or MATH 1006 or the former 1081

SECONDARY CALENDAR CHANGES under 13.12.3 Psychology Majors Courses

PSYC 2910 Research Methods in Psychology I

is an introduction to the design and application of psychological research with particular concentration on understanding and applying scientific method, creating and testing hypotheses, constructing reliable and valid experiments, managing and analysing data sets, using statistical software, and scientific writing. Specific topics include descriptive statistics including measures of central tendency, variability and relative standing, inferential statistics such as *t* tests for one and two sample designs, correlation and regression, and non-parametric statistics.

CR: ~~Statistics 2500, 2550, the former 2510,~~ PSYC 2925

LH: one laboratory period weekly

PR: PSYC 1000, 1001; Mathematics 1000 or two of 1090, 109B, 1050 and 1051 (or equivalent) and admission to a Major in Psychology or Behavioural Neuroscience

CALENDAR ENTRY AFTER CHANGES

PSYC 2910 Research Methods in Psychology I

is an introduction to the design and application of psychological research with particular concentration on understanding and applying scientific method, creating and testing hypotheses, constructing reliable and valid experiments, managing and analysing data sets, using statistical software, and scientific writing. Specific topics include descriptive statistics including measures of central tendency, variability and relative standing, inferential statistics such as *t* tests for one and two sample designs, correlation and regression, and non-parametric statistics.

CR: PSYC 2925

LH: one laboratory period weekly

PR: PSYC 1000, 1001; Mathematics 1000 or two of 1090, 109B, 1050 and 1051 (or equivalent) and admission to a Major in Psychology or Behavioural Neuroscience

SECONDARY CALENDAR CHANGES under Grenfell Campus 13.22 Mathematics and Statistics

STAT 2500 Statistical Foundations for Data Analytics

covers fundamental concepts such as population, sample, probability, random variables, and their distributions, enabling students to grasp modern data analytics. The course also includes various exploratory data analysis and visualization techniques using specialized statistical software such as R. Additional topics include point and interval estimation, hypothesis testing for one or more populations, and a brief overview of correlation and simple linear regression.

CR: STAT 2550, the former STAT 2510~~, Psychology 2910, 2925, and the former 2900~~

LH: one 90 minute lab per week. Lab computations are done with appropriate statistical software such as R, although no prior statistics computing experience is assumed.

PR: 3 credit hours in Mathematics or Statistics courses, or a combination of placement test and high school Mathematics scores acceptable to the School of Science and the Environment

STAT 2550 Statistics for Science Students

is an introduction to basic statistics methods with an emphasis on applications to the sciences. Material includes descriptive statistics, elementary probability, binomial distribution, Poisson distribution, normal distribution, sampling distribution, estimation and hypothesis testing (both one and two sample cases), chi-square test, one way analysis of variance, correlation and simple linear regression.

CR: Engineering 4421, STAT 2500, the former STAT 2510~~, Psychology 2910, Psychology 2925, and the former Psychology 2900~~

LH: 1.5

OR: Statistical computer package will be used in the laboratory, but no prior computing experience is assumed.

PR: MATH 1000 or MATH 1006 or the former 1081

CALENDAR ENTRY AFTER CHANGES

STAT 2500 Statistical Foundations for Data Analytics

covers fundamental concepts such as population, sample, probability, random variables, and their distributions, enabling students to grasp modern data analytics. The course also includes various exploratory data analysis and visualization techniques using specialized statistical software such as R. Additional topics include point and interval estimation, hypothesis testing for one or more populations, and a brief overview of correlation and simple linear regression.

CR: STAT 2550, the former STAT 2510

LH: one 90 minute lab per week. Lab computations are done with appropriate statistical software such as R, although no prior statistics computing experience is assumed.

PR: 3 credit hours in Mathematics or Statistics courses, or a combination of placement test and high school Mathematics scores acceptable the School of Science and the Environment

STAT 2550 Statistics for Science Students

is an introduction to basic statistics methods with an emphasis on applications to the sciences. Material includes descriptive statistics, elementary probability, binomial distribution, Poisson distribution, normal distribution, sampling distribution, estimation and hypothesis testing (both one and two sample cases), chi-square test, one way analysis of variance, correlation and simple linear regression.

CR: Engineering 4421, STAT 2500, the former STAT 2510

LH: 1.5

OR: Statistical computer package will be used in the laboratory, but no prior computing experience is assumed.

PR: MATH 1000 or MATH 1006 or the former 1081

SECONDARY CALENDAR CHANGES under Grenfell Campus 13.26.1 Psychology Survey Courses

PSYC 2925 Research Methods and Data Analysis in Psychology I

will cover basic research methods and supporting statistical concepts and techniques. Basic methods will include observational techniques, correlational studies, and surveys. Supporting statistical concepts will include populations and samples, measures of central tendency and variability, basic probability, correlation, simple linear regression and validity and reliability. Supporting statistical techniques will include producing tables and graphs, and the calculation and interpretation of measures of central tendency, variability, probabilities, correlation, and simple linear regression. Students will also learn how to write a description of a simple study in basic APA style, and how to use a statistical package to analyse surveys and calculate correlation. Basic ethical principles in conducting research will be introduced. This course includes a weekly laboratory.

CR: Psychology 2910, ~~Statistics 2500, Statistics 2550,~~ the former Psychology 2900~~, and the former Statistics 2510~~

LH: 3

CALENDAR ENTRY AFTER CHANGES

PSYC 2925 Research Methods and Data Analysis in Psychology I

will cover basic research methods and supporting statistical concepts and techniques. Basic methods will include observational techniques, correlational studies, and surveys. Supporting statistical concepts will include populations and samples, measures of central tendency and variability, basic probability, correlation, simple linear regression and validity and reliability. Supporting statistical techniques will include producing tables and graphs, and the calculation and interpretation of measures of central tendency, variability, probabilities, correlation, and simple linear regression. Students will also learn how to write a description of a simple study in basic APA style, and how to use a statistical package to analyse surveys and calculate correlation. Basic ethical principles in conducting research will be introduced. This course includes a weekly laboratory.

CR: Psychology 2910, the former Psychology 2900

LH: 3

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS SOUGHT

Academic Unit	Response Received
Business Administration	
Education	
Engineering and Applied Science	15 Oct 2025
Grenfell Campus School of Arts & Social Science	14 Nov 2025
Grenfell Campus School of Fine Arts	
Grenfell Campus School of Science and the Environment	13 Nov 2025
Human Kinetics and Recreation	
Humanities and Social Sciences	10 Oct 2025
Labrador Institute	
Library	02 Oct 2025
Marine Institute	
Medicine	01 Oct 2025

Academic Unit	Response Received
Music	
Nursing	06 Oct 2025
Pharmacy	02 Oct 2025
Registrar's Office	
Science	
Biochemistry	
Biology	
Chemistry	
Computer Science	
Earth Sciences	
Mathematics and Statistics	
Ocean Sciences	
Physics and Physical Oceanography	
Psychology	03 Oct 2025
Co-op office	
Social Work	05 Oct 2025

LIBRARY REPORT

Good Morning,

Thank you for the opportunity to provide feedback on the proposal involving credit restrictions between psychology and statistics courses. The following changes will have no impact on the library's collections or budget allocation.

Kathryn

Rose, Kathryn <kathrynr@mun.ca>

RESOURCE IMPLICATIONS

No resource implications as no new courses are being proposed.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

No new courses are being proposed.

CONSULTATION RECEIVED

<gcsass-dean@mun.ca>

Dear all,

My apologies for my delayed response, but as is noted in the email string below, our Psychology Program is in favour of the proposed change to remove the credit restriction between STAT 2500/2550 and PSYC 2925, and I am happy to support this position on behalf of the School of Arts and Social Science.

Kind regards,

Julie

JULIE PITCHER GILES, PhD | Interim Dean | School of Arts and Social Science

Assistant Professor | Business

Grenfell Campus, Memorial University

20 University Drive | Corner Brook, NL | A2H 5G4 | Canada

<rbailey00@mun.ca>

Dear Mikhail,

I apologise for not responding earlier -- I did not expect that this would actually delay the proposal's approval. That said, I really do appreciate that the Faculty of Science regards having our consent as important.

On the basis of our earlier discussions, I can confirm that the School of Science and the Environment is in full support of the secondary changes to STAT 2500 and 2550 in the Grenfell Campus section of the Calendar which appear in your proposal.

Since PSYC 2925 is under the jurisdiction of the School of Arts and Social Science, I have copied their Dean, Dr. Julie Pitcher Giles, on this response for her to provide her School's consent.

Best wishes,
Robert.

==========

Dr. Robert Bailey
Interim Dean, School of Science and the Environment
Associate Professor, Mathematics
Grenfell Campus, Memorial University
Corner Brook, NL, Canada

Office: AS 3025
Phone: +1 (709) 637-7166 (no voicemail available)
Email: robert.bailey@mun.ca

< engrconsult@mun.ca >

Thank you for the opportunity to comment on the proposed removal of credit restrictions between Psychology 2910, 2925 and the former 2900; and Statistics 2500 and 2550.

At its meeting on 2025 Oct. 15, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science found no impact on our programs.

Yours sincerely,

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science
Memorial University of Newfoundland
St. John's NL A1B 3X5

<assocdeancphss@mun.ca>

HSS welcomes this change. We have seen requests to wave the CR in cases where students were completing programs that required both CR courses.

P Dold

Patricia Dold (she/her)

Associate Professor, Religion and Culture

Associate Dean, Curriculum and Programs

Faculty of Humanities and Social Sciences

St. John's Campus, Memorial University

Jane Westcott-Stevens <jwstevens@mun.ca>

Good morning Dr. Kotchetov.

Dr. April Pike (Dean) and Mrs. Andrea Watkins (Associate Dean, Undergraduate Programs) have both reviewed the proposal. They tell me that they have no feedback on this change but that it will require calendar changes for Nursing, unless the calendar editor makes these as secondary changes. Mrs. Watkins will bring this up at SCugS when it comes there for voting, as to clarity for our responsibility with this change if approved.

Thank you for your time,
Jane

Hello Mikhail,
I have reviewed the proposed changes and see no issues of concern from the School of Social Work.
All the best.

Paul A. Issahaku (PhD)
Associate Professor, Acting Associate Dean of Undergraduate Programs
School of Social Work
Memorial University of Newfoundland
St. John's, Canada
Email: pissahaku@mun.ca
Tel. 7098648688

Hi Mikhail,

As indicated by our earlier discussions, the Department of Psychology supports this proposal to remove the credit restrictions between PSYC 2910 and STAT 2500/2550.

Best,
-Kathleen

Kathleen L. Hourihan, PhD (she/her)
Associate Professor
Department of Psychology
Memorial University of Newfoundland
(709) 864-8771

Gerona McGrath <geronam@mun.ca>

Thank you for the opportunity to review the proposed changes. There is no impact on the School of Pharmacy.

Gerona

Hi,

On behalf of the Faculty of Medicine, there are no concerns.

Thanks, Danielle

DANIELLE O'KEEFE MD CCFP FCFP MSc CCPE

Vice Dean, Education and Faculty Affairs

Associate Professor of Family Medicine

Faculty of Medicine

Memorial University of Newfoundland

Faculty of Medicine Building | Room M2M311

On 2025-09-29, 2:27 PM, "Math Consult" <mathconsult@mun.ca <mailto:mathconsult@mun.ca>> wrote:

Hello Everyone,

Department of Mathematics and Statistics seeks consultation on the
proposed removal of credit restrictions
between Psychology 2910, 2925 and the former 2900 on the one hand and
Statistics 2500 and 2550 on the other hand.
In the opinion of faculty members who currently teach Psychology
2910/2925 and Statistics 2500/2550, these courses are not equivalent.

More detailed information can be found in the attached proposal.
Department of Mathematics and Statistics supports the calendar changes
to STAT 2500/2550, and Department of Psychology the secondary changes to
PSYC 2910. We have also received positive feedback from
the School of Science and the Environment at Grenfell.

Please provide any feedback to this email address by Monday, October 27.

Best regards,

Mikhail Kotchetov
Deputy Head (Undergraduate)
Department of Mathematics and Statistics

INFORMAL FEEDBACK

On 2025-09-22 7:22 p.m., Bailey, Robert wrote:

Dear Mikhail,

I have heard back from the Program Chairs for Mathematics (Dr. Gallant) and Psychology (Dr. Buckle),

and they are both in support of the change being proposed. (I have cc'd them both, along with the Dean of Arts and Social Science (Dr. Pitcher-Giles), which is where Psychology is housed at Grenfell.)

In particular, the Psychology program provided the following feedback: "[We] are in favour of removing the credit restriction between STAT 2500/2550 and Psych 2925. There is an emphasis on psychological research methods and ethics, APA style and lab report writing, in addition to statistical analysis, in Psych 2925. This content makes it different from STAT 2500/2550, therefore, we are in favour of removing the credit restriction."

On the basis of this, we are requesting that you include a secondary Calendar change in your proposal, to amend the STAT 2500/2550 and PSYC 2925 Calendar entries in the Grenfell section of the Calendar in the same manner as the STAT 2500/2550 and PSYC 2910 entries in the Faculty of Science section.

Let me know if you need anything else!

Best wishes,
Robert.

==========
Dr. Robert Bailey
Interim Dean, School of Science and the Environment
Associate Professor, Mathematics
Grenfell Campus, Memorial University
Corner Brook, NL, Canada

Office: AS 3025
Phone: +1 (709) 637-7166 (no voicemail available)
Email: robert.bailey@mun.ca

Please do not feel obliged to respond outside of your usual working hours!

-----Original Message-----
From: Mikhail Kotchetov <mikhail@mun.ca>
Sent: 15 September 2025 19:48
To: Bailey, Robert <rbailey00@mun.ca>
Subject: Re: Psychology/Statistics credit restriction

Hi Robert,

The rationale is that our new Minor in Data Analytics may be attractive to Psychology students, but this credit restriction would be problematic for them, because PSYC 2910 is a required course for the Psychology and Behavioural Neuroscience Majors, whereas STAT 2500 or 2550 is required for the Minor in Data Analytics. This issue was pointed out by the Psychology Dept some time ago, and there is an agreement of the instructors from both departments that there is sufficient difference between PSYC

2910 and STAT 2500/2550 for the credit restriction to be removed.

We plan to bring this proposal to our next department meeting, which is planned for Sep 24, and Psychology is also going to bring it to their meeting. If approved by the two departments in St. John's, this change will go for formal consultation, including Grenfell, but it would be helpful to know your opinion before that.

Best wishes,

Mikhail

On 2025-09-15 7:07 p.m., Bailey, Robert wrote:

Dear Mikhail,

Thanks for your message. I'll need to bring this to both the Mathematics and Psychology programs here for consideration -- would you be able to provide some kind of rationale for why this change is being made?

Note that at Grenfell Campus the counterpart PSYC course is PSYC 2925 rather than PSYC 2910.

Best wishes,
Robert.

==========
Dr. Robert Bailey
Interim Dean, School of Science and the Environment Associate
Professor, Mathematics Grenfell Campus, Memorial University Corner
Brook, NL, Canada

Office: AS 3025
Phone: +1 (709) 637-7166 (no voicemail available)
Email: robert.bailey@mun.ca

Please do not feel obliged to respond outside of your usual working hours!

-----Original Message-----
From: Mikhail Kotchetov <mikhail@mun.ca>
Sent: 11 September 2025 09:50
To: robert.bailey@mun.ca
Subject: Psychology/Statistics credit restriction

Hi Robert,

I am taking over from Ivan as the deputy head for undergraduate studies. There is one item left over from last year: the removal of the credit restriction between PSYC 2910 and our STAT 2500 and STAT 2550. Both Psychology and our statistics group are in favour. Are there any concerns or objections from your side?

Best regards,
Mikhail

On 2025-08-04 16:50, Booth, Ivan wrote:

Hello Kathleen,

Apologies for the very late reply. This sounds fine.

In the Fall we can put the changes for the credit restrictions for 2500/2550 and 2910 through both Departments. I have just explained the situation to Misha (our new Deputy Head Mathematics who will monitor this email and is also the chair of our undergrad committee). So you can coordinate with him and Candemir (Deputy Head Statistics).

Best,
Ivan

PS I'm signing out from this account now but you can still reach me at ibooth@mun.ca if necessary.

On Jun 12, 2025, at 10:24, Deputy Head, Department of Psychology <psychdeputyhead@mun.ca> wrote:

Hi all,

I've received feedback from the instructors in our department regarding the credit restrictions.

We're in agreement that we would support removing the credit restriction between our PSYC 2910 and your STAT 2500 and STAT 2550.

However, there was much more overlap between our PSYC 2911 and your STAT 2560, so we would like to retain that credit restriction. This would mean that our Psychology majors would not be able to complete the general Statistics Minor, but still could choose the new Data Analytics Minor; for the STAT 2530 or STAT 2560 requirement, they would be able to take STAT 2530 (after first taking STAT 2500 and

MATH 1000/1006 or STAT 1500, which they likely took to be eligible for our major anyway), and then STAT 2530 would allow them to take STAT 3521 or 3530.

Thanks!
-Kathleen Hourihan

Kathleen L. Hourihan, PhD (she/her)
Associate Professor
Department of Psychology
Memorial University of Newfoundland
(709) 864-8771

FROM: Candemir Cigsar <ccigsar@mun.ca>
SENT: April 23, 2025 10:43 AM
TO: Deputy Head, Department of Psychology <psychdeputyhead@mun.ca>; Booth, Ivan <mathconsult@mun.ca>
CC: Yildiz Yilmaz <yyilmaz@mun.ca>
SUBJECT: Re: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Hi Kathleen,

I have attached the syllabus of STAT 2560 course.

Thanks,

Candemir
Deputy Head, Statistics and Data Science

--

Candemir Cigsar, PhD
Associate Professor of Statistics
Dept. of Mathematics & Statistics
Memorial University of Newfoundland
St. John’s, NL, Canada
A1C 5S7
Phone: (709) 864-8718
Fax: (709) 864-3010
Email: ccigsar@mun.ca

FROM: "Deputy Head, Department of Psychology"

<psychdeputyhead@mun.ca>
DATE: Monday, April 21, 2025 at 12:43 PM
TO: "Booth, Ivan" <mathconsult@mun.ca>, "Deputy Head, Department of Psychology" <psychdeputyhead@mun.ca>
CC: Candemir Cigsar <ccigsar@mun.ca>, "yyilmaz@mun.ca" <yyilmaz@mun.ca>
SUBJECT: RE: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Hi Ivan,

No worries for any delays; I don't think this is an urgent change, so long as we can have the CRs removed for whenever a students may potentially want to take the relevant courses.

Could we possibly get the syllabus for STAT 2560? If you are removing 2501 then we wouldn't need to worry about reviewing that, but I would also like to run the syllabus by our PSYC 2911 instructor. I can imagine that we'll also be fine with removing that credit restriction for similar reasons, but still would like to consult.

Best,
-Kathleen

Kathleen L. Hourihan, PhD (she/her)
Associate Professor
Department of Psychology
Memorial University of Newfoundland
(709) 864-8771

On Apr 16, 2025, at 09:37, Deputy Head, Department of Psychology <psychdeputyhead@mun.ca> wrote:

Hi all,

Thanks for sending the syllabi for the relevant courses. After review and discussion among the faculty who teach PSYC 2910 (and 2911), we have determined that although there is some content overlap in terms of some of the statistical tests covered, the manner of delivery (e.g., use of R in the STAT courses but jamovi in PSYC) and additional psychology methodology specifics means that the courses are sufficiently different that we would support removing the credit restrictions.

Would this be a calendar change proposed by the Mathematics and Statistics department then? With removal of the CR on PSYC 2910 as a secondary change? (I also cannot really speak to the CR for PSYC 2925, as this is a Grenfell course.)

I note that we would still have the credit restrictions for our PSYC 2911 course with STAT 2501 and 2560, but the minor requires either 2530 or 2560, so presumably PSYC majors who wanted to choose this minor could take 2530 to fulfill this requirement. It would mean that they would therefore need to take STAT 2500 rather than STAT 2550, though, considering the specific PRs for 2530 vs. 2560. (And this would be a little odd, considering that a PSYC major who wanted a minor in STAT would have to be doing the BSc instead of the BA, as BA majors outside of HSS require the minor to be in HSS.) We can also perhaps consider removal of the CRs between PSYC 2911 and STAT 2560? Should we address that now, as we propose deleting the CRs between PSYC 2910 and STAT 2500 and 2550?

Best,

-Kathleen

Kathleen L. Hourihan, PhD (she/her)

Associate Professor

Department of Psychology

Memorial University of Newfoundland

(709) 864-8771

From: Candemir Cigsar <ccigsar@mun.ca>
Sent: April 2, 2025 10:26 AM
To: Deputy Head, Department of Psychology <psychdeputyhead@mun.ca>; Booth, Ivan <mathconsult@mun.ca>
Cc: Yildiz Yilmaz <yyilmaz@mun.ca>
Subject: Re: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Hi Kathleen,

I have attached the syllabus of the STAT 2500 and STAT 2550 courses.

Thanks,

Candemir

Deputy Head, Statistics and Data Science

Department of Mathematics & Statistics

Memorial University of Newfoundland

From: "Deputy Head, Department of Psychology" <psychdeputyhead@mun.ca>
Date: Wednesday, April 2, 2025 at 8:16 AM
To: "Booth, Ivan" <mathconsult@mun.ca>, "Deputy Head, Department of Psychology" <psychdeputyhead@mun.ca>
Cc: "yyilmaz@mun.ca" <yyilmaz@mun.ca>, "ccigsar@mun.ca" <ccigsar@mun.ca>
Subject: RE: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Hi Ivan,

I would need to consult with others in the department, especially those who teach 2910/2911, before I could say definitively how we'd feel about removing the credit restriction. Would you be able to send me a current syllabus for the two courses?

Thanks,

-Kathleen

Kathleen L. Hourihan, PhD (she/her)

Associate Professor

Department of Psychology

Memorial University of Newfoundland

From: Booth, Ivan <mathconsult@mun.ca>
Sent: April 1, 2025 1:57 PM
To: Deputy Head, Department of Psychology <psychdeputyhead@mun.ca>
Cc: Yildiz Yilmaz <yyilmaz@mun.ca>; ccigsar@mun.ca
Subject: Re: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Hello Kathleen,

Thanks for the feedback. We are open to the possibility of removing the credit restriction between 2500/2550 and 2910 and have actually discussed this in a previous Stats/Math Undergrad Studies meeting. However, we would prefer to deal with that separately from this proposal.

Would there be any objection on the Psychology side to just removing the restriction?

Best,

Ivan

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- ☐ New course(s):
- ☐ Amended or deleted course(s):
- ☐ New program(s):
- ☐ Amended or deleted program(s):
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- **X New, amended or deleted Faculty, School or Departmental regulations**
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Regulations

SECTION OF CALENDAR

Indicate the section of the Calendar impacted by the proposed change(s):

- ☐ Glossary of Terms Used in the Calendar
- ☐ Admission/Readmission to the University (Undergraduate)
- ☐ General Academic Regulations (Undergraduate)
- **X Faculty of: Science**
- ☐ School of:
- ☐ Department of:
- ☐ Other:

RATIONALE

Recently, the Department of Physics and Physical Oceanography successfully proposed a change of Faculty of Science Supplementary Examination regulation 8.1 (https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-science/8/) to allow all students taking PHYS 3000 *Physics of Device Materials* the opportunity to avail of a supplementary exam if they wish. This was done to accommodate students in both the Computer Engineering and Electrical Engineering programs who fail PHYS 3000, which is a required course for them. Engineering students who fail an Engineering course can take advantage of the re-examination clause in the Faculty of Engineering and Applied Science's Promotion Regulations: https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-engineering-and-applied-science/7/2/. However, PHYS 3000 is a Science course, and does not fall under Engineering regulations. Enabling supplementary exams for PHYS 3000 is a remedy to a provide a second-chance option similar to re-examinations.

The present proposal seeks to further align PHYS 3000 supplementary exams with Engineering Promotion regulations by expanding the eligibility for supplementary examinations from the range of final grade of 45-49 to the range 40-49 (the norm in Engineering). Students of PHYS 3000 are almost all from Engineering.

ANTICIPATED EFFECTIVE DATE

Fall 2026

CALENDAR CHANGES

(St. John's Campus/Faculty of Science)

8 Supplementary Examinations

4. Students who have clear or conditional standing may write a supplementary examination in a course if they obtained a final grade of 45-49F (or 40-49F in the case of Physics 3000) and if their grade in the course excluding the original final examination is at least 50%.

CALENDAR ENTRY AFTER CHANGES

8 Supplementary Examinations

4. Students who have clear or conditional standing may write a supplementary examination in a course if they obtained a final grade of 45-49F (or 40-49F in the case of Physics 3000) and if their grade in the course excluding the original final examination is at least 50%.

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Appendix Page

CONSULTATIONS SOUGHT

Consultation email

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Monday, October 6, 2025 at 4:51 PM
To: assocdeancphss <assocdeancphss@mun.ca>, Business Undergrad Help <busihelp@mun.ca>, Dean of Education <educdean@mun.ca>, Engineering and Applied Science <engrconsult@mun.ca>, HKR Dean <hkrdean@mun.ca>, Dean of Medicine : McKeen, Dr. Dolores <deanofmedicine@mun.ca>, Karen Bulmer <kbulmer@mun.ca>, DeanNurse <DeanNurse@mun.ca>, Pharmacy <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Dean of Arts and Social Science (Grenfell Campus) <gcsass-dean@mun.ca>, GC School of Science and the Environment <gcsse@mun.ca>, GC School of Fine Arts <gcsofa@mun.ca>, Marine Institute <miugconsultations@mi.mun.ca>, deanofsass <deanofsass@mun.ca>
Subject: Consultation Request -- Supplemental Exams for PHYS 3000

The Department of Physics and Physical Oceanography is soliciting feedback on a proposal for extending the final grade eligibility for supplemental exams in Physics 3000 from 45-49 to 40-49. This proposal is specifically for Physics 3000 and does not affect Mathematics courses which offer supplemental exams.

Physics 3000 is a required course for ECE students in the Faculty of Engineering and Applied Science and is taken mostly by Engineering students. The proposed changes will better align eligibility for a supplemental exam in Physics 3000 (which follows Faculty of Science regulations) with re-examination regulations in FEAS.

Please send comments to Ivan Saika-Voivod at saika@mun.ca.

Thank you,

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

Academic Unit	Response Received
Humanities and Social Sciences	Oct. 7, 2025
Business Administration	
Education	
Engineering and Applied Science	Oct. 7, 2025
Human Kinetics and Recreation	Oct. 27, 2025
Marine Institute	
Medicine	
Music	
Nursing	Oct. 8, 2025
Pharmacy	Oct. 7, 2025
Science	
Biochemistry	
Biology	
Chemistry	
Computer Science	

Academic Unit	Response Received
Earth Sciences	
Mathematics and Statistics	Oct. 31, 2025
Ocean Sciences	
Physics and Physical Oceanography	
Psychology	
Social Work	
Library	
Grenfell - Arts and Social Science	
Grenfell - Science and the Environment	
Grenfell - Fine Arts	
Labrador Institute	

FEAS

From: CUGS Chair <engrconsult@mun.ca>
Date: Tuesday, October 7, 2025 at 8:12 AM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: RE: Consultation Request -- Supplemental Exams for PHYS 3000

Ivan, I refer to our Faculty's strong support (e-mail of Sep. 17) for this Calendar change.

Glyn.

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science
Memorial University of Newfoundland
St. John's NL A1B 3X5

[Note: email of Sept. 17 is included at the end of Additional Information below.]

HSS

From: assocdeancphss <assocdeancphss@mun.ca>
Date: Tuesday, October 7, 2025 at 9:27 AM
To: Saika-Voivod, Ivan <saika@mun.ca>, …
Subject: Re: Consultation Request -- Supplemental Exams for PHYS 3000

No concerns from HSS.

P Dold

Patricia Dold (she/her)
Associate Professor, Religion and Culture
Associate Dean, Curriculum and Programs
Faculty of Humanities and Social Sciences
St. John's Campus, Memorial University

School of Pharmacy

From: McGrath, Gerona <geronam@mun.ca>
Date: Tuesday, October 7, 2025 at 4:11 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: RE: Consultation Request -- Supplemental Exams for PHYS 3000

Thank you for the opportunity to review the proposed change. The School of Pharmacy has no objection.

Gerona

Nursing

From: DeanNurse <DeanNurse@mun.ca>
Date: Wednesday, October 8, 2025 at 3:18 PM

To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: RE: Consultation Request -- Supplemental Exams for PHYS 3000
Good afternoon,

Dr. Pike (dean of the Faculty of Nursing) has reviewed the calendar change. She tells me that she sees no implications for the Faculty of Nursing.

Thank you for your time,
Jane

HKR

From: HKR Dean <hkrdean@mun.ca>
Date: Monday, October 27, 2025 at 11:13 AM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: Re: Consultation Request -- Supplemental Exams for PHYS 3000

Hi Ivan,
Thank you for the opportunity to review. There are no concerns or questions from the SHKR.

Anne-Marie

Anne-Marie Sullivan, PhD, CTRS
Professor and Dean
School of Human Kinetics and Recreation.
Home of the Memorial University Sea-Hawks
(p) 709-864-8129 (e) asulliva@mun.ca
https://mun.webex.com/meet/asulliva

Mathematics and Statistics

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Monday, November 3, 2025 at 9:10 AM
To: Math Consult <mathconsult@mun.ca>
Subject: Re: Consultation Request -- Supplemental Exams for PHYS 3000
Dear Misha,

Thank you and your committee for your thoughtful response.

We are not averse to reviewing the regulations as a whole and we appreciate your willingness to draft a proposal. Our only concern is about timelines, as we would like to accommodate Engineering after our discussions with them.

As the FoSCUGS meeting is this Tuesday, we might as well discuss it there and proceed according to the collective thinking of FoSCUGS. Perhaps revising the regulations now is the way to go, or perhaps we can go ahead with the current proposal, with PHYS 3000 as an exception to the rule, as we revise the regulations. Should revising the regulations now be the best way forward, knowing that the regulations are being reviewed would hopefully allow us to obtain a waiver to the regulations for PHYS 3000 for next year. Let's hear what Shannon and others have to say.

Best regards,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Math Consult <mathconsult@mun.ca>
Date: Friday, October 31, 2025 at 8:43 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: Fwd: Consultation Request -- Supplemental Exams for PHYS 3000
Dear Ivan,

The Undergraduate Studies Committee of the Department of Mathematics and Statistics has discussed the proposed change to the supplemental exam eligibility for PHYS 3000. We are concerned that this change would create inconsistency between departments in the Faculty of Science and defeat the purpose of the faculty-wide supplementary exam regulations.

Instead of making this ad hoc adjustment for one course, we feel that it is time to review these regulations as a whole. We can put together a proposal and send it for your consideration. We hope that we can find a version that will work for both departments and perhaps other departments as well, if they decide to offer supplementary exams in the future. Would this be acceptable to you?

Best regards,
Misha

RESOURCE IMPLICATIONS
Administrative overhead required for holding supplemental exams falls in the same category of deferred exams. No additional resources are required.

ADDITIONAL INFORMATION

Feedback on Previous Proposal from FEAS prompting the current proposal

From: deanengineering <dean.engineering@mun.ca>
Date: Wednesday, December 4, 2024 at 3:47 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: George,Glyn <glyn@mun.ca>, Jonathan Anderson <jonathan.anderson@mun.ca>, Ahmed, Salim <sahmed@mun.ca>, Garzon, Marissella <mgarzon@mun.ca>, engrconsult@mun.ca <engrconsult@mun.ca>
Subject: Consultation request: Suppl. exams for PHYS 3000
Good afternoon,

Thank you for the opportunity to comment on the proposed Calendar change to add PHYS 3000 to the list of Science courses for which supplementary examinations are available.

At its meeting on Nov. 27, the Faculty Council of the Faculty of Engineering and Applied Science expressed strong support for this proposal, which will be of considerable benefit to students who achieve a probationary promotion in Academic Term 3 of the Computer Engineering and Electrical Engineering majors, with a failure in PHYS 3000. Thank you for proposing this change.

We do, however, note that supplementary examinations are available only if the grade is in the range 45 to 49. In Engineering, re-examinations are available to students on probationary promotion (PRP) if the grade in the failed course is in the range 40 to 49. Below 40, students must repeat the failed course in order to clear promotion, which usually delays graduation by a year.

Our PRP students with PHYS 3000 grades below 45 will continue to be unable to clear their probationary status until PHYS 3000 is offered again a year later. We would appreciate an expansion of the eligibility for supplementary examinations from the range 45-49 to the range 40-49.

Secretary to Faculty Council on behalf of Dr. Octavia Dobre, Interim Dean

****

Octavia A. Dobre, P.Eng., CAE Fellow, EIC Fellow, IEEE Fellow, RSC Fellow
Interim Dean, Professor, and Tier-1 Canada Research Chair
Engineering and Applied Science, Memorial University, Canada
http://www.engr.mun.ca/~dobre/

Pre-consulatation for current proposal with the Faculty of Engineering and Applied Science

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Wednesday, September 17, 2025 at 5:07 PM
To: Engineering Consult <engrconsult@mun.ca>
Cc: Edmunds, Jayde <edmundsj@mun.ca>, Masek, Vlastimil <masek@mun.ca>, Adam Noel <adam.noel@mun.ca>, deanengineering <dean.engineering@mun.ca>
Subject: Re: Consultation request: Suppl. exams for PHYS 3000

Thank you very much for your feedback. Thank you for including the view of your committee on its contentment with the minimum grade of 40.
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Engineering Consult <engrconsult@mun.ca>
Date: Wednesday, September 17, 2025 at 2:53 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Edmunds, Jayde <edmundsj@mun.ca>, Masek, Vlastimil <masek@mun.ca>, Adam Noel <adam.noel@mun.ca>, deanengineering <dean.engineering@mun.ca>
Subject: Re: Consultation request: Suppl. exams for PHYS 3000

Thank you for the opportunity to comment on the proposal to expand eligibility for supplementary exams for PHYS 3000 from 45-49 to 40-49, which will help students in Term 3 of the Computer and Electrical majors of Engineering who have a probationary promotion (PRP) due to a failure in the required course PHYS 3000.

At its meeting on Sep. 17, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science expressed strong support and gratitude for this proposed Calendar change.

There is another proposal pending at Senate, to drop the minimum grade requirement of 40 for eligibility for re-examinations in engineering courses. We are content with retaining a minimum grade of 40 in the case of PHYS 3000.

Yours sincerely,

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science
Memorial University of Newfoundland
St. John's NL A1B 3X5

On 2025-09-16 17:09, Saika-Voivod, Ivan wrote:
> Dear Dr. Chen,
>
> Last year we introduced a calendar change to introduce supplemental
> exams for PHYS 3000, a required course for ECE students. We did this
> to better align this Science course with re-examination opportunities
> that Engineering students have to meet progression requirements.
>
> Our Undergraduate Studies Committee is now proposing an update in
> response to feedback from FEAS to expand the eligibility for
> supplemental examinations from the range 45-49 to the range 40-49 to
> better with FEAS regulations.
>
> As such, we would be glad to receive informal feedback on the
> attached proposal to update the Faculty of Science regulations for
> supplemental exams
> https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-science/8/
> [1]. Formal consultations will follow approval of the proposal by our
> department, but this will likely take place only on Oct. 8, our next
> scheduled meeting.
>
> Best regards,
> Ivan
>
> Ivan Saika-Voivod, Professor
>
> Deputy Head (Undergraduate Studies)
> Department of Physics and Physical Oceanography, Memorial University

> of Newfoundland
> Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026,
> http://www.physics.mun.ca/~saika/

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES
Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- **X New course: Physics 3055 Introduction to Health Physics**
- ☐ Amended or deleted course(s):
- ☐ New program(s):
- ☐ Amended or deleted program(s):
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION
By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Courses

COURSE NUMBER AND TITLE
Physics 3055 Introduction to Health Physics

ABBREVIATED COURSE TITLE
Intro to Health Physics

RATIONALE

Medical Physicists at Eastern Health have identified a difficulty in recruiting and retaining Medical Physicists. As a step to remedy this situation, Dr. Erin Niven, a Medical Physicist with Newfoundland and Labrador Health Services and a Clinical Assistant Professor in the Discipline of Radiology, Faculty of Medicine, MUN, has come forward with this proposed course. Dr. Niven has taught versions of this course multiple times at the University of Alberta and at the University of Nevada, Las Vegas. The name “Health Physics” is the standard name for radiation physics applied to various industries and settings, e.g. medical/health, environment, space, military, and energy, for the protection of people and the environment (https://en.wikipedia.org/wiki/Health_physics).

Introducing this Health Physics course will provide undergraduates with a perspective on both Health Physics and Medical Physics as career options and perhaps encourage them to complete certified Medical Physics graduate degrees out of province and then come back to Newfoundland and Labrador for employment. Although it does not seem feasible yet to develop and sustain a certified Medical Physics program at MUN, there is already an interest among physics students in this area. This course will help provide a clearer understanding of what medical physics is for these students. We imagine that this course can be taken by our physics students as an elective in year 3 or 4.

The prerequisite structure and the interdisciplinary nature of the subject will allow the course to be a suitable one for interested students in biology, chemistry, human biosciences, engineering, and medicine.

There is a pressing need for radiation health physicists and other professionals across Canada and beyond. A recent report by the Canadian Nuclear Isotope Council, Securing Canadian Medical Isotope Talent and Expertise, highlights need for people working in this area. The difficulty in recruiting people in various fields of the radiation sciences (Health Physicists, Medical Physicists, Radiologists, Nuclear Medicine Physicians, Radiochemists, Radiation Oncologists, as well as some imaging and therapy technologist's positions) has persisted for some time. The shortage of such professionals has become a commonplace discussion now.

Alarm sounded over declining US radiation professional workforce | Physics Today | AIP Publishing

The Persistent Shortage of Physicists: Current Trends and Future Prospects - Atom Physics

The shortage of radiotherapy physicists - PubMed

From the ABR - Combating Shortages in Radiation Oncology Staffing - Summer 2024 ASTROnews - American Society for Radiation Oncology (ASTRO)

The Radiologist Shortage: Rising Demand, Limited Supply, Strategic Response

The Growing Nationwide Radiologist Shortage: Current Opportunities and Ongoing Challenges for International Medical Graduate Radiologists | Radiology

The Future of Nuclear Medicine in the United States | Journal of Nuclear Medicine

Trends in Nuclear Medicine and the Radiopharmaceutical Sciences in Oncology: Workforce Challenges and Training in the Age of Theranostics - PMC

New cancer treatment may be hamstrung by 'talent shortage'

This is the primary reason we would like the course to be open (and advertised) to undergrad students beyond the Department of Physics and Physical Oceanography. This would be a fantastic course for pre-med students as well as people interested in radiation chemistry or radiation biology (which often translates to radiation oncology). The more students become aware of these career opportunities, the more likely the Province will get them returning in these various fields in the future.

ANTICIPATED EFFECTIVE DATE
Fall 2026

NOTE ON POSSIBLE CREATION OF CROSS-LISTED COURSE IN MEDICINE

During the consultation process, see Nov. 5-6 emails on pages 9-12, Dr. Edward Kendall, Associate Dean of the Division of BioMedical Sciences, expressed the idea to cross-list the course with Medicine. Discussions will continue regarding a possible proposal by the Faculty of Medicine's Division of Biomedical Sciences for a future proposed course MED 3006 that would be equivalent to and cross-listed with the proposed new course PHYS 3055.

CALENDAR CHANGES
In St. John's Campus / Faculty of Science / 13 Course Descriptions

Section 13.11 Physics and Physical Oceanography

PHYS 3055 Introduction to Health Physics lays the foundational principles of radiation science essential for human health. The course covers the structure of an atom, radioactive decay, interactions of radiation with matter, radiation quantities, radiation detection, radiation safety, and radiation biology. The course is suitable for students interested in pursuing Medical Physics or Health Physics as a career.

PR: Mathematics 1090 or 1000 or 1006; Chemistry 1050 (or 1200); PHYS 1021 or 1051; six credit hours in courses numbered 2000 or higher in Biology, Biochemistry, Chemistry, Human Biosciences, Mathematics, Physics, Engineering, or courses chosen from Psychology 3800, 3802, 3850, 3851, 3852, and 3853.

CALENDAR ENTRY AFTER CHANGES

PHYS 3055 Introduction to Health Physics lays the foundational principles of radiation science essential for human health. The course covers the structure of an atom, radioactive decay, interactions of radiation with matter, radiation quantities, radiation detection, radiation safety, and radiation biology. The course is suitable for students interested in pursuing Medical Physics or Health Physics as a career.

PR: Mathematics 1090 or 1000 or 1006; Chemistry 1050 (or 1200); PHYS 1021 or 1051; six credit hours in courses numbered 2000 or higher in Biology, Biochemistry, Chemistry, Human Biosciences, Mathematics, Physics, Engineering, or courses chosen from Psychology 3800, 3802, 3850, 3851, 3852, and 3853.

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Appendix Page

CONSULTATIONS SOUGHT

Note: Significant and positive pre-consultation is reported with several departments (Biology, Human Biosciences, Chemistry, Electrical and Computer Engineering, Mechanical Engineering, and the Division of BioMedical Sciences) starting on page 22.

Changes resulting from consultation:

- Course number change from PHYS 3060 to PHYS 3055
- List of course topics updated with more detail at the request from BioMedical Sciences, Faculty of Medicine in anticipation of the possible creation of a cross-listed course in Medicine.
- Behavioural Neuroscience restricted majors courses and Mathematics courses added to list of eligible prerequisites
- Note: proposed calendar changes appearing in previous drafts of this proposal pertaining to a cross-listed course in Medicine have been removed.

Consultation email

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Wednesday, October 22, 2025 at 4:10 PM
To: assocdeancphss <assocdeancphss@mun.ca>, Business Undergrad Help <busihelp@mun.ca>, Dean of Education <educdean@mun.ca>, Engineering and Applied Science <engrconsult@mun.ca>, HKR Dean <hkrdean@mun.ca>, Dean of Medicine : McKeen, Dr. Dolores <deanofmedicine@mun.ca>, Karen Bulmer <kbulmer@mun.ca>, DeanNurse <DeanNurse@mun.ca>, Pharmacy <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Dean of Arts and Social Science (Grenfell Campus) <gcsass-dean@mun.ca>, GC School of Science and the Environment <gcsse@mun.ca>, GC School of Fine Arts <gcsofa@mun.ca>, Marine Institute <miugconsultations@mi.mun.ca>, deanofsass <deanofsass@mun.ca>
Subject: Re: Consultation Request -- Health Physics
The Department of Physics and Physical Oceanography is soliciting feedback on a proposal for a new course, Physics 3060 Health Physics.

The name “Health Physics” is the standard name for radiation physics applied to various industries and settings, e.g. medical/health, environment, space, military, and energy, for the protection of people and the environment. Introducing this Health Physics course will provide undergraduates with a perspective on both Health Physics and Medical Physics as career options and perhaps encourage them to complete certified graduate degrees out of province and then come back to Newfoundland and Labrador for employment.

The prerequisite structure and the interdisciplinary nature of the subject make the course suitable for interested students in biology, chemistry, human biosciences, engineering, and medicine.

Please send comments to Ivan Saika-Voivod at saika@mun.ca.

Thank you,

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

UNIT	**RESPONSE**	**DATE**
Business	Yes/No	
Education	Yes/No	
Engineering	Yes	Nov. 19, 2025
Grenfell Campus School of Arts & Social Science	Yes	Nov. 1, 2025
Human Kinetics and Recreation	Yes/No	
Humanities and Social Sciences	Yes	Oct. 27, 2025
Labrador Institute	Yes/No	
Library	Yes/No	
Marine Institute	Yes/No	
Medicine	Yes	Oct. 24, 2025
Division of BioMedical Sciences	Yes	Nov. 5, 2025
Music	Yes/No	
Nursing	Yes/No	
Pharmacy	Yes/No	
Registrar’s Office	Yes/No	
Science	Yes/No	
Biochemistry	Yes/No	
Biology	Yes/No	
Chemistry	Yes/No	
Computer Science	Yes/No	
Earth Sciences	Yes/No	
Mathematics & Statistics	Yes	Nov. 19, 2025
Ocean Sciences	Yes/No	
Physics & Physical Oceanography	Yes/No	
Psychology	Yes	Nov. 17, 2025
Co-op office	Yes/No	
Social Work	Yes/No	

From: medvicedean <medvicedean@mun.ca>
Date: Friday, October 24, 2025 at 8:47 AM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Dean of Medicine : McKeen, Dr. Dolores <deanofmedicine@mun.ca>
Subject: Re: Consultation Request -- Health Physics

Hi Ivan,
Interesting proposal. There are no concerns from the Faculty of Medicine. Good luck!
Thanks, Danielle

DANIELLE O'KEEFE MD CCFP FCFP MSc CCPE
Vice Dean, Education and Faculty Affairs
Associate Professor of Family Medicine
Faculty of Medicine
Memorial University of Newfoundland
Faculty of Medicine Building | Room M2M311
300 Prince Philip Drive
St. John's, NL, Canada A1B 3V6
T 709 864 6289 | F 709 864 6336
www.mun.ca/medicine

HSS

From: assocdeancphss <assocdeancphss@mun.ca>
Date: Monday, October 27, 2025 at 12:47 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: Re: Consultation Request -- Health Physics

Hello,
HSS is happy to support this proposal.
P. Dold

Patricia Dold (she/her)
Associate Professor, Religion and Culture
Associate Dean, Curriculum and Programs
Faculty of Humanities and Social Sciences
St. John's Campus, Memorial University

Grenfell

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Monday, November 3, 2025 at 9:14 AM
To: Bailey, Robert <rbailey00@mun.ca>
Cc: GC School of Science and the Environment <gcsse@mun.ca>, Hynes, Destanee

Sky Joan <dsjhynes@mun.ca>, Rouleau, Pierre <r6pr@mun.ca>
Subject: Re: Consultation Request -- Health Physics

Dear Robert,

Thank you for your supportive comments regarding the proposal for a Health Physics course. It is indeed our aim to help address the shortage of medical physicists in the province.

I apologize for the oversight on course number. We will fix that.

Best regards,
Ivan
Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Bailey, Robert <rbailey00@mun.ca>
Date: Saturday, November 1, 2025 at 5:19 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: GC School of Science and the Environment <gcsse@mun.ca>, Hynes, Destanee Sky Joan <dsjhynes@mun.ca>, Rouleau, Pierre <r6pr@mun.ca>
Subject: RE: Consultation Request -- Health Physics

Dear Ivan,

Thank you for the opportunity to review the proposed new Health Physics course. I circulated it around the relevant Program Chairs in the School of Science and the Environment, and the feedback was positive – this sounds like a course that will be an attractive option for students in Science (and potentially Engineering) programs. I hope that some arrangement can be made with the Faculty of Medicine to allow Dr. Niven to teach the course. The shortage of medical physicists is a genuine real-world problem (there was much excitement when one was recently hired at the Western Regional Memorial Hospital here in Corner Brook) and hopefully this course can contribute towards students considering it as a career option. The School is happy to support this proposal.

I do have one substantive comment – the course number PHYS 3060 is not available, as it is already in use at Grenfell Campus (for the Electricity and Magnetism course). So the new course will need a different number!

Regards,
Robert.
==========

Dr. Robert Bailey
Interim Dean, School of Science and the Environment
Associate Professor, Mathematics
Grenfell Campus, Memorial University
Corner Brook, NL, Canada
Office: AS 3025
Phone: +1 (709) 637-7166 *(no voicemail available)*
Email: robert.bailey@mun.ca

Division of BioMedical Sciences (Faculty of Medicine)

From: Kendall, Edward <ek0074@mun.ca>
Date: Thursday, November 6, 2025 at 4:49 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Gauld, James <jgauld@mun.ca>
Subject: Re: Consultation Request -- Health Physics
Dear Ivan:
Thanks for this update. I will take this to our Division Faculty and from there it will go to Faculty Council.

I am pretty sure that SCUGs is going to want a week by week indication of what will be taught. I had to provide that for my course. I will need something like that for approval through our faculty council. However, our divisional faculty requirements are less formal, so I will start with that.

Ed

EJ Kendall, PhD
Professor and Associate Dean
BioMedical Sciences
Faculty of Medicine
Memorial University of Newfoundland
From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Thursday, November 6, 2025 at 11:46
To: Kendall, Edward <ek0074@mun.ca>
Cc: Gauld, James <jgauld@mun.ca>
Subject: Re: Consultation Request -- Health Physics
Dear Ed,

Thanks again for your email from yesterday.

I am attaching an amended proposal that now includes secondary calendar changes introducing MED 3XXX as an equivalent (cross-listed) course to PHYS 3055 Introduction to Health Physics. I imagine that there needs to be some sort of formal

approval from the Faculty of Medicine for a calendar change in the Faculty of Medicine side of the Calendar, and we also would eventually need a concrete course number.

I think I put the MED 3XXX course description in the correct section of the Calendar, i.e., https://www.mun.ca/university-calendar/st-johns-campus/faculty-of-medicine/12/6/.

If this seems good to you, then let's proceed. I can double-check with someone with knowledge of the approval process on how to proceed in such cases… or perhaps you can just go ahead on your end?

Many thanks,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Wednesday, November 5, 2025 at 2:41 PM
To: Kendall, Edward <ek0074@mun.ca>
Cc: Gauld, James <jgauld@mun.ca>, Physics Head <physicshead@mun.ca>
Subject: Re: Consultation Request -- Health Physics

Dear Ed,

Thank you for your quick and very positive response.

Cross-listing the Health Physics PHYS course as a MED course makes a lot of sense. I will draft secondary calendar changes and share them with you. I'm not sure of the exact procedures for Medicine to approve the addition of a cross-listed course, but I'm sure we'll figure it out.

Kind regards,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Kendall, Edward <ek0074@mun.ca>
Date: Wednesday, November 5, 2025 at 1:24 PM
To: Saika-Voivod, Ivan <saika@mun.ca>, Gauld, James <jgauld@mun.ca>
Subject: Re: Consultation Request -- Health Physics

First, I want to underline that I enthusiastically support this course offering. I note that our Vice-Dean, Dr. O'Keefe, has formally responded indicating that Medicine has no issues with the offering.

Dr. Niven is an experienced health physicist and can offer both the theoretical and practical aspects of the topic. As I mentioned in earlier correspondence, this course will nicely complement our Med 4006 Fundamentals of Medical Imaging course. The health physics course will undoubtedly cover interactions of radiation with matter, biological consequences of radiation and radiation uses in diagnosis and therapy. I believe that the complementarity is so high that it should be cross-listed in Medicine. Also, if this becomes an annual offering we may remove the 3 lectures we include in Med 4006 and consider suggesting this new course as a pre-requisite. I also note in related correspondence that NLHS has hired a diagnostic imaging medical physicist. Perhaps that individual may wish to contribute to either of these courses.

Finally, I was forwarded a note from your Dean (copied here) enquiring about Dr. Niven's appointment and potential reimbursement for teaching. Although I am not privy to the terms of Dr. Niven's appointment, I held a similar appointment for many years. In those appointments it is expected that instructional focus will be on program residents. However, in my case at least there was no specific exclusion. As I indicated in my note to Dr. Gauld, I would be astounded if there was any objection her offering this course.

I don't know where you folks are with sorting out this appointment and any related reimbursement. I would really like to see this course go ahead and, if necessary, could approach our Dean for support.

Kind regards,

EJ Kendall, PhD

Professor and Associate Dean
BioMedical Sciences
Faculty of Medicine
Memorial University of Newfoundland

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Wednesday, November 5, 2025 at 12:19
To: Kendall, Edward <ek0074@mun.ca>
Subject: FW: Consultation Request -- Health Physics

Good afternoon, Ed.

It was nice seeing you at the AI talk earlier today. Attached is the current version of the Health Physics proposal that is currently circulating around for consultations.

A couple of people have asked about how it relates to your new medical imaging course, so a comment on that would be appreciated.

Also, any ideas on improving the chances that it will be offered are most welcome.

Thank you,
Ivan

Psychology

Date: Monday, November 17, 2025 at 3:47 PM
To: Deputy Head, Department of Psychology <psychdeputyhead@mun.ca>
Subject: Re: Consultation Request -- Health Physics

Hi Kathleen,

Dr. Niven has confirmed that the Bahavioural Neuroscience students would be a good cohort to target and that adding the courses you suggest would be fine. The new wording might be

> six credit hours in courses numbered 2000 or higher in Biology, Biochemistry, Chemistry, Human Biosciences, Physics, courses offered by the Faculty of Engineering and Applied Science, or courses chosen from Psychology 3800, 3802, 3850, 3851, 3852, and 3853.

I'm sure that FoSCUGS will help us get the wording right.

Thanks again for your feedback.

Best regards,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/
From: Deputy Head, Department of Psychology <psychdeputyhead@mun.ca>
Date: Monday, November 17, 2025 at 12:26 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: RE: Consultation Request -- Health Physics

Hi Ivan,

Thanks. I have attached the most recent syllabus for:

3800 (with lab schedule)
3802
3850 (former 3810)
3851 (former 3830)
3852 (former 3840)
3853

And yes, sorry I was not as specific as I intended; I did mean just the 385X majors-restricted courses, not the 382X unrestricted courses.

Best,
-Kathleen

Kathleen L. Hourihan, PhD (she/her)
Associate Professor
Department of Psychology
Memorial University of Newfoundland
(709) 864-8771

From: Saika-Voivod, Ivan <saika@mun.ca>
Sent: November 17, 2025 11:25 AM
To: Deputy Head, Department of Psychology <psychdeputyhead@mun.ca>
Subject: Re: Consultation Request -- Health Physics

Dear Kathleen,

Thank you for your feedback. I will forward your request to Dr. Niven along with calendar entries for the six PSYC 38xx in question: 3800, 3802, 3850, 3851, 3852, and 3853 (and NOT 3821 and 3822). I think it would be helpful for you to forward me any of the course syllabi for the courses in question so that I can include them for Dr. Niven as well.

Best regards,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Deputy Head, Department of Psychology <psychdeputyhead@mun.ca>
Date: Monday, November 17, 2025 at 10:05 AM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: RE: Consultation Request -- Health Physics

Hi Ivan,

This sounds like an interesting new course, and would be something that our Behavioural Neuroscience students (who are often pre-med) might be interested in taking, as it would also be eligible for fulfilling some of their general senior science program requirements. Would you consider including any of our PSYC 38XX (Behavioural Neuroscience Majors) courses as potential PRs, in the "…six credit hours in courses numbered 2000 or higher in Biology, Biochemistry, Chemistry, Human Biosciences, Physics, or…" part? I'd be happy to share some syllabi for the relevant courses if you'd like.

Best,
-Kathleen

Kathleen L. Hourihan, PhD (she/her)
Associate Professor
Department of Psychology
Memorial University of Newfoundland
(709) 864-8771

Mathematics

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Thursday, November 20, 2025 at 7:56 AM
To: Stuckless, Tara Lee <tstuckless@mun.ca>
Cc: Mikhail Kotchetov <mikhail@mun.ca>
Subject: Re: feedback on recent proposals
Hi Tara and Misha,

Thanks for your thorough feedback. It was nice chatting with you after the FOSCUGS meeting.

Regarding Math and the proposed Health Physics, good news. I've discussed this with Dr. Niven and we are including "Mathematics" in the list of Science disciplines making up the 2+xx list.

The course is at the three-year level, and having knowledge and experience beyond "Mathematics 1090 or 1000 or 1006; and Chemistry 1050 (or 1200); and PHYS 1021 or 1051" in the sciences listed would be greatly beneficial, according to the experience of Dr. Niven. The list may be cumbersome and may come to bite us in terms of what the registrar's system can handle, but we're willing to try to make it work. We'll see how it works in the new system!

Yes, the PSYC list is a subset of behavioural neurosciences courses that are very biology/biochemistry-like. The intention is to allow student with 6 CH in these courses to fulfill the “2+xxx” requirement.

[… reply about a different proposal…]

Best regards,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Stuckless, Tara Lee <tstuckless@mun.ca>
Date: Wednesday, November 19, 2025 at 11:41 AM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Mikhail Kotchetov <mikhail@mun.ca>
Subject: feedback on recent proposals

Hi Ivan,

Misha asked me to email you with my feedback on the two proposals :

1. Regarding the proposal for PHYS 3055/MED 3xxx:

Comment on the PR:
PR: Mathematics 1090 or 1000 or 1006; Chemistry 1050 (or 1200); PHYS 1021 or 1051; six credit hours in courses numbered 2000 or higher in Biology, Biochemistry, Chemistry, Human Biosciences, Physics, courses offered by the Faculty of Engineering and Applied Science, or courses chosen from Psychology 3800, 3802, 3850, 3851, 3852, and 3853.

This is very cumbersome, and difficult for students to navigate and the PR system to evaluate. If a student is passionately interested in medical physics, would they be turned away if they had just “Mathematics 1090 or 1000 or 1006; and Chemistry 1050 (or 1200); and PHYS 1021 or 1051”?

Also, the “or courses chosen from…” clause implies that 6 credit hours would come from that set of PYSC courses – is that the intention, or could it be 3 from the PSYC list, and 3 from another discipline? Maybe Shannon already commented on the rewording.

I think there could potentially be math majors interested in doing a Health Physics course. If they've done Mathematics 1090 or 1000 or 1006; Chemistry 1050 (or 1200); and PHYS 1021 or 1051, would they be permitted to join?

[… feedback on a different proposal removed…]

Thanks for considering. I understand this may be too late for the meeting. I've had a continuous stream of requests coming at me.

Tara

Tara Stuckless
Program Officer (Undergraduate)
Department of Mathematics and Statistics
Memorial University
Office: HH 3004, (709) 864-8914
Web: http://www.mun.ca/math
Book time with Stuckless, Tara Lee

Engineering

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Thursday, November 20, 2025 at 7:42 AM
To: Engineering Consult <engrconsult@mun.ca>
Cc: Edmunds, Jayde <edmundsj@mun.ca>, Masek, Vlastimil <masek@mun.ca>, Adam Noel <adam.noel@mun.ca>
Subject: Re: Consultation Request -- Health Physics
Thank you, Glyn.

I will tidy up the prerequisite listings using "Engineering."

Best regards,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/
From: Engineering Consult <engrconsult@mun.ca>
Date: Wednesday, November 19, 2025 at 2:14 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Edmunds, Jayde <edmundsj@mun.ca>, Masek, Vlastimil <masek@mun.ca>,

Adam Noel <adam.noel@mun.ca>
Subject: Re: Consultation Request -- Health Physics
Thank you for the opportunity to comment on the proposed new course PHYS 3060 "Health Physics".

After consultations within the Department of Electrical and Computer Engineering and the Department of Mechanical and Mechatronics Engineering, at its meeting on 2025 Nov. 19, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science expressed support for this new course. It could be an excellent elective option for students in the biomedical streams of these two departments.

Adding just "... or Engineering" to the prerequisite list does capture all Engineering prefix codes (ENGI, CIV, ECE, ME, ONAE and PROC).

Yours sincerely,

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science
Memorial University of Newfoundland
St. John's NL A1B 3X5

LIBRARY REPORT

Email to Library

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Tuesday, October 7, 2025 at 12:13 PM
To: University Librarian <univlib@mun.ca>
Subject: Report request: New course Physics 3060 Intro to Health Physics
Dear Library,

The Department of Physics and Physical Oceanography is kindly requesting a library report for a new course proposal, Physics 3060 Introduction to Health Physics, attached.

Two textbooks have been identified for the course.

Primary:
Introduction to health physics., by Herman Cember and Thomas E. Johnson. New York: McGraw-Hill Medical c2009.
Available at Health Sciences Library Stacks (WN415.C41 2009)

Additional reading:
Atoms, radiation, and radiation protection., 2nd Edition, by James Turner. New York; Toronto: J. Wiley c1995.
Available at Queen Elizabeth II Stacks (QC795.T87 1995)

Thank you,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

Response from Library

From: Rose, Kathryn <kathrynr@mun.ca>
Date: Thursday, October 16, 2025 at 9:33 AM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: FW: Report request: New course Physics 3060 Intro to Health Physics
Good morning Ivan,

I am responding to the request for a library report for Physics 3060 – Intro to Health Physics. It is a bit challenging to produce a comprehensive library report in the absence of a full syllabus. Using the course description and the subject areas described there, I

believe the library system has sufficient coverage within the Medical Physics subject area to support a course in this area.

Number of titles associated with relevant subject headings are as follows:

Medical physics – 1,393
Radiography – 398
Radiotherapy – 196
Radiation – Physiological effect – 182
Radiobiology – 113

Databases and indexes that can assist students access scholarship for research purposes include Scopus, Web of Science, PubMed, MEDLINE and EMBASE.
Kathryn

_____
Kathryn Rose, MLIS, PhD (she/her) | Head, Collections Strategies
Memorial University Libraries
St. John's, Newfoundland, A1B 3Y1
+1 709 864-3139
www.library.mun.ca

RESOURCE IMPLICATIONS

Some new resources are anticipated.

This course will ideally only be offered when appropriate instructors from the Faculty of Medicine and/or Eastern Health are available. Dr. Erin Niven has expressed a strong desire to teach the course. However, arrangements to have the course taught as part of Dr. Niven's regular teaching duties can not be made at present; the Physics Department therefore requires funding to have Dr. Niven teach the course as a per-course instructor. The department is aware of two other potential instructors with a background in medical and/or health physics who could teach this course.

We request to have the following two books put on hold.

Atoms, radiation, and radiation protection., 2nd Edition, by James Turner. New York; Toronto: J. Wiley c1995. Available at Queen Elizabeth II Stacks (QC795.T87 1995)

Introduction to health physics., by Herman Cember and Thomas E. Johnson. New York: McGraw-Hill Medical c2009. Available at Health Sciences Library Stacks (WN415.C41 2009)

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

SAMPLE OUTLINE

PHYS 3060 Introduction to Health Physics Fall 2026

Instructor: Erin Niven; email: eniven@mun.ca
Course website: Brightspace
Introduction to Health Physics provides a foundation of knowledge in the radiation sciences. The course covers the structure of an atom, radioactive decay, interactions of radiation with matter, radiation quantities, radiation detection, radiation safety, and radiation biology.
Prerequisites: Mathematics 1090 or 1000; Chemistry 1050 (or 1200); PHYS 1021 or 1051; six credit hours at the second-year level in Biology, Biochemistry, Chemistry, Human Biosciences, or Physics.
Classes: to be determined.
Textbook:
Introduction to health physics., by Herman Cember and Thomas E. Johnson. New York: McGraw-Hill Medical c2009. Available at Health Sciences Library Stacks (WN415.C41 2009)
Additional reading: *Atoms, radiation, and radiation protection.*, 2nd Edition, by James Turner. New York; Toronto: J. Wiley c1995. Available at Queen Elizabeth II Stacks (QC795.T87 1995)
Additional handouts may also be provided.
Evaluation:

- 30% Assignments
- 30% Midterm
- 40% Final exam (3 hours)

Outline (estimated number of lectures – 34 in total):

- Welcome and Introduction (1)
  - course structure, expectations, and reading materials
  - applicable industries/jobs (biology, chemistry, engineering, medicine, and physics)
- Atomic structure, forces, and nuclear reactions (4)
  - atom and electron models
  - the four fundamental forces
  - electromagnetic spectrum vs particles
  - nuclear and electron binding energies
  - balancing nuclear reactions
  - Q values, threshold & starting energies
- Radioactive decay and radiation emissions (3)
  - parent/daughter nomenclature
  - decay schemes (energy level diagrams)
  - six radioactive decay modes
  - radiation emission yields and energies
- Decay kinetics (2)
  - decay probability / half-life
  - decay chains

- production of isotopes (reactors and accelerators)

- Interaction of radiation with matter (3)
  - charged particle interactions (including range, stopping power, w-value)
  - photon interactions (including linear attenuation, build-up, and beam hardening)
  - neutron interactions (including scattering and absorption)
- Radiation detectors and counting statistics (6)
  - detector materials (gas, liquid, solid)
  - detection based on ionization, excitation, and chemical reactions
  - common detector systems (portable and benchtop)
- Basics of the x-ray tube (2)
  - electron production, x-ray production, x-ray emission
  - energy spectrum, filtration, and collimation
  - aspects of image formation
- Radiation biology and radiation risk (5)
  - different types of radiological damage to cells
  - DNA damage and repair
  - somatic vs heritable effects
  - stochastic vs tissue effects (aka deterministic effects)
  - local radiation injuries and acute radiation sickness
  - in-utero effects
  - radiation risk models, dose and dose rate effectiveness factor
  - cell death mechanisms and radiation therapy
- Dosimetry (2)
  - absorbed dose, equivalent dose, and effective dose
  - tissue and radiation weighting factors
  - exposure routes
  - external vs internal dose
- Radiation safety (3)
  - scientific and regulatory agencies (international and Canadian)
  - provincial vs federal authorities
  - radiation safety principles/philosophies
  - radiation safety practices & the industrial hygiene hierarchy of controls
- Radioactive materials usage (2)
  - nuclear gauges and non-destructive testing
  - medicine (imaging and therapy)
  - production industries
  - tracers (biology and environmental)
- Review (1)

Office Hours: We will schedule office hours to accommodate student schedules. Until we do, please email eniven@mun.ca to book an appointment.

SAMPLE ASSIGNMENT QUESTIONS taken from past offering at the University of Nevada, Las Vegas

UNLV HPS/RAD 102
Assignment #1

Date assigned: 09/07/07
Date due: 09/21/07

1) The isotope ^{64}Cu is radioactive.
   A) Write out the decay equations for Electron Capture, B^+, and B^- decay.
   B) Calculate Q for each decay equation.
   C) There is an excited state of 1.346 MeV for EC decay. Calculate the Q value for the emission when the decay goes to the excited state.
   D) Calculate the expected average energies for the B^+ and B^- particles.
   E) Draw the decay schemes for each decay equation.

Given: $\Delta\ ^{63}Cu = -65.5779$ MeV
$\Delta\ ^{64}Cu = -65.4204$ MeV
$\Delta\ ^{65}Cu = -67.2602$ MeV
$\Delta\ ^{63}Zn = -62.2096$ MeV
$\Delta\ ^{64}Zn = -66.0009$ MeV
$\Delta\ ^{65}Zn = -65.9076$ MeV
$\Delta\ ^{63}Ni = -65.5089$ MeV
$\Delta\ ^{64}Ni = -67.0972$ MeV
$\Delta\ ^{65}Ni = -65.1223$ MeV

2A) Calculate the Binding Energy per nucleon for ^{56}Fe, ^{58}Fe, ^{60}Ni, and ^{62}Ni
2B) Rank the isotopes above from greatest to least BE/nucleon and describe where they lie on the BE/nucleon curve.

Given actual masses: $^{56}Fe = 55.934939$AMU
$^{58}Fe = 57.933277$AMU
$^{60}Ni = 59.930788$ AMU
$^{62}Ni = 61.928346$ AMU

3) Given the equation: $^{16}O(p,pn)^{15}O$
   A) Write out the full equation and show proof of balance.
   B) Calculate the energy, Q, of the reaction, and describe what this means for the system.
   C) Calculate the threshold energy.

Given: $\Delta\ ^{63}Cu = 2.85502$ MeV
$\Delta\ ^{64}Cu = -4.73697$ MeV

4) Describe the three primary interactions of charged particles with matter (include text and diagrams).

Pre-Consultation with the Electrical and Computer Engineering and Mechanical Engineering

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Tuesday, October 21, 2025 at 1:57 PM
To: Rideout, Geoff <gdrideout@mun.ca>
Cc: Mann, George <gmann@mun.ca>, FEAS ECE Department Head <engrecehead@mun.ca>, Engineering and Applied Science <engrconsult@mun.ca>, George,Glyn <glyn@mun.ca>, Power, Sarah Dianne <b09sdp@mun.ca>
Subject: Re: Health Physics

Dear Geoff,

Thank you for your positive response as well. The bigger the positive impact the course will have across campus, the better the argument for getting it off the ground.
Thank you for your suggestion on refining the prerequisite wording. I look forward to any further suggestions you and your Curriculum Committee may offer. As I mentioned earlier, I'll send this out soon for broad consultation, during which time we can incorporate any further suggestions.

Kind regards,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Rideout, Geoff <gdrideout@mun.ca>
Date: Tuesday, October 21, 2025 at 1:19 PM
To: Saika-Voivod, Ivan <saika@mun.ca>, Power, Sarah Dianne <b09sdp@mun.ca>, FEAS ECE Department Head <engrecehead@mun.ca>, Engineering and Applied Science <engrconsult@mun.ca>, George,Glyn <glyn@mun.ca>
Cc: Mann, George <gmann@mun.ca>
Subject: RE: Health Physics

Hello Ivan and Sarah,

I see Dr. George, our CUGS Chair, is copied for possible input on appropriate prerequisite language. I suspect "or courses offered by the Faculty of Engineering and Applied Science, with the permission of the course instructor." might put a finer point on it.

I have copied the chair of our Curriculum Committee, George Mann. George, let's add to the CC agenda a discussion of possible inclusion of the course below as a technical

elective. It would have be be offered in Winter for us to use it. Alternatively, we could look at allowing our Biomedical stream students to do PHYS3060 in Fall Term 6 instead of the HKR2311 course. That would make a very difficult Term 6 even more difficult. I suppose we could also allow them to do PHYS3060 on their work term prior to Term 8, instead of HKR2311 in Term 6.

Ivan, our enrollments in our more rigorous Biomedical stream in Mechanical have had 7 and 5 students, so we would be funneling in very small numbers. I appreciate the notification, because this might be a no-cost way for us to add value to the stream. Stream enrollment may increase with official Calendar recognition next year.

Regards,
Geoff

Geoff Rideout, Ph.D., P.Eng.
Professor and Head, Mechanical and Mechatronics Engineering
Faculty of Engineering and Applied Science, Memorial University
St. John's, NL Canada A1A 2Y9
g.rideout@mun.ca
https://www.mun.ca/engineering/about/our-people/geoff-rideout/
"The best time to plant a tree is 20 years ago. The second best time is now."
Douglas Coupland

From: Saika-Voivod, Ivan <saika@mun.ca>
Sent: Tuesday, October 21, 2025 11:29 AM
To: Power, Sarah Dianne <b09sdp@mun.ca>; FEAS ECE Department Head <engrecehead@mun.ca>; Engineering and Applied Science <engrconsult@mun.ca>; George,Glyn <glyn@mun.ca>; g.rideout@mun.ca
Subject: Re: Health Physics

Hi Sarah,

Thank you for your positive response to the proposed Health Physics course.
Whether this course is offered depends on whether the Dean and Science and the Dean of Medicine can come to some arrangement for having clinical faculty members from Medicine teach within the Faculty of Science. If all goes well, the course would be offered in Fall 2026 or Winter 2027. There is a preference from the Department of Chemistry for the course to be offered in the Fall, so that's where it is leaning now, but it'll depend on demand from other departments, other duties of the instructor, and, perhaps, what other elective Physics has on offer.
I appreciate you're taking this to your curriculum committee.
In the meantime, I will likely send this around for university-wide consultation tomorrow or Thursday, and I can include the advice from your curriculum committee during the consultation period.

Thanks again,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Power, Sarah Dianne <b09sdp@mun.ca>
Date: Tuesday, October 21, 2025 at 9:51 AM
To: Saika-Voivod, Ivan <saika@mun.ca>, FEAS ECE Department Head <engrecehead@mun.ca>, Engineering and Applied Science <engrconsult@mun.ca>, George,Glyn <glyn@mun.ca>, g.rideout@mun.ca <g.rideout@mun.ca>
Subject: RE: Health Physics

Hi Ivan,

Thank you for your email. This sounds like a very interesting and timely course that could be an excellent elective option for our biomedical stream students.

Do you know when the course would be regularly offered (i.e., during which semesters)?
I'll bring this to our curriculum committee for discussion in our next meeting and we will get back to you regarding any suggested language for the PR section.

Kind regards,
Sarah

From: Saika-Voivod, Ivan <saika@mun.ca>
Sent: Monday, October 20, 2025 1:54 PM
To: FEAS ECE Department Head <engrecehead@mun.ca>; Power, Sarah Dianne <b09sdp@mun.ca>; Engineering and Applied Science <engrconsult@mun.ca>; George,Glyn <glyn@mun.ca>; g.rideout@mun.ca
Subject: Health Physics

Dear Lihong, Sarah, Geoff, and Glyn,

Physics is proposing a course in Health Physics (PHYS 3060) — the application of radiation physics to health and safety — that, if all goes well, will be taught by a medical physicist (or not taught at all). The course is interdisciplinary in nature, and so the prerequisites are rather more general than the typical third-year Physics course: Math 1000, Physics 1051, Chemistry 1050 and 2 courses at the second-year level in any of a number of Science subjects. In making the pre-consultation rounds, we thought the course might be of interest to Engineering students, particularly those interested in the biomedical streams.

In the words of the likely instructor, Dr. Erin Niven, Medical Physicist with NL Health Services, who has taught the course at the University of Nevada and at the University of Alberta:

> The course will be heavy on content, so lots and lots of material, with the ability to define/describe (and sometimes draw) concepts that link physics, chemistry, biology, and engineering together. The math helps reinforce the concepts. So it will "hit" students differently – it might be easy math-wise for the physics and engineering students, but it will force them to expand their knowledge in the chemistry and biology realms. Conversely, for the chemistry and biology students, it should be easier for them to understand the health/medical aspects of the material, but force them to understand the devices/machinery in use.

I'm not sure if students in the biomedical streams would have room for such an elective. In case they do, or if you think that other students might be interested taking Health Physics, we've left a placeholder in the prerequisites that would allow Engineering students to take the course. Here is the proposed calendar entry below.

PHYS 3060 Introduction to Health Physics lays the foundational principles of radiation science essential for human health. The course covers the structure of an atom, radioactive decay, interactions of radiation with matter, radiation quantities, radiation detection, radiation safety, and radiation biology. The course is suitable for students interested in pursuing Medical Physics or Health Physics as a career.

PR: Mathematics 1090 or 1000 or 1006; Chemistry 1050 (or 1200); PHYS 1021 or 1051; six credit hours in courses numbered 2000 or higher in Biology, Biochemistry, Chemistry, Human Biosciences, Physics, or courses offered by the Faculty of Engineering and Applied Science.

Please let me know your thoughts, in particular, if the current "or courses offered by the Faculty of Engineering and Applied Science" prerequisite language is sufficient, should be replaced (e.g. "Electrical and Computer Engineering, or Mechanical Engineering") or should be removed.

Thank you,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

Pre-Consultation with Biology, Chemistry, Human Biosciences, and the Dean's Office
Consultation Email

From: Saika-Voivod, Ivan <saika@mun.ca>
Sent: Thursday, October 9, 2025 11:28 AM
To: Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Dean of Science <deansci@mun.ca>; chemapo <chemapo@mun.ca>; Chemistry - Head of Dept <chemhead@mun.ca>; Marshall, Heather Dawn <dawnm@mun.ca>; Biology Academic Program Officer <BioAPO@mun.ca>; Rise, Matthew <mrise@mun.ca>; Berry, Mark <mberry@mun.ca>; Harding, Scott <sharding@mun.ca>
Cc: Niven, Erin <eniven@mun.ca>; Physics Head <physicshead@mun.ca>; Physics Academic Program Officer <physicsAPO@mun.ca>; Wallin, Jan Stefan <jswallin@mun.ca>
Subject: Health Physics

Dear Colleagues in Biology, Chemistry, Human Biosciences, and the Dean's Office,

I am following up on something I brought up at the end of our last FoSCUGS meeting. The Department of Physics and Physical Oceanography is requesting feedback, advice, and possible cooperation, on a proposal for a new course, Physics 3060 Introduction to Health Physics (attached). The proposal (which has been approved by our department) is the result of longstanding communication with medical physicists at Eastern Health / NL Health Services about the need to attract students into this field and fields related to radiation in medicine.
Health Physics, although it sounds like a very broad term, is a professional term referring to radiation physics applied to health. The proposal was spearheaded by Dr. Erin Niven, a Nuclear Medicine Medical Physicist with Newfoundland and Labrador Health Services and a Clinical Assistant Professor in the Discipline of Radiology, Faculty of Medicine, MUN (cc'd). She has taught the course at U of A and at U Las Vegas.

There is a pressing need for radiation health physicists and other professionals across Canada and beyond. A recent report by the Canadian Nuclear Isotope Council, Securing Canadian Medical Isotope Talent and Expertise, highlights need for people working in this area. The difficulty in recruiting people in various fields of the radiation sciences (Health Physicists, Medical Physicists, Radiologists, Nuclear Medicine Physicians, Radiochemists, Radiation Oncologists, as well as some imaging and therapy technologist's positions) has persisted for some time. This need has motivated Erin to offer the course at MUN.

This broad need is the primary reason we would like this interdisciplinary course to be open (and advertised) to undergrad students beyond the Department of Physics and Physical Oceanography, and the pre-requisite structure makes this possible (Math 1090 or 1000; Physics 1021 or 1051; 6 CH of 2xxx in BIOL, CHEM, HUBI, or PHYS). We feel that this would be a fantastic course for pre-med students as well as people interested in radiation chemistry or radiation biology (which often translates to radiation oncology). The more students become aware of these career opportunities, the more likely the province will get them returning in these various fields in the future.

However, as a Clinical Assistant Professor, Erin is not part of MUNFA. After earlier discussions with Travis as Dean of Science, it appears that the only way to have her teach the course is as a per-course instructor (PCI). It would really make sense to have a medical physicist teach this course. Our new dean, Dr. Gauld, has suggested working with other departments. Thus, we are hoping to gauge interest in the proposed course and hearing from you before taking the discussion to the Faculty of Medicine. Having this course taught within the FoS hits a broader student audience.

Given the current need to cut spending, the course might be offered in one of two ways: we come to an agreement with NL Health Services and/or the Faculty of Medicine to fund the PCI position (and TA), or come to an agreement with the same bodies and our own Faculty to have Erin (or someone in a similar position) teach the course within her limited teaching mandate. The course will only be offered if we can arrange to have a medical physicist teach it.

To help this along, we are asking the following.

1. Would such a course be of interest to the students in your programs?
2. If yes, do you see any difficulties with the current proposal, especially in terms of students in your programs being able to take it?
3. Do you have any advice on how to proceed (or how not to proceed!) and/or would you been interested in meeting to discuss any of this?

Thank you,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

Chemistry

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Wednesday, October 22, 2025 at 3:38 PM
To: chemapo <chemapo@mun.ca>
Subject: Re: Health Physics

Dear Steve,

I've followed up with Dr. Niven about Chem 1050 vs Chem 1051 and it looks like Chem 1050 is sufficient.

Thanks again for your feedback.
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Thursday, October 9, 2025 at 12:57 PM
To: chemapo <chemapo@mun.ca>
Cc: Physics Head <physicshead@mun.ca>, Physics Academic Program Officer <physicsAPO@mun.ca>, Chemistry - Head of Dept <chemhead@mun.ca>, Niven, Erin <eniven@mun.ca>
Subject: Re: Health Physics

Dear Steve,

Thank you for your supportive and constructive feedback, on behalf of Chemistry, for the Health Physics proposal. Yes, the course targets students in third (or fourth) year.

Your comment about Chemistry 1051 being a better prerequisite than Chemistry 1050, given 1051's covering of rates, is well taken. I don't think adopting Chem 1051 as the PR will hinder enrolment significantly, since essentially all Science programs that require Chemistry 1050 also require Chemistry 1051. However, it will have some impact (sometimes Physics students are guilty of not taking Chem 1051 in a timely manner). I imagine that the discussion on rates, half-life, etc will be self-contained in the proposed course, but we will confer with Erin on this.

Your comment on the Fall being a better semester to offer the course is also noted and will help guide scheduling.

Thanks again!
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: chemapo <chemapo@mun.ca>
Date: Thursday, October 9, 2025 at 12:19 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Physics Head <physicshead@mun.ca>, Physics Academic Program Officer <physicsAPO@mun.ca>, Chemistry - Head of Dept <chemhead@mun.ca>
Subject: RE: Health Physics

Hey Ivan,

I'll send separate emails on this just to separate the discussion with respect to Chemistry and Biochemistry / Human Biosciences. This message is with respect to Chemistry.
I think this course will absolutely be of interest!!

In terms of course content, will there be any discussion on rates, rate orders, half-life, etc? I was initially assuming a discussion on decay may require that type of background but obviously I'm not the expert here! The reason I'm asking is because I'm wondering if CHEM 1051 may be a better PR than CHEM 1050. While CHEM 1050 does cover the structure of the atom, it doesn't cover anything related to rates. That topic isn't covered until CHEM 1051.

I don't see any issues for students in any of the Chemistry programs doing this course other than the semester you plan on offering it. If the target audience is students in their 3rd year (I'm judging this by the course # and the requirement for 2 courses at the 2000-level), a Fall offering would be a better fit to the typical courses students in Chemistry complete in their 3rd year.

Cheers,
Steve

STEVEN SMITH HBSc, B.Ed, M.Sc
ACADEMIC PROGRAM OFFICER
Biochemistry, Chemistry, and Human Bioscience
Core Science Facility, CSF 2240
Memorial University
Office: (709) 864 8904

Human Biosciences
From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Thursday, October 9, 2025 at 2:19 PM

To: Berry, Mark <mberry@mun.ca>
Cc: Physics Head <physicshead@mun.ca>, Physics Academic Program Officer <physicsAPO@mun.ca>, Harding, Scott <sharding@mun.ca>, chemapo <chemapo@mun.ca>
Subject: Re: Health Physics

Thank you, Mark!

I agree wholeheartedly about Med4006.

As we undergo a curriculum review this year, we would do well to keep your idea of co-teaching a biophysics course in mind.

Best,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Berry, Mark <mberry@mun.ca>
Date: Thursday, October 9, 2025 at 2:12 PM
To: Saika-Voivod, Ivan <saika@mun.ca>, chemapo <chemapo@mun.ca>
Cc: Physics Head <physicshead@mun.ca>, Physics Academic Program Officer <physicsAPO@mun.ca>, Harding, Scott <sharding@mun.ca>
Subject: Re: Health Physics

Just to jump in, I think this would be a great course. FYI there is also a course in BMS (Med4006 – Foundations of Medical Imaging) being offered for the first time this Winter, that it sounds like this course would be a great accompaniement to for students with those types of interests.
I think Ivan knows my favourable feelings about a Biophysics course, which should be able to be co-taught across the 2 departments.

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Thursday, October 9, 2025 at 1:46 PM
To: chemapo <chemapo@mun.ca>
Cc: Physics Head <physicshead@mun.ca>, Physics Academic Program Officer <physicsAPO@mun.ca>, Berry, Mark <mberry@mun.ca>, Harding, Scott <sharding@mun.ca>
Subject: Re: Health Physics

Thank you, Steven. This helps build the case for the course.
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: chemapo <chemapo@mun.ca>
Date: Thursday, October 9, 2025 at 1:41 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Physics Head <physicshead@mun.ca>, Physics Academic Program Officer <physicsAPO@mun.ca>, Berry, Mark <mberry@mun.ca>, Harding, Scott

<sharding@mun.ca>
Subject: Re: Health Physics

Hey Ivan,

Just adding to Scott's email.
In terms to the best semester to offer the course, it doesn't make that much of a difference to HuBi students. It's unlikely (possible but unlikely) any 3rd year HuBi students will complete this course based on how the 3rd year of the HuBi program is structured (the Winter is a maybe but I still think it's unlikely). You absolutely could get HuBi students in their 4th year doing this course regardless of whether the course is offered in the Fall or Winter semester (again just based on how the program is structured).

Many students in HuBi have a keen interest in the area of health. I suspect there will be many HuBi students with interest in this course!

Best Regards,
Steve

STEVEN SMITH HBSc, B.Ed, M.Sc
ACADEMIC PROGRAM OFFICER
Biochemistry, Chemistry, and Human Biosciences
Core Science Facility, CSF 2240
Memorial University
Office: (709) 864 8904

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Thursday, October 9, 2025 at 1:44 PM
To: Harding, Scott <sharding@mun.ca>
Cc: Niven, Erin <eniven@mun.ca>, Physics Head <physicshead@mun.ca>, Physics Academic Program Officer <physicsAPO@mun.ca>, Wallin, Jan Stefan <jswallin@mun.ca>, Associate Dean of Science (Undergraduate) <adsu@mun.ca>, Dean of Science <deansci@mun.ca>, chemapo <chemapo@mun.ca>, Chemistry - Head of Dept <chemhead@mun.ca>, Marshall, Heather Dawn <dawnm@mun.ca>, Biology Academic Program Officer <BioAPO@mun.ca>, Rise, Matthew <mrise@mun.ca>, Berry, Mark <mberry@mun.ca>
Subject: Re: Health Physics

Hi Scott,

Thank you for your supportive and thoughtful feedback. It is very encouraging that you would add it to your course baskets for some of your concentrations and that you see it as a good fit to our joint honours HUBI/Physics program. This provides motivation for offering it in a sustained way.

With regard to Math 1006, I would categorize its omission as an oversight. It follows Math 1090, covers the same formalism as Math 1000, and is a sufficient prerequisite for Math 1001. We will tend to this correction.

Thank you for providing useful leads on solving the jurisdictional roadblocks to having someone in Dr. Niven's position teach the course.

Thanks again,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Harding, Scott <sharding@mun.ca>
Date: Thursday, October 9, 2025 at 1:08 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Niven, Erin <eniven@mun.ca>, Physics Head <physicshead@mun.ca>, Physics Academic Program Officer <physicsAPO@mun.ca>, Wallin, Jan Stefan <jswallin@mun.ca>, Associate Dean of Science (Undergraduate) <adsu@mun.ca>, Dean of Science <deansci@mun.ca>, chemapo <chemapo@mun.ca>, Chemistry - Head of Dept <chemhead@mun.ca>, Marshall, Heather Dawn <dawnm@mun.ca>, Biology Academic Program Officer <BioAPO@mun.ca>, Rise, Matthew <mrise@mun.ca>, Berry, Mark <mberry@mun.ca>
Subject: RE: Health Physics

Hi Ivan,

I really like this course idea. I think it would compliment our program nicely for some students. Here are my specific responses to your questions:

1. Would such a course be of interest to the students in your programs?
    a. Yes, I think there would be significant interest in this course by our students and we would offer it as one of the courses that counts toward the relevant "Concentration", specifically "Biochemistry" and "Health and Disease". It would also make an excellent addition to the requirements for our Joint Honours program (HuBi/Physics).
2. If yes, do you see any difficulties with the current proposal, especially in terms of students in your programs being able to take it?
    a. I do not see any difficulties for students on a program of study in HuBi that would also be completing their other science electives in Maths and Physics. We have a forthcoming calendar editorial change to our regulations as our Math requirement is listed as Math1006 (or equivalent) and it should be Math 1006 or Math 1000 (or equivalent). I would also work with our academic advisor to be sure that the information going out

to high school students about our program highlights that physics courses in first year, while not required for HuBi, would be a good idea to open up the option for electives, minors, and joint majors.

3. Do you have any advice on how to proceed (or how not to proceed!) and/or would you been interested in meeting to discuss any of this?
    a. Regarding how to proceed with Dr. Niven being the instructor or co-instructor on the course, I would suggest a conversation with faculty relations. If she is appointed as a Clinical Assistant Professor, I would assume she is compensated for providing education to students at Memorial (specifically medical students) but not as part of a bargaining unit. I would suggest looking at the wording of her appointment with Memorial. We have various groups of instructors in different bargaining units or no bargaining unit across the university so this must not be the first instance of this issue (e.g. NAPE and MUNFA instructors at MI)? Also, would a cross-appointment to Physics and Physical Oceanography solve this issue? Particularly if the cross-appointment describes this course as Dr. Niven's contribution to the department/faculty? It seems to be within Dr. Niven's academic freedom to teach in Physics as long as there is some sort of administrative mechanism or precedent at the university for this type of arrangement?

Separate but related note, several ASM in our program have expressed a desire to see Physics offering more in the way of biophysics options for undergraduate students to address the gap in that area for students with interests in the physical aspects of biochemistry and related biosciences.

I will provide separate feedback on the proposal once it is formally requested but it might be worth checking if Math 1006 is also sufficient for the maths requirement and we would have secondary calendar changes for the Joint Honours and our concentrations course baskets.

All the best,
Scott
--
Scott Harding, PhD
Associate Professor
Deputy Head | Undergraduate Studies
Department of Human Biosciences | Faculty of Science | Memorial University
T. 709.864.8539 | Rm. No. CSF-3235

Biology
From: Marshall, Heather Dawn <dawnm@mun.ca>
Date: Friday, October 10, 2025 at 12:24 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Niven, Erin <eniven@mun.ca>, Biology Academic Program Officer

<BioAPO@mun.ca>
Subject: Re: Health Physics

Hi Ivan

Thank you for this information. The two courses do sound quite different. Certainly, I think Biology students would be quite interested in the proposed Health Physics course as an elective, especially those in our Health Concentration. Other than the already-mentioned Math 1006 alternative, the pre-requisites don't currently seem to be an issue – Biology students are already required to take first-year Physics.

I am cc'ing Andrew in case he has anything to add.

Best,
Dawn Marshall
--
Dawn Marshall, PhD
Associate Professor, Deputy Head Undergraduate
Biology Department, Faculty of Science
Memorial University of Newfoundland

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Thursday, October 9, 2025 at 5:28 PM
To: Marshall, Heather Dawn <dawnm@mun.ca>
Cc: Niven, Erin <eniven@mun.ca>
Subject: FW: Health Physics

Dear Dawn,

Thank you for your question.

From my limited understanding, the Med 4xx3 medical imaging course (I believe the number is now MED 4006) covers the use of non-ionizing and ionizing radiation for imaging, the technicalities of obtaining images, and instrumentation, with a bit on safety. The Health Physics course covers the fundamentals of ionizing radiation, its sources, and its interaction with materials and living matter. There is a significant emphasis on dosimetry and safety. Health physics does not cover imaging at all, and nothing about MRI.

I've cc'd Dr. Niven so that she can correct and/or elaborate on my answer.

Best,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)

Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Marshall, Heather Dawn <dawnm@mun.ca>
Date: Thursday, October 9, 2025 at 2:42 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: Re: Health Physics

Hi Ivan

Just wondering about the relationship between your proposed course and the Med 4XX3 course that was sent around for comments last April? (See attached?)

Best,
Dawn Marshall

--
Dawn Marshall, PhD
Associate Professor, Deputy Head Undergraduate
Biology Department, Faculty of Science
Memorial University of Newfoundland

Dean's Office
From: Saika-Voivod, Ivan <saika@mun.ca>
Sent: October 9, 2025 5:12 PM
To: Fridgen,Travis <tfridgen@mun.ca>
Subject: Re: Health Physics

Hi Travis,
[other email content on a different matter]
The prerequisites were based on Erin Niven's experience with the course. With the course being interdisciplinary, physics students, for example, would have an easier time with the physics but would struggle with the biology. Chemistry students would be more at ease with the concepts of rates and reaction kinetics. One point brought up by our USC against the course was that it doesn't have sufficient physics content, that it would be too easy from a physics perspective, to which the counter was that there is a lot of diverse material that needs to be covered… so there's a maturity or breadth component to having 2nd year prerequisites. This is my response based on our USC discussions. If you like, I can touch base with Erin to provide a more qualified answer.
Cheers,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of

Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Fridgen,Travis <tfridgen@mun.ca>
Date: Thursday, October 9, 2025 at 4:47 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: RE: Health Physics

Hi Ivan,

Quick questions about the prerequisites:
6 CH of 2xxx in BIOL, CHEM, HUBI, or PHYS
Why have these? What is taught in each of these course is completely independent of one another, so the material taught in the health physics course cannot depend on any of the concepts taught in these courses. That means to me that the prerequisites are not actually prerequisite knowledge.
[other email content on a different matter]

Best,
T

DR. TRAVIS FRIDGEN HBSc, BEd, PhD (he/him)
ASSOCIATE DEAN OF SCIENCE
Professor of Chemistry
Memorial University
St. John's, NL , Canada A1B 3X7
T 709-864-8153
https://www.mun.ca/faculty/tfridgen
https://mun.webex.com/meet/tfridgen

Discussion with BioMedical Science (Faculty of Medicine)

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Thursday, September 25, 2025 at 11:06 AM
To: Kendall, Edward <ek0074@mun.ca>
Subject: Re: progressing on Health Physics course proposal

Thank you, Ed. We will let our students know about Med 4006 Fundamentals of Medical Imaging.
Cheers,
Ivan

Ivan Saika-Voivod, Professor

Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Kendall, Edward <ek0074@mun.ca>
Date: Thursday, September 25, 2025 at 10:50 AM
To: Saika-Voivod, Ivan <saika@mun.ca>, Erin Niven <Erin.Niven@nlhealthservices.ca>
Cc: Wallin, Jan Stefan <jswallin@mun.ca>, Niven, Erin <eniven@mun.ca>, Jeffery Flemming <Jeffery.Flemming@nlhealthservices.ca>, Tony Poole <Tony.Poole@nlhealthservices.ca>, Julio Panama <julio.panama@nlhealthservices.ca>
Subject: Re: progressing on Health Physics course proposal

Great news, thanks for looping me in. I am delighted to hear that Physics will be engaging in the health physics area.

FoM is developing a generalized UG program in Medical Physiology. This will complement our existing graduate programs that cover five themes (neuroscience, cardiovascular and renal physiology, human genetics, immunology and infectious disease and cancer). The undergraduate programs will roll out over three years, Winter 2026 will offer Med 4006 Fundamental of Medical Imaging open to Science and Engineering students. Fall 2026 will see three additional course that will have a more physiological theme.

I feel that there will be plenty of space for a radiation physics UG course and we will be sure to recommend it to students and I hope that Physics will consider the Imaging course as an option.

Our new President emphasizes the UG experience and it is important for our units to work cooperatively to have maximum impact
Please do not hesitate to reach out if I can help in any way, including curriculum development…
Ed

EJ Kendall, PhD
Professor and Associate Dean
BioMedical Sciences
Faculty of Medicine
Memorial University of Newfoundland

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Tuesday, September 23, 2025 at 15:14
To: Erin Niven <Erin.Niven@nlhealthservices.ca>
Cc: Wallin, Jan Stefan <jswallin@mun.ca>, Niven, Erin <eniven@mun.ca>, Jeffery Flemming <Jeffery.Flemming@nlhealthservices.ca>, Tony Poole

<Tony.Poole@nlhealthservices.ca>, Julio Panama <julio.panama@nlhealthservices.ca>, Kendall, Edward <ek0074@mun.ca>
Subject: Re: progressing on Health Physics course proposal

Thanks, Erin. Ed will be a great ally on this I'm sure.
Cheers,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Erin Niven <Erin.Niven@nlhealthservices.ca>
Date: Tuesday, September 23, 2025 at 2:53 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Wallin, Jan Stefan <jswallin@mun.ca>, Niven, Erin <eniven@mun.ca>, Jeffery Flemming <Jeffery.Flemming@nlhealthservices.ca>, Tony Poole <Tony.Poole@nlhealthservices.ca>, Julio Panama <julio.panama@nlhealthservices.ca>, Kendall, Edward <ek0074@mun.ca>
Subject: RE: progressing on Health Physics course proposal
Good news!

If it helps, I believe Ed Kendall has been tasked with setting up a new program (or multiple programs) within Health Sciences. I have copied him so that you may get ahold of him as well.

Apologies Ed – I can't remember the details of what you are working on, but I believe you indicated an "Introduction to Health Physics" course could be useful for some of the future students you would be targeting in your newly developed program(s).

There are so many "tracks" you could head down in the radiation sciences that I do believe enticing people from all the science and engineering programs will be useful.

Sincerely,
Erin

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

Indicate the Calendar change(s) being proposed by checking and completing as appropriate:

- X New course(s): **Physics 399W Physics Co-operative Internship**
- ☐ Amended or deleted course(s):
- ☐ New program(s):
- ☐ Amended or deleted program(s):
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- X New, amended or deleted Faculty, School or Departmental regulations:

Regulations pertaining to Co-operative Internship in Physics

- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

By signing below, you are confirming that the attached Calendar changes have obtained all necessary Faculty/School approvals, and that the costs, if any, associated with these changes can be met from within the existing budget allocation or authorized new funding for the appropriate academic unit.

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Regulations

SECTION OF CALENDAR

Indicate the section of the Calendar impacted by the proposed change(s):

- ☐ Glossary of Terms Used in the Calendar
- ☐ Admission/Readmission to the University (Undergraduate)
- ☐ General Academic Regulations (Undergraduate)
- ☐ Faculty of:
- ☐ School of:
- X Department of: **Physics and Physical Oceanography**
- ☐ Other:

RATIONALE

Statement of Purpose

Undergraduate students within the Department of Physics and Physical Oceanography have expressed concern about the prospects of being hired with a degree in Physics. This feedback has come from meetings with undergraduates and through a survey administered as part of the recent departmental AUP process. While there are plentiful job opportunities with a Physics degree, many may not be obvious to our students. We propose a Co-operative Internship within our department to help students find options for work and build connections in industry for their post-graduation benefit. Further, even if a student chooses to pursue a career outside of industry – in academia or otherwise – such experience would be a valuable addition to their education.

This program will foster connections between the students in the department and local or national industry partners. We hope this will help to raise awareness of the skill set obtained with a degree in Physics and its usefulness in the workplace. Finally, industry connections could benefit our department and faculty through educational and other exchanges.

Analysis of Student Interest

In a recent survey carried out as part of our most recent Academic Unit Planning, we found that a strong theme among student responses was the availability of jobs. Students finishing our program tended to either have employment already or require about a year to find employment. It is clear that this is a major concern for our students. This is further supported by in-person meetings between faculty, staff, and students. We hope that the Co-operative Internship in Physics will close the year-long gap in

finding a job, either through students continuing work with the co-op employer or through having relevant industry experience**.**

Analysis of employer interest, job market potential

Through a combination of alumni networks, research collaborations, and other contacts, we are carrying out a survey of 9 potential local employers on their willingness to hire Physics undergraduates as co-op students. Avalon Holographics, which has hired several of graduates in the past, has responded positively, saying that they would indeed hire Physics co-op students, valuing specialization in optics. Newfoundland Hydro sees Physics students as an option they would explore, with our students taking on similar roles to Engineering students. Newfoundland Hydro saw as a great benefit our proposed new course, the Physics of Energy, since it will reduce the learning curve for students at the company.

The response of SubC Imaging is perhaps emblematic of companies who have not hired physicists in the past. They wondered what skills physics students had and how would they fit into their business:

> "What are their skill sets that could be applied to our business? Do they have experience with design of mechanical or electrical systems? Do they have experience with implementation of AI in cloud based software for image analysis?"

Our response to such questions is that Physics students have a broad range of skills, reflecting the different joint programs, minors, personal interests, and summer research work. For example, a Physics student with an Electrical Engineering minor will have done electrical design work in courses, a joint Computer Science and Physics student will have more software development training, and both will have a good mathematical and problem-solving foundation. A recent graduate, Nurul bin Ibrahim, started an AI company developing design tools, Atlantiq AI. Apart from a personal interest he had with ML and AI, Nurul gained experience with it during undergraduate research work. One of our goals is to have companies consider Physics students if they normally hire Engineering or Computer Science students for co-op positions.

Ultimately, the interview process will determine whether the student and the company are a good fit for each other. Our job is to get the message across that Physics students are quantitative problem solvers with laboratory and computational skills in a variety of areas.

That being said, the number of eligible students that would undertake this program would be quite small, at least initially, reflecting the number of students in our programs. Specifically, in Fall 2024 we had 16 scholarship-eligible students, translating to approximately 5 per year. This would be the pool of potential co-op students. This small number of students would ease the introduction of the Physics co-op program, both in terms of program administration and in terms of developing ties with the job market. In

the foreseeable future, it seems likely that the maximum size of this program will remain small - on the order of 5 to 10 students.

Cultivating ties with companies will be an ongoing process.

ANTICIPATED EFFECTIVE DATE

September 2026

CALENDAR CHANGES

11.11.8 Co-operative Internship in Physics (CIP)

www.mun.ca/coop

The Co-operative Internship in Physics (CIP) provides an opportunity for qualified students to obtain rewarding co-operative internships that help them develop practical skills in a real work setting before graduation. The CIP is available to students in any Physics major program. Students will typically apply between their third and fourth years of studies. Admission to the CIP is limited and competitive.

11.11.8.1 Admission Requirements

To be considered for admission to the CIP, an applicant:

1. must be declared in any Physics major or joint major program;
2. must be registered as a full-time student at the time of application;
3. must have successfully completed at least 15 credit hours in Physics courses at the 3000 level or beyond prior to the start of the internship;
4. must have obtained an average grade of at least 75 over all Physics courses prior to the start of the internship;
5. must have completed at least 75 credit hours prior to the start of the internship;
6. must have at least 15 credit hours remaining after the co-operative internship to satisfy degree requirements, at least 3 credit hours of which must be in courses required for their major or joint major at the 2000 level or above; and
7. is expected to return to Memorial University as a full-time student after the co-operative internship.

11.11.8.2 Co-operative Internship Guidelines

1. General management of the CIP is the responsibility of Academic Staff Member(s) in Co-operative Education (ASM-CE). ASMs-CE are responsible for developing employment opportunities, organizing competitions for co-operative internship employment, co-operative education data management, monitoring students during co-operative internships, and evaluating co-operative internships.
2. Subject to the availability of appropriate co-operative internship employment, a student must complete a co-operative internship of 4, 8, or 12 consecutive months with a single employer. Co-operative internships are full-time, paid, and involve work that is relevant to the discipline of physics.
3. The co-operative internship start and end dates are listed at www.mun.ca/coop.
4. Students are ultimately responsible for securing their co-operative internship. ASMs-CE provide support for the job search and inform students of potential opportunities.
5. Students who are admitted to the CIP give permission to ASMs-CE to supply prospective employers with copies of their resume and transcript.
6. A student who has been admitted to the CIP may independently obtain a co-operative internship in consultation with an ASM-CE. Such employment positions must satisfy the criteria for co-operative internships, be confirmed in writing by the employer, and approved by an ASM-CE before the first day of the co-operative internship.
7. Students must register for the course Physics 399W every semester during their co-operative internship. Physics 399W is considered a full-time course load.
8. Students are not permitted to drop their co-operative internship without prior approval from an ASM-CE and the Head of the Department of Physics and Physical Oceanography. Students who drop a co-operative internship without permission, who fail to honour an agreement to work with an employer, or who conduct themselves in such a manner as to cause their discharge from the co-operative internship, will normally be awarded a fail grade for the co-operative internship period and may not be permitted to reapply to the CIP.

Note:

Students should also refer to the University Regulations (Undergraduate), General Academic Regulations (Undergraduate).

CALENDAR ENTRY AFTER CHANGES

11.11.8 Co-operative Internship in Physics (CIP)

www.mun.ca/coop

The Co-operative Internship in Physics (CIP) provides an opportunity for qualified students to obtain rewarding co-operative internships that help them develop practical skills in a real work setting before graduation. The CIP is available to students in any Physics program. Students will typically apply between their third and fourth years of studies. Admission to the CIP is limited and competitive.

11.11.8.1 Admission Requirements

To be considered for admission to the CIP, an applicant:

1. must be declared in any Physics major or joint major program;
2. must be registered as a full-time student at the time of application;
3. must have successfully completed at least 15 credit hours in Physics courses at the 3000 level or beyond prior to the start of the internship;
4. must have obtained an average grade of at least 75 over all Physics courses prior to the start of the internship;
5. must have completed at least 75 credit hours prior to the start of the internship;
6. must have at least 15 credit hours remaining after the co-operative internship to satisfy degree requirements, at least 3 credit hours of which must be in courses required for their major or joint major at the 2000 level or above; and
7. is expected to return to Memorial University as a full-time student after the co-operative internship.

11.11.8.2 Co-operative Internship Guidelines

1. General management of the CIP is the responsibility of Academic Staff Member(s) in Co-operative Education (ASM-CE). ASMs-CE are responsible for developing employment opportunities, organizing competitions for co-operative internship employment, co-operative education data management, monitoring students during co-operative internships, and evaluating co-operative internships.
2. Subject to the availability of appropriate co-operative internship employment, a student must complete a co-operative internship of 4, 8, or 12 consecutive months with a single employer. Co-operative internships are full-time, paid, and involve work that is relevant to the discipline of physics.
3. The co-operative internship start and end dates are listed at www.mun.ca/coop.

4. Students are ultimately responsible for securing their co-operative internship. ASMs-CE provide support for the job search and inform students of potential opportunities.
5. Students who are admitted to the CIP give permission to ASMs-CE to supply prospective employers with copies of their resume and transcript.
6. A student who has been admitted to the CIP may independently obtain a co-operative internship in consultation with an ASM-CE. Such employment positions must satisfy the criteria for co-operative internships, be confirmed in writing by the employer, and approved by an ASM-CE before the first day of the co-operative internship.
7. Students must register for the course Physics 399W every semester during their co-operative internship. Physics 399W is considered a full-time course load.
8. Students are not permitted to drop their co-operative internship without prior approval from an ASM-CE and the Head of the Department of Physics and Physical Oceanography. Students who drop a co-operative internship without permission, who fail to honour an agreement to work with an employer, or who conduct themselves in such a manner as to cause their discharge from the co-operative internship, will normally be awarded a fail grade for the co-operative internship period and may not be permitted to reapply to the CIP.

Note:
Students should also refer to the University Regulations (Undergraduate), General Academic Regulations (Undergraduate).

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Senate Summary Page for Courses

COURSE NUMBER AND TITLE

Physics 399W Physics Co-operative Internship

ABBREVIATED COURSE TITLE

Co-operative Internship

RATIONALE

The creation of this course is a necessary part of the Co-operative Internship in Physics.

ANTICIPATED EFFECTIVE DATE

September 2026

CALENDAR CHANGES

13.11 Physics and Physical Oceanography

Physics 399W Physics Co-operative Internship
is open only to students who have been accepted into the Co-operative Internship in Physics. This course provides an opportunity for qualified students to obtain rewarding job experience of 4, 8, or 12 months of continuous duration in fields related to physics during the course of their studies. A grade of NC (no grade expected) will be awarded for this course if the student is continuing the co-operative internship into the next semester.

CH: 0
PR: admission to the Co-operative Internship in Physics (CIP)

CALENDAR ENTRY AFTER CHANGES

13.11 Physics and Physical Oceanography

Physics 399W Physics Co-operative Internship

is open only to students who have been accepted into the Co-operative Internship in Physics. This course provides an opportunity for qualified students to obtain rewarding job experience of 4, 8, or 12 months of continuous duration in fields related to physics during the course of their studies. A grade of NC (no grade expected) will be awarded for this course if the student is continuing the co-operative internship into the next semester.

CH: 0
PR: admission to the Co-operative Internship in Physics (CIP)

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Appendix Page

CONSULTATIONS SOUGHT

Minor changes made in response to consultation

In discussion with the Co-op Office, for item 6 of Admission Requirements, we added 3 CH in required program courses to be completed after the internship. This corrected a misunderstanding in our discussions with the Co-op Office.

- 6. must have at least 15 credit hours remaining after the co-operative internship ~~in order to satisfy degree requirements~~ to satisfy degree requirements, at least 3 credit hours of which must be in courses required for their major or joint major at the 2000 level or above; and

Consultation email

From: Saika-Voivod, Ivan <saika@mun.ca>
Sent: Wednesday, October 22, 2025 3:25 PM
To: assocdeancphss <assocdeancphss@mun.ca>; Business Undergrad Help <busihelp@mun.ca>; Dean of Education <educdean@mun.ca>; Engineering and Applied Science <engrconsult@mun.ca>; HKR Dean <hkrdean@mun.ca>; Dean of Medicine : McKeen, Dr. Dolores <deanofmedicine@mun.ca>; Karen Bulmer <kbulmer@mun.ca>; DeanNurse <DeanNurse@mun.ca>; Pharmacy <pharminfo@mun.ca>; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Dean of Arts and Social Science (Grenfell Campus) <gcsass-dean@mun.ca>; GC School of Science and the Environment <gcsse@mun.ca>; GC School of Fine Arts <gcsofa@mun.ca>; Marine Institute <miugconsultations@mi.mun.ca>; deanofsass <deanofsass@mun.ca>
Subject: Consultation Request -- Co-operative Internship in Physics

The Department of Physics and Physical Oceanography is soliciting feedback on a proposal to create a co-op option for Physics majors, the Co-operative Internship in Physics.

The proposal has been developed together with the Science and Humanities and Social Sciences Co-op Office and will provide an opportunity for qualified students to obtain rewarding job experience of 4, 8, or 12 months of continuous duration in fields related to physics during the course of their studies.

Please send comments to Ivan Saika-Voivod at saika@mun.ca.

Thank you,

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

UNIT	RESPONSE	DATE
Business	No	
Education	No	
Engineering	Yes	Nov. 19, 2025
Grenfell Campus School of Arts & Social Science	No	
Human Kinetics and Recreation	No	
Humanities and Social Sciences	Yes	Oct. 27, 2025
Labrador Institute	No	
Library	Yes	Oct. 24, 2025
Marine Institute	No	
Medicine	Yes	Oct. 24, 2025
Music	No	
Nursing	No	
Pharmacy	No	
Registrar's Office	No	
Science	No	
Biochemistry	No	
Biology	No	
Chemistry	No	
Computer Science	Yes	Oct. 24, 2025
Earth Sciences	No	
Mathematics & Statistics	No	
Ocean Sciences	No	
Physics & Physical Oceanography	No	
Psychology	No	
Co-op office	Yes (clarified in person)	Oct. 23, 2025
Social Work	No	

Co-op Office

From: Newhook, Rebecca <rnewhook@mun.ca>
Date: Thursday, October 23, 2025 at 8:48 AM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: RE: Co-op for Physics

Hi Ivan,

I'm free this morning to discuss, thanks. You didn't misunderstand my question, but I think the solution became muddled and I'm sorry I didn't notice it until the meeting!

It would be better to reduce credit hours completed prior to the work term to 12CH in 3000+ physics courses if necessary, as we'd always want a student to have at least one physics courses remaining so they could apply what was learned on the internship in class. More than one would be better, but none is very much out of line with pedagogy in co-op and internships.

Do you want to chat around 9.30am?

Rebecca

From: Saika-Voivod, Ivan <saika@mun.ca>
Sent: Wednesday, October 22, 2025 4:33 PM
To: Newhook, Rebecca <rnewhook@mun.ca>
Subject: Re: Co-op for Physics

Dear Rebecca,

I just sent out the proposal for consultation an hour ago, so we could amend it at FoSCUGS.

Yes, the 3CH after-co-op stipulation was there and we took it out after we discussed your comments on Oct. 10. Perhaps I misunderstood and/or misinterpreted the comment in the docx file.

> Is it practical to ask students to have completed 15CH in 3000+ level courses AND have at least 3CH remaining? Is there more than one term when students can satisfy both of these conditions?

Going back over some of our programs and joint programs, it seemed to me that it was quite likely that a student after third year would have 15 CH in Physics courses, but might not always have 3 CH in Physics left if they, say, stay an extra Fall semester (in 4th year) and start a co-op in the Winter. They'll have other required courses, but maybe not in Physics.

Hmm. Perhaps meeting would be helpful. I'm available tomorrow (Th) 9 to 11 am, then after 2:30 pm. Friday, I have something from 11 to 12, but am otherwise unscheduled.

Sorry for the confusion! and thank you for your diligent help.

Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

From: Newhook, Rebecca <rnewhook@mun.ca>
Date: Wednesday, October 22, 2025 at 4:01 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: RE: Co-op for Physics

Hi Ivan,

After the meeting today I went back to see where the 3CH in physics courses remaining after the internship went, I'm sorry that I'm only getting a chance to communicate about that now.

The draft that was discussed a couple of weeks back (attached), did include that stipulation, and I don't recall a discussion of striking that part, although it is possible that I've forgotten? See point 6. on page 4:

1. must have at least 15 credit hours remaining after the co-operative internship in order to satisfy degree requirements, 3 credit hours of which must be in physics courses; and

Is it possible to add that back in? I could make a friendly amendment in faculty council but it would be better to circulate that with the draft now.

Thanks,
Rebecca

Medicine

From: medvicedean <medvicedean@mun.ca>
Date: Friday, October 24, 2025 at 8:39 AM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Dean of Medicine : McKeen, Dr. Dolores <deanofmedicine@mun.ca>
Subject: Re: Consultation Request -- Co-operative Internship in Physics
Hi Ivan,

On behalf of the Faculty of Medicine, there are no concerns with the proposal. All the best.

Danielle

DANIELLE O'KEEFE MD CCFP FCFP MSc CCPE
Vice Dean, Education and Faculty Affairs
Associate Professor of Family Medicine

Faculty of Medicine
Memorial University of Newfoundland
Faculty of Medicine Building | Room M2M311
300 Prince Philip Drive
St. John's, NL, Canada A1B 3V6
T 709 864 6289 | F 709 864 6336
www.mun.ca/medicine

Computer Science

Date: Friday, October 24, 2025 at 4:36 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: FW: Consultation Request -- Co-operative Internship in Physics

Looks great, Ivan! I'm excited that Physics is getting a co-op program, it's a great opportunity for the students. Have a good weekend

. . . . . .

Cathy Hyde, MSc | Manager of Academic Programs, MSc

Department of Computer Science
Memorial University of Newfoundland
220 Prince Philip Drive, St. John's, NL, A1C 5S7
www.mun.ca/computerscience/

HSS

From: assocdeancphss <assocdeancphss@mun.ca>
Date: Monday, October 27, 2025 at 12:45 PM

To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: Re: Consultation Request -- Co-operative Internship in Physics
Hello,

The proposed co-op program is clearly a great idea. HSS wishes you success with it.

P Dold

Patricia Dold (she/her)
Associate Professor, Religion and Culture
Associate Dean, Curriculum and Programs
Faculty of Humanities and Social Sciences
St. John's Campus, Memorial University

Engineering

From: Engineering Consult <engrconsult@mun.ca>
Date: Wednesday, November 19, 2025 at 2:16 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Cc: Edmunds, Jayde <edmundsj@mun.ca>, Masek, Vlastimil <masek@mun.ca>, Adam Noel <adam.noel@mun.ca>
Subject: Re: Consultation Request -- Co-operative Internship in Physics
Thank you for the opportunity to comment on the proposed new Co-operative Internship in Physics.

At its meeting on 2025 Nov. 19, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science expressed support for this new initiative. We encourage opportunities for work integrated learning experience for university students.

Yours sincerely,

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science
Memorial University of Newfoundland
St. John's NL A1B 3X5

LIBRARY REPORT

Request email

From: Saika-Voivod, Ivan <saika@mun.ca>
Date: Wednesday, October 22, 2025 at 3:21 PM
To: University Librarian <univlib@mun.ca>
Subject: Report request: Co-operative Internship in Physics
Dear Library,

The Department of Physics and Physical Oceanography is kindly requesting a library report for the attached proposal for creating the Co-operative Internship in Physics. The proposal will require new regulations and a new course, Physics 399W.

Thank you very much,
Ivan

Ivan Saika-Voivod, Professor
Deputy Head (Undergraduate Studies)
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, http://www.physics.mun.ca/~saika/

Library response

From: Rose, Kathryn <kathrynr@mun.ca>
Date: Friday, October 24, 2025 at 1:47 PM
To: Saika-Voivod, Ivan <saika@mun.ca>
Subject: FW: Report request: Co-operative Internship in Physics
Good afternoon Ivan,

Thank you for the opportunity to provide feedback on the proposed Co-op internship for Physics. This will have no impact on the library's collections. We will continue to support students as required.

Kathryn

From: University Librarian <univlib@mun.ca>
Sent: October 23, 2025 9:48 AM
To: Rose, Kathryn <kathrynr@mun.ca>
Subject: FW: Report request: Co-operative Internship in Physics

SHERI COOMBS MA | Decanal Assistant
Memorial University Libraries
L-2019A Queen Elizabeth II Library
Memorial University | St. John's | Newfoundland | A1B 3Y1
T: 709.864.3862
E: sheri.coombs@mun.ca
www.library.mun.ca

RESOURCE IMPLICATIONS

This course and program would be handled by the Science and Humanities and Social Sciences Co-op office. We have formulated this proposal together with the Co-op office, ensuring that this program would follow all standards already in place for similar programs in other departments. We expect that our Co-op Internship will have small enrolments at the beginning and should not greatly increase the workload for the ASMs-CE.

ADDITIONAL INFORMATION

Below, we include a Physics Student Profile to help ASMs-CE work with potential employers.

The Physics Student Profile

Skill Set

- Deep understanding of physical principles and theoretical modeling
- Strong analytical and mathematical skills
- Problem-solving with a focus on fundamental laws of nature
- Experience with scientific computing, simulations, and data analysis
- Lab work focused on experimentation and understanding physical phenomena

Typical Coursework

- Core subjects: classical mechanics, electromagnetism, quantum mechanics, thermal physics, experimental physics
- Electives: semiconductor devices, fluid mechanics, physical oceanography, electric circuits, general relativity, quantum computing, statistical mechanics, optics, astrophysics, physics of energy, biophysics
- Advanced mathematics (calculus, linear algebra, differential equations)
- Scientific computing (Scripting and Compiled Languages, e.g., Python, C, Fortran)
- Labs (experiments include investigations of mechanical, electrical, optical, laser, fluidic, thermal, nuclear magnetic resonance, infrared spectroscopy, atomic and other quantum systems; Arduinos and other computer interfacing; data analysis)

Degrees

- Physics; Ocean Physics; Environmental Physics
- Joint degrees and/or minors with Earth Sciences & Geophysics, Electrical Engineering, Human Bioscience & Biochemistry, Chemistry, Computer Science, Mathematics

Jobs our graduates get outside of academia (including examples from MUN Physics graduates)

- Research and Development
  - Avalon Holographics
    - Optics specialists
    - Machine learning specialists
    - Technical Sales
  - Solace Power, Computational Physicists (device modelling)
  - Defense Research and Development Canada (Halifax), Defence Scientist
  - Department of Fisheries and Oceans, Research Scientist

- Data analyst, quantitative analyst
  - Provincial Aerospace, Physical Oceanographer/Senior Data Analyst
  - Sander Geophysics, Data Analyst
  - Thoughtworks, Software Engineer
  - Dig Insights, Analytics Manager
- Software developer
  - Iridian Spectral Technologies, Optical Manufacturing Software Developer
  - Engage Creative, Machine Learning Software Developer
- Consultants
  - Align HCM, Associate Systems Consultant
- Technical writing
  - ControlUp, Technical API Writer
- Weather
  - Environment and Climate Change Canada
    - Meteorologist
    - Developmental Meteorologist
- Cyber Security
  - Office of the Auditor General of Canada, Cyber Security Analyst
- Medical Physicist
  - BC Cancer Agency, Medical Physics Associate
  - UW-Madison, Medical Physics Resident
- Green Materials
  - alterBiota, Production Manager

Physics vs Engineering

- Physicists discover the rules, engineers apply the rules.
- Math skills: Math major > Physics > Engineering
- Understanding why you want to do something instead of just doing it
- Less skill in circuits and electronics
- Less skill in design
- Physicists like to work on novel problems to create breakthroughs
  - Created electric motors and generators
  - Created radio communication
  - Created solar cells
  - Created nuclear power
  - Created lasers
  - Created transistors
  - Developed the mathematics of financial derivatives
  - Created MRI machines
  - Created the foundations of AI (J. Hopfield, Physics Nobel Prize, 2024)

Hire a Physics Student

Physics students have a broad range of skills, reflecting the different joint programs, minors, personal interests, and summer research work. For example, a Physics student may have summer research experience with machine learning and AI; a student with an Electrical Engineering minor will have experience with electrical design; a joint Computer Science and Physics student will have more software development training; a joint degree with Human Biosciences prepares students for the biotech sector. All will have a good mathematical and problem-solving foundation. Whatever type of major a company normally hires, it should consider Physics students if the work involves quantitative reasoning and analysis, technical problem solving, lab work, software development, and the like.

Motion to create new courses

Motion: The following courses be approved:

1. MATH 6114 Scientific Machine Learning as a special topics course.
2. STAT 6450 Reinforcement Learning
3. STAT 6486 Neural Networks and Deep Learning
4. STAT 6502 Applied Stochastic Processes
5. STAT 6504 Biostatistics
6. STAT 6511 Bayesian Data Analysis
7. STAT 6541 Statistics of Financial Markets

Rationale:

1. MATH 6114 is a special topics course that will be offered as a reading course. The intended audience for this course is graduate students in areas where classical scientific computing techniques (such as numerical methods for differential equations) are now being augmented with techniques coming from neural networks. Thus, it is expected that students in this course will have some background in scientific computing, either through existing courses or their past/current research.

While there are now several courses on topics related to machine learning taught at MUN, none of these approach the topic from the perspective of its use as a tool in scientific simulation/scientific computing. Unfortunately, many of the foci of existing machine-learning and data-science courses do not immediately translate to this subfield - while there is some overlap in the mechanics of neural network architectures, the techniques of interest in SciML are quite orthogonal to what is taught in existing courses.

2-6. As a consequence of the current financial situation and the enforcement of the policy for low-enrolment courses, the number of elective courses offered exclusively for graduate students has drastically reduced. The approval of this motion will immediately make available for graduate credit four senior undergraduate data science courses, which will increase the number of options for electives in all our statistics graduate programs.

Since STAT 4411, 4502, 4504, 4485, and MATH 4250 are already part of our current undergraduate programs, there are no new resources involved in the approval of STAT 6511, 6502, 6504, 6450, and 6486.

7. Financial statistics is an integral component of modern curriculum. To make it resource neutral, this course replaces STAT 6571.

MEMORIAL UNIVERSITY

SCHOOL OF GRADUATE STUDIES

Request for Approval of a Graduate Course

Adobe Reader, minimum version 8, is required to complete this form.
Download the latest version: http://get.adobe.com/reader.

(1) Fill out the form completely and accurately, and save the form in PDF format. Make sure you specify the save location, e.g. Desktop.
(2) Review https://www.mun.ca/sgs/how-to-create-and-insert-a-digital-signature/ for instructions on how to digitally sign the form.
(3) Send the completed form and attachments to the appropriate faculty/school council in the first instance. If approved, they will forward to the School of Graduate Studies.

To: Dean, School of Graduate Studies
From: Faculty/School/Department/Program
Subject: ☐ Regular Course ☑ Special/Selected Topics Course

Course No.: MATH 6114

Course Title: Scientific Machine Learning

I. To be completed for all requests:

A. Course Type:
☐ Lecture course ☐ Lecture course with laboratory
☐ Laboratory course ☐ Undergraduate course[1]
☑ Directed readings ☐ Other (please specify)

B. Can this course be offered by existing faculty? ☑ Yes ☐ No

C. Will this course require new funding (including payment of instructor, labs, equipment, etc.)? ☐ Yes ☑ No
If yes, please specify:

D. Will additional library resources be required? ☐ Yes ☑ No
(If yes, please contact munul@mun.ca for a resource consultation.)

E. Credit hours for this course: 3

F. Course description (please attach course outline and reading list):
See attached description.

G. Method of evaluation:

	Percentage	
	Written	**Oral**
Class tests		
Assignments	40	10
Other (specify):	35	15
Final examination:		
Total	100	

[1] Must specify the additional work at the graduate level.

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

		Instructor's initials
1.	duplication of thesis work	SM
2.	double credit	SM
3.	work that is a faculty research product	SM
4.	overlap with existing courses	SM

Recommended for offering in the: ☑ Fall ☐ Winter ☐ Spring 20 25

Length of session if less than a semester: Full semester
(i.e. accelerated timeframe)

III. This course proposal has been prepared in accordance with the General Regulations governing the School of Graduate Studies

Scott MacLachlan — August 22, 2025
Course instructor — Date

11/16/25
Approval of the head of the academic unit — Date

IV. I certify that this course proposal was approved by the Faculty or School Council.

Secretary, Faculty/School Council — Date

Revised: May 15, 2025.

Memorial University of Newfoundland
Math 6114: Scientific Machine Learning

Course Outline: The course will cover the theory and practice of Scientific Machine Learning (SciML), which leverages machine learning tools for scientific computing. A major focus will be on the tools of automated differentiation and (graph) neural networks and their use in approximating solutions to ordinary and partial differential equations. Thus, topics include differentiable and probabilistic programming for scientific computing, interpretable and explainable learning, physic-informed neural networks, model discovery, and neural ODEs and PDEs. An emphasis will include efficient implementation of algorithms on modern computing architectures.

Course Texts: There are plethora of open-source instructional materials available in this field. Course notes for similar courses are available from MIT (`https://book.sciml.ai`), Purdue (`https://predictivesciencelab.github.io/advanced-scientific-machine-learning/intro.html`), and the University of Illinois at Urbana Champaign (`https://github.com/lukeolson-group/598sml-f23-syllabus/tree/main`). The course will be taught

Possible Instructors: The initial offering of the course would be taught by Scott MacLachlan (Math and Stats), but we note that many others in the Faculty of Science could teach this course, including Alex Bihlo, Elsa Cardoso-Bihlo, or Terrence Tricco.

Marking Scheme: The course will be graded 50% on weekly homework assignments and 50% on a final project. The weekly assignments will include presenting readings for the course and traditional computational assignments. The final project will include an oral presentation worth 15% of the total final grade (30% of the project grade).

Justification and Notes: The intended audience for this course is graduate students in areas where classical scientific computing techniques (such as numerical methods for differential equations) are now being augmented with techniques coming from neural networks. Thus, it is expected that students in this course will have some background in scientific computing, either through existing courses or their past/current research.

While there are now several courses on topics related to machine learning taught at MUN, none of these approach the topic from the perspective of its use as a tool in scientific simulation / scientific computing. Unfortunately, many of the foci of existing machine-learning and data-science courses do not immediately translate to this subfield - while there is some overlap in the mechanics of neural network architectures, the techniques of interest in SciML are quite orthogonal to what is taught in existing courses.

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Request for Approval of a Graduate Course

Adobe Reader, minimum version 8, is required to complete this form. Download the latest version: http://get.adobe.com/reader. (1) Save the form by clicking on the diskette icon on the upper left side of the screen; (2) Ensure that you are saving the file in PDF format; (3) Specify where you would like to save the file, e.g. Desktop; (4) Review the How to create and insert a digital signature webpage for step by step instructions; (5) Fill in the required data and save the file; (6) Send the completed form by email to: sgs@mun.ca.

To: Dean, School of Graduate Studies
From: Faculty/School/Department/Program
Subject: ☑ Regular Course ☐ Special/Selected Topics Course

Course No.: STAT 6450

Course Title: Reinforcement learning

I. To be completed for all requests:

A. Course Type:
☑ Lecture course
☐ Laboratory course
☐ Directed readings
☐ Lecture course with laboratory
☑ Undergraduate course[1]
☐ Other (please specify)

B. Can this course be offered by existing faculty? ☑ Yes ☐ No

C. Will this course require new funding (including payment of instructor, labs, equipment, etc.)? If yes, please specify: ☐ Yes ☑ No

D. Will additional library resources be required (if yes, please contact munul@mun.ca for a resource consultation)? ☐ Yes ☑ No

E. Credit hours for this course: 3

F. Course description (please attach course outline and reading list):

Reinforcement learning is an emerging topic in data sciences in which an agent immerse in a randomly evolving environment, interactively learns and decides which actions should be taken to maximize a reward function. This course is intended to be an elective option for the graduate students in our programmes and will be offered concurrently with Math-4250 (see attachment).

G. Method of evaluation:

	Percentage	
	Written	**Oral**
Class tests	30%	
Assignments	20%	
Other (specify): Project	10%	(Graduate projects have extra requirements)
Final examination:	40%	
Total	100%	

[1] Must specify the additional work at the graduate level

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

		Instructor's initials
1.	duplication of thesis work	_____
2.	double credit	_____
3.	work that is a faculty research product	_____
4.	overlap with existing courses	_____

Recommended for offering in the Fall Winter Spring 20 26

Length of session if less than a semester:

III. This course proposal has been prepared in accordance with General Regulations governing the School of Graduate Studies

Nan Zheng Digitally signed by Nan Zheng Date: 2025.07.07 14:24:32 -02'30' — July 7, 2025

Course instructor — Date

_____ — July 9, 2025

Approval of the head of the academic unit — Date

IV. This course proposal was approved by the Faculty/School/Council

_____ — _____

Secretary, Faculty/School/Council — Date

APPENDIX 3 – STAT 4250/6450

MATH 4250. Reinforcement learning

Calendar description. Math-4250 considers a mathematical framework in which an agent (such as a person or a robot) learns which actions to take in an environment to maximize a specific reward signal. The course provides an introduction to reinforcement learning, including tabular solution methods, dynamic programming, Monte Carlo methods, temporal-difference learning, planning methods and approximate solution methods.

Prerequisites. MATH 2051, 3132, STAT 2550.

Tentative syllabus.

1. Multi-armed bandits
   - 1.1. Action-value methods
   - 1.2. The exploration-exploitation dilemma
2. Dynamic programming
   - 2.1. An introduction to finite Markov decision processes
   - 2.2. Generalized policy iteration
   - 2.3. Asynchronous dynamic programming
3. Monte Carlo methods
   - 3.1. On-policy Monte Carlo methods
   - 3.2. Off-policy Monte Carlo methods
4. Temporal-difference learning
   - 4.1. TD reinforcement learning
   - 4.2. SARSA and Q-learning
   - 4.3. *n*-step bootstraping methods
5. Planning methods
   - 5.1. Models and planning
   - 5.2. Prioritized sweeping
   - 5.3. Real-time dynamic programming
   - 5.4. Monte Carlo tree search
6. Approximate solution methods and deep reinforcement learning
   - 6.1. Linear methods and feature construction
   - 6.2. A short introduction to deep neural networks
   - 6.3. Deep Q-learning and applications to video and board games
7. Policy gradient methods
   - 7.1. The policy gradient theorem
   - 7.2. Monte Carlo policy gradient
   - 7.3. Actor-Critic methods

Reference textbooks.

1. *Reinforcement learning*, RS Sutton and AG Barto. MIT Press, 2018 (available online)
2. *Algorithms for reinforcement learning* by C Szepesvári. Morgan and Claypool, 2010 (available online)
3. *Decision making under uncertainty and reinforcement learning, theory and algorithms* by C Dimitrakis and R Ortner. Springer, 2022.

Evaluation scheme.

Assignments	30%
Term exam	30%
Final exam	40%

Graduate evaluation scheme.

Assignments	20%	
Term exam	30%	
Project	10%	Graduate project is an extra requirement
Final exam	40%	

MEMORIAL UNIVERSITY
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Request for Approval of a Graduate Course

Adobe Reader, minimum version 8, is required to complete this form. Download the latest version: http://get.adobe.com/reader. (1) Save the form by clicking on the diskette icon on the upper left side of the screen; (2) Ensure that you are saving the file in PDF format; (3) Specify where you would like to save the file, e.g. Desktop; (4) Review the How to create and insert a digital signature webpage for step by step instructions; (5) Fill in the required data and save the file; (6) Send the completed form by email to: sgs@mun.ca.

To: Dean, School of Graduate Studies
From: Faculty/School/Department/Program
Subject: ☑ Regular Course ☐ Special/Selected Topics Course

Course No.: STAT-6486

Course Title: Neural networks and deep learning

I. To be completed for all requests:

A. Course Type:
☑ Lecture course
☐ Laboratory course
☐ Directed readings
☐ Lecture course with laboratory
☑ Undergraduate course[1]
☐ Other (please specify)

B. Can this course be offered by existing faculty? ☑ Yes ☐ No

C. Will this course require new funding (including payment of instructor, labs, equipment, etc.)? If yes, please specify: ☐ Yes ☑ No

D. Will additional library resources be required (if yes, please contact munul@mun.ca for a resource consultation)? ☐ Yes ☑ No

E. Credit hours for this course: 3

F. Course description (please attach course outline and reading list):

The topics covered in this course have become required components of modern curriculum in statistics and data sciences. Intended to be an elective course for graduate students in our programmes, this offering will run concurrently with Stat-4486 (see attachment).

G. Method of evaluation:

	Percentage	
	Written	**Oral**
Class tests	20%	
Assignments	20%	
Other (specify): Project	30%	(Graduate projects have additional requirements)
Final examination:	30%	
Total	100%	

[1] Must specify the additional work at the graduate level

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

		Instructor's initials
1.	duplication of thesis work	_____
2.	double credit	_____
3.	work that is a faculty research product	_____
4.	overlap with existing courses	_____

Recommended for offering in the Fall Winter Spring 20 26

Length of session if less than a semester:

III. This course proposal has been prepared in accordance with General Regulations governing the School of Graduate Studies

Nan Zheng Digitally signed by Nan Zheng Date: 2025.07.07 10:40:36 -02'30' — July 7, 2025

Course instructor — Date

[signature] — July 9, 2025

Approval of the head of the academic unit — Date

IV. This course proposal was approved by the Faculty/School/Council

_____ _____

Secretary, Faculty/School/Council — Date

Appendix 4 – Stat 4486/6486

STAT 4486. Neural networks and deep learning

Course description. This course presents the mathematical foundations of artificial neural networks and deep learning. Topics include a mathematical derivation of basic architectures, regularization of neural networks, their stability, generalization abilities and their relation to various areas of mathematics and probability, including dynamical systems (deterministic and stochastic), Bayesian inference, graph theory and numerical analysis.

Prerequisites. Stat 3521, Stat 3486 or Comp 3202.

Tentative course outline.

1. Brief review of machine learning concepts
2. Neural networks
   - 2.1. Types of artificial neural networks
   - 2.2. Feedforward neural networks and multilayers
   - 2.3. Activation functions and their derivatives
   - 2.4. Loss and cost functions
   - 2.5. Backpropagation
3. Deep neural networks
   - 3.1. Deep neural network algorithm
   - 3.2. Parameter initialisation
   - 3.3. Optimisation and regularisation
   - 3.4. Convolutional neural networks
   - 3.5. Recurrent neural networks
   - 3.6. Graph neural networks
   - 3.7. Applications to computer vision, time series analysis, differential equations
4. Structured neural representations
   - 4.1. Language models
   - 4.2. Embeddings
   - 4.3. Neural machine transitions
5. Advanced topics in deep learning
   - 5.1. Attention mechanisms
   - 5.2. Adversarial deep learning
   - 5.3. Competitive learning
   - 5.4. Reinforcement learning

Reference textbooks.

1. *Deep learning with R*, by Abhijit Ghatak. Springer, 2019.
2. *Neural networks and deep learning*, by Charu C Aggarwal. Springer. 2023.
3. *Deep learning*, by Ian Goodfellow, Yoshua Bengio and Aaron Courville. MIT Press, 2016.

4. *Deep learning with Python: a hands-on introduction*, by Nikhil Katkar. Springer, 2017.

Evaluation Scheme.

Assignments	30%	
Project	20%	
Term exam	20%	
Final exam	30%	

Graduate evaluation scheme.

Assignments	20%	
Term exam	20%	
Project	30%	Graduate project has extra requirements
Final exam	30%	

MEMORIAL UNIVERSITY

SCHOOL OF GRADUATE STUDIES

Request for Approval of a Graduate Course

Adobe Reader, minimum version 8, is required to complete this form. Download the latest version: http://get.adobe.com/reader. (1) Save the form by clicking on the diskette icon on the upper left side of the screen; (2) Ensure that you are saving the file in PDF format; (3) Specify where you would like to save the file, e.g. Desktop; (4) Review the How to create and insert a digital signature webpage for step by step instructions; (5) Fill in the required data and save the file; (6) Send the completed form by email to: sgs@mun.ca.

To: Dean, School of Graduate Studies
From: Faculty/School/Department/Program
Subject: ☑ Regular Course ☐ Special/Selected Topics Course

Course No.: STAT-6502

Course Title: Applied stochastic processes

I. To be completed for all requests:

A. Course Type:
☑ Lecture course
☐ Laboratory course
☐ Directed readings
☐ Lecture course with laboratory
☑ Undergraduate course[1]
☐ Other (please specify)

B. Can this course be offered by existing faculty? ☑ Yes ☐ No

C. Will this course require new funding (including payment of instructor, labs, equipment, etc.)? If yes, please specify: ☐ Yes ☑ No

D. Will additional library resources be required (if yes, please contact munul@mun.ca for a resource consultation)? ☐ Yes ☑ No

E. Credit hours for this course: 3

F. Course description (please attach course outline and reading list):

Many applications require of a working knowledge of stochastic processes. This course introduces the most common processes with emphasis in their implementation to solve a wide array of practical problems. This course is intended to be an elective option for the graduate students in our programmes and will be offered concurrently with Stat-4502 (see attachment).

G. Method of evaluation:

	Percentage	
	Written	**Oral**
Class tests	30%	
Assignments		
Other (specify): Project	20%	(Graduate projects have addtional requirements)
Final examination:	50%	
Total	100%	

[1] Must specify the additional work at the graduate level

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

		Instructor's initials
1.	duplication of thesis work	_____
2.	double credit	_____
3.	work that is a faculty research product	_____
4.	overlap with existing courses	_____

Recommended for offering in the Fall Winter Spring 20 26

Length of session if less than a semester:

III. This course proposal has been prepared in accordance with General Regulations governing the School of Graduate Studies

Candemir Cigsar Digitally signed by Candemir Cigsar Date: 2025.07.07 11:27:28 -02'30' — July 7, 2025

Course instructor — Date

[signature] — July 9, 2025

Approval of the head of the academic unit — Date

IV. This course proposal was approved by the Faculty/School/Council

_____ _____

Secretary, Faculty/School/Council — Date

APPENDIX 5 – STAT 4502/6502

STAT 4502. Applied Stochastic Processes

Calendar description. Stat-4502 aims to provide students with a basic understanding of the probabilistic models and techniques underlying the most widely used classes of stochastic processes, such as Bernoulli processes, Poisson processes, renewal processes and Markov chains. The main focus is on modeling aspects, which are completed by a description of some popular algorithms for simulation using R.

Prerequisites. STAT 3585

Tentative syllabus.

1. Preliminaries
   - 1.1. Sample spaces and events
   - 1.2. Conditional probability
   - 1.3. The partition theorem
   - 1.4. Bayes' theorem
   - 1.5. Independence
   - 1.6. Continuous and discrete random variables
   - 1.7. Independent random variables
   - 1.8. Expectation
   - 1.9. Variance, covariance, and correlation
   - 1.10. Conditional expectation and conditional variance
   - 1.11. Generating functions
   - 1.12. Sums independent random variables
   - 1.13. Some limit theorems
2. Special stochastic processes
   - 2.1. The Bernoulli processes
   - 2.2. The random walk
   - 2.3. The Gambler's ruin
   - 2.4. The First-step analysis
   - 2.5. The Markovian property of a stochastic process
   - 2.6. R Simulations of stochastic processes
3. Poisson processes
   - 3.1. Definition
   - 3.2. Derivation of exponential distribution
   - 3.3. Properties of exponential distribution
   - 3.4. Counting processes and the Poisson distribution
   - 3.5. Superposition of Poisson processes
   - 3.6. Splitting of Poisson processes
   - 3.7. Non-homogeneous Poisson processes
   - 3.8. Compound Poisson processes

3.9. R Simulations of Poisson processes

4. Renewal processes
   4.1. Distribution of a renewal processes
   4.2. Limit theorems
   4.3. Renewal reward processes
   4.4. Alternating renewal processes
   4.5. R Simulations of renewal processes
5. Markov Chains
   5.1. Definitions
   5.2. The transition matrix
   5.3. n-step transition probabilities
   5.4. Chapman–Kolmogorov equations
   5.5. Distribution of a Markov chain
   5.6. Trajectory probability
   5.7. Structure of the state space of a Markov chain
   5.8. The hitting probabilities
   5.9. The expected hitting times
   5.10. R Simulations of Markov Chains

Reference books.

1. *Probability* by AN Shiryaev. Springer, 2016.
2. *Introduction to probability models* by Sheldon M. Ross. Academic Press, 2023.
3. *Essentials of stochastic processes* by Rick Durrett (`https://services.math.duke.edu/ rtd/EOSP/EOSP2021.pdf`).
4. *Lecture notes: stochastic processes*, Department of Statistics University of Auckland.

Evaluation scheme.

Quizzes	30%
Term project	20%
Final project	50% (includes a presentation)

Graduate evaluation scheme.

Quizzes	20%	
Term project	20%	
Final project	30%	Graduate projects have extra requirements
Final oral exam	20%	

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SCHOOL OF GRADUATE STUDIES

Request for Approval of a Graduate Course

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To: Dean, School of Graduate Studies
From: Faculty/School/Department/Program
Subject: ☑ Regular Course ☐ Special/Selected Topics Course

Course No.: STAT-6504

Course Title: Biostatistics

I. To be completed for all requests:

A. Course Type:
☑ Lecture course
☐ Laboratory course
☐ Directed readings
☐ Lecture course with laboratory
☑ Undergraduate course[1]
☐ Other (please specify)

B. Can this course be offered by existing faculty? ☑ Yes ☐ No

C. Will this course require new funding (including payment of instructor, labs, equipment, etc.)? If yes, please specify: ☐ Yes ☑ No

D. Will additional library resources be required (if yes, please contact munul@mun.ca for a resource consultation)? ☐ Yes ☑ No

E. Credit hours for this course: 3

F. Course description (please attach course outline and reading list):

Graduates trained in the theory and practice of biostatistics are highly sought in governmental organizations and private sector. This course will help students to have a comprehensive knowledge on biostatistics. Intended as an elective option for the graduate students in our programmes, the course will be offered concurrently with Stat-4504 (see attachment).

G. Method of evaluation:

	Percentage	
	Written	**Oral**
Class tests	20%	
Assignments	10%	
Other (specify): Project	20%	(Graduate projects have additional requirements)
Final examination:	50%	
Total	100%	

[1] Must specify the additional work at the graduate level

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

		Instructor's initials
1.	duplication of thesis work	_____
2.	double credit	_____
3.	work that is a faculty research product	_____
4.	overlap with existing courses	_____

Recommended for offering in the Fall Winter Spring 20 26

Length of session if less than a semester:

III. This course proposal has been prepared in accordance with General Regulations governing the School of Graduate Studies

Yildiz Yilmaz Digitally signed by Yildiz Yilmaz Date: 2025.07.07 10:56:57 -02'30'

Course instructor _____ Date _____

Approval of the head of the academic unit _____ Date July 9, 2025

IV. This course proposal was approved by the Faculty/School/Council

Secretary, Faculty/School/Council _____ Date _____

APPENDIX 6 – STAT 4504/6504

STAT 4504. Biostatistics

Course Description. Statistics 4504 provides an overview of statistical principles and methods in epidemiology. Emphasis will be placed on study designs, measures of risk and disease-exposure association, inference for measures of association, confounding, causal inference, analysis of binary responses, count, and time-to-event.

Prerequisites. STAT 2550 and 3411 or permision from the instructor.

Tentative Syllabus.

1. Statistics in medicine and public health
2. Study designs
3. Measures of risk and association
4. Randomization and causation
5. Analysis of binary responses and counts
6. Case-control studies
7. Randomized clinical trials
8. Causal inference
9. Survival analysis

Textbooks.

1. *Statistics for epidemiology* by NP Jewell. Chapman & Hall, 2004.
2. *Biostatistical methods in epidemiology* by SC Newman. Wiley, 2001.
3. *Causal inference: what if* by MA Hernan, JM Robins. Chapman & Hall/CRC, 2020.
4. *Statistical models and methods for lifetime data, 2nd edition* by JF Lawless. John Wiley and Sons, New York, 2003.

Evaluation scheme.

Assignments	10%
Midterm exam	20%
Final exam	50%
Project	20%

Graduate evaluation scheme.

Assignments	10%	
Term exam	20%	
Project	20%	Graduate project has extra requirements
Final exam	50%	

MEMORIAL UNIVERSITY

School of Graduate Studies

Request for Approval of a Graduate Course

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School of Graduate Studies; Memorial University of Newfoundland; IIC-2012 (Bruneau Centre for Research and Innovation); St. John's, NL A1C 5S7 Canada Fax: 709.864.4702 eMail: sgs@mun.ca

To: Dean, School of Graduate Studies
From: Faculty/School/Department/Program
Subject: ☑ Regular Course ☐ Special/Selected Topics Course

Course No.: STAT 6511

Course Title: Bayesian Data Analysis

I. To be completed for all requests:

A. Course Type:
☑ Lecture course
☐ Laboratory course
☐ Directed readings
☐ Lecture course with laboratory
☐ Undergraduate course[1]
☐ Other (please specify)

B. Can this course be offered by existing faculty? ☑ Yes ☐ No

C. Will this course require new funding (including payment of instructor, labs, equipment, etc.)? If yes, please specify: ☐ Yes ☑ No

D. Will additional library resources be required (if yes, please contact munul@mun.ca for a resource consultation)? ☐ Yes ☑ No

E. Credit hours for this course: 3

F. Course description (reading list required):

Bayesian Data Analysis is an introductory course to the Bayesian data analysis with applications. See attached document for details.
This will be a *special topics* course for the graduate students concurrent with STAT4411.

G. Method of evaluation:

	Percentage	
	Written	**Oral**
Class tests	30%	0%
Assignments	20%	0%
Other (specify): Project	10%	0%
Final examination:	40%	0%
Total	100%	

[1] Must specify the additional work at the graduate level

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

		Instructor's initials
1.	duplication of thesis work	AS
2.	double credit	AS
3.	work that is a faculty research product	AS
4.	overlap with existing courses	AS

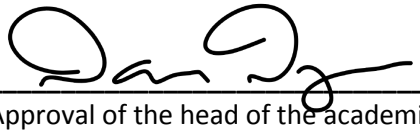
Recommended for offering in the Fall x Winter Spring 20 25

Length of session if less than a semester: N/A

III. This course proposal has been prepared in accordance with General Regulations governing the School of Graduate Studies

Alexander Shestopaloff — January 28th 2025

Course instructor — Date



11/16/25

Approval of the head of the academic unit — Date

IV. This course proposal was approved by the Faculty/School/Council

Secretary, Faculty/School/Council — Date

STAT 4411/STAT 6511: Bayesian Data Analysis

Course description: Bayesian Data Analysis is an introductory course to the Bayesian data analysis with applications. The topics include basic principles of Bayesian modeling and inference, methods and theoretical aspects of Bayesian analysis, Bayesian computation and applications, and special topics in Bayesian data analysis. Programming languages R and/or Python will be used to explore data sets using the techniques.

Prerequisites: STAT 3411

Tentative syllabus

1. Statistical Preliminaries
2. Elements of Bayesian Decision Theory
3. Single-Parameter Models
4. Multiparameter Models
5. Large Sample Methods
6. Hypothesis Testing and Model Selection
7. Bayesian Computation
8. High Dimensional Problems
9. Some Applications

Textbooks and references

Recommended text:

1. J.K. Ghosh, M. Delampady, T. Samanta. An Introduction to Bayesian Analysis. Springer New York, 2006

References:

1. J. Albert. Bayesian Computation with R, 2rd edition. Springer Science & Business Media, 2009.
2. A. Gelman, et al. Bayesian Data Analysis, 3rd edition. Chapman and Hall/CRC, 2013. (A free electronic copy of this reference book for non-commercial purposes is available at the following link: http://www.stat.columbia.edu/~gelman/book/)

Evaluation scheme

Assignments	20%
Midterm examination:	30%
Final project:	40%
Project:	10%

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SCHOOL OF GRADUATE STUDIES

Request for Approval of a Graduate Course

Adobe Reader, minimum version 8, is required to complete this form. Download the latest version: http://get.adobe.com/reader. (1) Save the form by clicking on the diskette icon on the upper left side of the screen; (2) Ensure that you are saving the file in PDF format; (3) Specify where you would like to save the file, e.g. Desktop; (4) Review the How to create and insert a digital signature webpage for step by step instructions; (5) Fill in the required data and save the file; (6) Send the completed form by email to: sgs@mun.ca.

To: Dean, School of Graduate Studies
From: Faculty/School/Department/Program
Subject: ☑ Regular Course ☐ Special/Selected Topics Course

Course No.: STAT-6541

Course Title: Statistics of financial markets

I. To be completed for all requests:

A. Course Type:
☑ Lecture course ☐ Lecture course with laboratory
☐ Laboratory course ☐ Undergraduate course[1]
☐ Directed readings ☐ Other (please specify)

B. Can this course be offered by existing faculty? ☑ Yes ☐ No

C. Will this course require new funding (including payment of instructor, labs, equipment, etc.)? If yes, please specify: ☐ Yes ☑ No

D. Will additional library resources be required (if yes, please contact munul@mun.ca for a resource consultation)? ☐ Yes ☑ No

E. Credit hours for this course: 3

F. Course description (please attach course outline and reading list):

Practitioners with a working knowledge of financial time series are in constant demand from the finance industry. This course includes an introduction to option pricing derivatives followed by a modern interpretation of financial time series constructed on stochastic financial models. This proposal involves phasing out Stat 6571 and replacing it with Stat 6541, the proposed course (see attachment).

G. Method of evaluation:

	Percentage	
	Written	**Oral**
Class tests	20%	
Assignments	10%	
Other (specify): Project	20%	
Final examination:	50%	
Total	100%	

[1] Must specify the additional work at the graduate level

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

	Instructor's initials
1. duplication of thesis work	_____
2. double credit	_____
3. work that is a faculty research product	_____
4. overlap with existing courses	_____

Recommended for offering in the Fall Winter Spring 20 ___

Length of session if less than a semester:

III. This course proposal has been prepared in accordance with General Regulations governing the School of Graduate Studies

_____ July 9, 2025
Course instructor Date

_____ JC Loredo-Osti July 7, 2025
Approval of the head of the academic unit Date

IV. This course proposal was approved by the Faculty/School/Council

_____ _____
Secretary, Faculty/School/Council Date

APPENDIX 5 – STAT 6541

Statistics of financial markets

Practitioners with a working knowledge of financial time series are in constant demand from the finance industry. A traditional time series curriculum usually does not include a treatment of the mathematics of option pricing derivatives, which is something fundamental to understanding the foundations of modern financial theories and methods. The proposed course includes such a treatment in addition to a modern interpretation of financial time series constructed on stochastic financial models.

We currently offer Stat 6571 (*Financial and Environmental Time Series*), a course roughly split in two: one half covers basic time series with examples from finance, and the other half is devoted to techniques and methods mainly used in spatio-temporal environmental data sets. However, a survey of the graduate students who have taken the course indicates that almost all of them were mostly interested in financial time series. The implmentation of this proposal involves discontinuing Stat 6571 and replacing it with Stat 6541, the proposed course.

Course description. This course contains an introduction to the modelling and analysis of financial time series. The first part of the course provides a basic introduction to the theory of pricing derivatives, followed by a stochastic calculus formulation of the models; the second part of the course contains a modern time series formulation of financial models that may include stochastic volatility with focus on the estimation of parameters, the selection of the appropriate models and their validation using data, and forecasting. Methods and techniques are illustrated using the R programming language. Please note that advanced models and techniques based on martingale theory are not covered in this course.

Prerequisites. STAT 5540 or STAT 6502 or authorisation from the instructor.

Tentative syllabus.

1. Option pricing
   - 1.1. Derivatives
   - 1.2. Option management
   - 1.3. Arbitrage relations
   - 1.4. Portfolio insurance
2. Stochastic processes
   - 2.1. Binomial process
   - 2.2. General random walks
   - 2.3. Geometric random walks
   - 2.4. Weiner process
3. Stochastic calculus
   - 3.1. Stochastic integral
   - 3.2. Stochastic differential equations
   - 3.3. Stock price as a stochastic process
   - 3.4. Itô's Lemma
4. Black-Scholes option pricing model
   - 4.1. Black-Scholes formulation of European options

4.2. Risk management and hedging
4.3. Historical and implied volatility
4.4. Realised volatility

5. Binomial model for European options
6. Trinomial model for American options
7. Exotic options
8. Models for interest rate and interest rate derivatives
9. Econometric models of financial time series
   9.1. Stock prices (the CAMP)
   9.2. Interest rate and parity
   9.3. The Cox-Ingersoll-Ross model for term structure
   9.4. Options and the Black-Scholes model
   9.5. The market price of risk
   9.6. The random walk hypothesis
10. ARIMA time series
    10.1. Autoregressive and moving average models
    10.2. ARMA and ARIMA models
    10.3. Partial autocorrelation
    10.4. Estimation
11. Time series with stochastic volatility
    11.1. ARCH and GARCH models
    11.2. Extensions to GARCH models
    11.3. Vector autoregression and multivariate GARCH models
    11.4. Pricing options with flexible volatility estimators
12. Forecast and value-at-risk models
13. Neural networks
    13.1. Neural networks in non-parametric regression analysis
    13.2. Forecast of financial time series with neural networks

Reference textbooks.

1. *Statistics of financial markets, 2nd ed,* by J Franke, WK Härdle and CM Hafner. Springer, 2008.
2. *A course in statistics for finance* by SL Sclove. CRC Press, 2013.
3. *Analysis of financial time series, 3rd ed,* by RS Tsay. Wiley, 2010.
4. *Handbook of financial time series* by TG Anderses, RA Davis, J-P Kreiß, and T Mikosh (eds). Springer, 2009.

Evaluation scheme.

Term exam 1	20%
Term exam 2	20%
Project	20%
Final exam	40%

Calendar Changes:

9.4.2 Applied Statistics Elective Courses

- 6450 Reinforcement Learning
- 6486 Neural Networks and Deep Learning
- 6502 Applied Stochastic Processes
- 6504 Biostatistics
- 6505 Survival Analysis
- 6530 Longitudinal Data Analysis
- 6559 Statistical Exploration of Data
- 6561 Categorical Data Analysis
- 6563 Sampling Theory
- 6564 Experimental Designs
- 6571 Financial and Environmental Time Series
- 6573 Statistical Genetics

32.17.3.2 Statistics

- 6450 Reinforcement Learning
- 6486 Neural Networks and Deep Learning
- 6500 Probability *(credit restricted with former 6586)*
- 6502 Applied Stochastic Processes
- 6503 Stochastic Processes
- 6504 Biostatistics
- 6505 Survival Analysis
- 6509 Statistical Inference
- 6510 Mathematical Statistics
- 6511 Bayesian Data Analysis
- 6520 Linear Models
- 6530 Longitudinal Data Analysis
- 6540 Time Series Analysis
- 6541 Statistics of Financial Markets
- 6545 Computational Statistics
- 6550 Nonparametric Statistics
- 6559 Statistical Exploration of Data
- 6560 Continuous Multivariate Analysis
- 6561 Categorical Data Analysis
- 6563 Sampling Theory
- 6564 Experimental Designs
- 6571 Financial and Environmental Time Series
- 6573 Statistical Genetics
- 6570-6589 Selected Topics in Statistics and Probability (excluding 6571, 6573, 6586)
- 697A/B Graduate Seminar Series in Statistics (2 credit hours)

44.30.5.2 Statistics

- 6450 Reinforcement Learning
- 6486 Neural Networks and Deep Learning
- 6500 Probability (credit restricted with the former 6586)
- 6502 Applied Stochastic Processes
- 6503 Stochastic Processes
- 6504 Biostatistics
- 6505 Survival Analysis
- 6511 Bayesian Data Analysis
- 6520 Linear Models
- 6530 Longitudinal Data Analysis
- 6540 Time Series Analysis
- 6541 Statistics of Financial Markets
- 6545 Computational Statistics
- 6550 Nonparametric Statistics
- 6559 Statistical Exploration of Data
- 6560 Continuous Multivariate Analysis
- 6561 Categorical Data Analysis
- 6564 Experimental Designs
- 6563 Sampling Theory
- 6571 Financial and Environmental Time Series
- 6573 Statistical Genetics
- 6570-6589 Selected Topics in Statistics and Probability (excluding 6571, 6573, 6586)
- Note that, although the courses 6500, 6510, and 6560 cannot be used to fulfill the 6 credit hours graduate courses requirement, any of them can be listed as part of the

program of study as additional course work, whenever the supervisory committee deems it appropriate.

Motion to reduce the courses in the MSc Statistics.

Motion: Reduce the number of required courses for the completion of the Master of Science in Statistics program from six to five.

Rationale: Our current MSc in Statistics program requires the completion of six courses. This figure exceeds the requirements for our other research-based programs. This change will harmonize the requirements for the MSc in Statistics program with those of our MSc in Mathematics.

Calendar changes:

32.17.2 Specific Requirements for the M.Sc. in Statistics

Every student for the M.Sc. in Statistics is required to complete a minimum of 15~~18~~ credit hours in graduate courses including STAT 6509 and STAT 6510 as well as the series STAT 697A/B or the completion of an additional 3 credit hour graduate course from the list below (STAT 6519 cannot be used to satisfy this requirement). A thesis is required as per General Regulations, Theses and Reports.

Students who already hold a Master of Applied Statistics are only required to complete STAT 6510 and one of STAT 6500, STAT 6503, STAT 6520, or STAT 6560, and a thesis as per General Regulations, Theses and Reports.

Appearance after changes:

32.17.2 Specific Requirements for the M.Sc. in Statistics

Every student for the M.Sc. in Statistics is required to complete a minimum of 15credit hours in graduate courses including STAT 6509 and STAT 6510 as well as the series STAT 697A/B or the completion of an additional 3 credit hour graduate course from the list below (STAT 6519 cannot be used to satisfy this requirement). A thesis is required as per General Regulations, Theses and Reports.

Students who already hold a Master of Applied Statistics are only required to complete STAT 6510 and one of STAT 6500, STAT 6503, STAT 6520, or STAT 6560, and a thesis as per General Regulations, Theses and Reports.

Request for Approval of a Graduate Course

Adobe Reader, minimum version 8, is required to complete this form.
Download the latest version: http://get.adobe.com/reader.

MEMORIAL UNIVERSITY
SCHOOL OF GRADUATE STUDIES

(1) Fill out the form completely and accurately, and save the form in PDF format. Make sure you specify the save location, e.g. Desktop.
(2) Review https://www.mun.ca/sgs/how-to-create-and-insert-a-digital-signature/ for instructions on how to digitally sign the form.
(3) Send the completed form and attachments to the appropriate faculty/school council in the first instance. If approved, they will forward to the School of Graduate Studies.

To: Dean, School of Graduate Studies
From: Faculty/School/Department/Program
Subject: ☐ Regular Course ☑ Special/Selected Topics Course

Course No.: Physics 6914

Course Title: Graduate Introduction to Astrophysics II: Galaxies & Cosmology

I. To be completed for all requests:

A. Course Type:
☑ Lecture course
☐ Laboratory course
☐ Directed readings
☐ Lecture course with laboratory
☐ Undergraduate course[1]
☐ Other (please specify)

B. Can this course be offered by existing faculty? ☑ Yes ☐ No

C. Will this course require new funding (including payment of instructor, labs, equipment, etc.)? ☐ Yes ☑ No
If yes, please specify:

D. Will additional library resources be required? (If yes, please contact munul@mun.ca for a resource consultation.) ☐ Yes ☑ No

E. Credit hours for this course: 3 hrs (whatever standard grad course is)

F. Course description (please attach course outline and reading list):
Please see attached

G. Method of evaluation:

	Percentage	
	Written	**Oral**
Class tests		15
Assignments	20	
Other (specify):	30	20
Final examination:		15
Total	100	

[1] Must specify the additional work at the graduate level.

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

		Instructor's initials
1.	duplication of thesis work	HW
2.	double credit	HW
3.	work that is a faculty research product	HW
4.	overlap with existing courses	Physics 3151

Recommended for offering in the: ☐ Fall ☑ Winter ☐ Spring 20 26

Length of session if less than a semester: (i.e. accelerated timeframe)

III. This course proposal has been prepared in accordance with the General Regulations governing the School of Graduate Studies

Heidi Neilson — 14 November 2025

Course instructor — Date

Stefan Wallin — November 18, 2025

Approval of the head of the academic unit — Date

IV. I certify that this course proposal was approved by the Faculty or School Council.

Secretary, Faculty/School Council — Date

Revised: May 15, 2025.

Physics 6914: Graduate Introduction to Stellar Astrophysics II: Galaxies & Cosmology - Winter

2026

Instructor: Dr. Hilding Neilson
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Class: TBD
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Course Outline

Astrophysics is the study of the stars, planets, galaxies, etc and requires building an understanding of how observations work, radiation physics. In this course, we will study the properties, evolution, and formation of galaxies in our Universe along with the field of cosmology and how astronomers understand the evolution of the Universe. Furthermore, we explore issues related to the expansion and acceleration in the Universe as well as the problems of dark matter and dark energy.

Prerequisites: Physics 3150 or Physics 6913 or permission of the instructor.

https://www.nasa.gov/webbfirstimages

This course excludes PHYSICS 3151
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My Take:
The goal for this course is to provide a graduate boot camp in galaxies and cosmology. To accomplish this students will be expected to read specific chapters and works before a next lecture, write reflections about things they understand from the readings along with questions that arise from the readings. We will discuss them and the content in class and work on building an understanding the physics and methods used in astrophysics.

Readings

Carroll & Ostle, An Introduction to Modern Astrophysics (textbook), chapters 24 - 30
+ weekly journal article review

+ references to:
Elise, Maartens, MacCallum, Relativistic Cosmology
Baumann, Cosmology

Grading

Midterm (oral) …… 15%
Final exam (oral) …… 15%
Participation/Reflections ……..10%
Assignments ……. 20%
Other - Written paper …….20%
Other - Prepared lecture ……. 10%
Other - Prepared lecture ……. 10%