



Faculty of Science

Office of the Dean
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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 5, 2018 at 1 p.m. in C-2045.

AGENDA (Revised)

1. **Regrets**
2. **Adoption of the Minutes of November 21, 2018**
3. **Business Arising from the Minutes:**
4. **Correspondence:** None
5. **Reports of Standing Committees:**
 - A. **Undergraduate Studies Committee:**
 - a. Department of Earth Sciences (pages 9-13)
 - i. Calendar change to existing courses: EASC 1002 and 499A/B
 - b. Department of Biology (pages 14-164)
 - i. Calendar change to existing programs: Biology Majors to Concentrations
 - ii. Calendar proposal new program: Joint Honours in Marine Biology
 - iii. Calendar change to existing program: Joint Major in Marine Biology
 - iv. Amend course: BIOL 4605
 - c. Department of Ocean Sciences (pages 165-187)
 - i. Calendar proposal new course: OCSC 4400
 - ii. Calendar change to existing program: Major in Ocean Sciences and Ocean Sciences (Environmental Systems)
 - d. Department of Computer Science (pages 188-273)
 - i. Calendar proposal new course: COMP 1003
 - ii. Calendar change to existing courses: Amend COMP 1000, 4770, 4300, 3550, 3301 and 3202; delete course being phased out because of new curriculum (including COMP 4748)
 - iii. Calendar changes to existing programs: Add COMP 3200 to Visual Computing and Games Major; add COMP 3731 to Computer Science/Statistics Joint Major; add paragraph to Computer Science/Physics Joint Major; amend Computer Science Internship; amend programs which require COMP 1000 to new course COMP 1003

- iv. Calendar changes to departmental regulations: Amend Computer Science Minor regulations to replace COMP 1000 with new course COMP 1003; amend admission criteria for acceptance as a Computer Science Major
- e. Department of Psychology (pages 274-400)
 - i. Calendar change to existing course: PSYC 3250 to 3810
 - ii. Calendar proposal for new course: PSYC 3251
 - iii. Calendar proposal for new course: PSYC 3840
 - iv. Calendar proposal for new course: PSYC 3860
 - v. Calendar proposal for new course: PSYC 2521
 - vi. Calendar proposal for new course: Add lap to PSYC 3800
 - vii. Calendar proposal for new selected topics courses: PSYC 4852, 4853 and 4854
 - viii. Calendar change to existing program: Behavioural Neuroscience
- f. Department of Mathematics and Statistics (pages 401-427)
 - i. Amend course: MATH 2320
 - ii. Amend course: MATH 3000
- g. Department of Biochemistry (pages 428-447)
 - i. Amend courses: BIOC 2910, 3402, 3906, 3907, 4200, 4210, 4230, 4240, 499A and 499B
 - ii. Amend program: Major in Biochemistry, Major in Nutrition and Honours Degree in Nutrition
- h. Faculty of Science Dean's List Criteria (pages 448-450)

B. Graduate Studies Committee:

- a. Aquaculture Program, proposed calendar changes (pages 451-457)
- b. Environmental Science Program, calendar changes proposing changes to the co-op program (pages 458-461)
- c. Department of Earth Sciences, proposed calendar changes to masters and doctoral programs adding the option of an internship (pages 462-463)

C. Nominating Committee: None

D. Library Committee: None

- 6. **Report of Teaching Consultant**
- 7. **Reports of Delegates from Other Councils**
- 8. **Report of the Dean**
- 9. **Question Period**
- 10. **Adjournment**



Mark Abrahams, PhD
Dean of Science



Faculty of Science

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**FACULTY OF SCIENCE
FACULTY COUNCIL OF SCIENCE
MINUTES OF MEETING OF NOVEMBER 21, 2018**

A meeting of the Faculty Council of the Faculty of Science was held on Wednesday, November 21, at 1:00 p.m. in room C-2045.

FSC 2634

Present

Biochemistry

M. Berry, S. Harding, M. Mulligan

Biology

T. Chapman, B. Staveley

Chemistry

C. Bottaro, E. Merschrod

Computer Science

S. Bungay

Earth Sciences

E. Burden

Mathematics and Statistics

JC Loredó-Osti, D. Pike, S. Sullivan

Ocean Sciences

G. Fletcher

Physics & Physical Oceanography

K. Poduska, Curnoe, S., M. Morrow, K. Poduska

Psychology

C. Thorpe

Dean of Science Office

K. Foss, T. Fridgen, G. Jackson, T. Mackenzie, R. Newhook, L. Zedel

CITL
A. Todd

Registrar's Office
T. Edmunds

FSC 2635 Regrets
S. Mantyka

FSC 2636 Adoption of Minutes
Moved: Minutes of October 17, 2018, meeting be adopted (Sullivan/Fletcher).
Carried.

FSC 2637 Business Arising: None

FSC 2638 Correspondence: None

FSC 2639 Indigenous Research – Consent Requirements Presentation by Dr. Max Liboiron, Associate Vice-President (Indigenous Research)
Dr. Max Liboiron is presenting at all faculty councils regarding the requirement for consent from Indigenous groups to complete research. Currently, the Faculty of Science is the most compliant in getting permits and consents when needed. ROMEO will be updated to include a box to ensure consents and permits are collected when needed. This is not a new process, but it is being formalized. This will be instituted on July 1, 2019 and a memo will be distributed about the process on December 3, 2018. For additional information, there will be a FAQ on the Vice-President (Research) website.

FSC 2628 Reports of Standing Committees:

A. Undergraduate Studies Committee:

Shannon Sullivan, Chair, Undergraduate Studies Committee, reminded council members that the absolute deadline for calendar changes to FoSCUGS is November 23rd at 1:00pm, in order to make next year's calendar.

B. Nominating Committee: Travis Fridgen would like to receive comments on the draft constitution that was circulated. This will be brought to Science Faculty Council in the January 2019 meeting for a formal vote. The constitution is being rewritten to reflect current practices; the current constitution is outdated.

FSC 2629 MUNFA Negotiation Update

Dr. Mark Abrahams suggested that faculty members educate themselves on the issues before voting to strike, if it comes to that. If there is a strike, all faculty members are on strike. Crossing the picket line is permitted only for critical reasons. Such applications will have to be made to Faculty Relations as per the second last page of the MUNFA collective agreement.

In the event of a strike, faculty are not to provide work for the university so cannot come onto campus to keep a research program moving or to supervise students. As per the

collective agreement, a faculty member may be able to access their lab or office space if the experiment is at a critical stage and may be in jeopardy; the faculty member may be granted permission to sustain the research only, not to continue the research.

If the Union is in a strike position, it means that the faculty association can go on strike or the University can lock out the faculty members. The University and MUNFA have met to discuss strike protocols.

The Union is currently conducting information sessions for faculty members and will be visiting departments. Also note that a strike vote is not a ratification vote. It was questioned why the University removed the right of first refusal for teaching term appointments from the agreement. Dr. Abrahams explained that at that point in the negotiations they were presenting items as a package, and since MUNFA did not accept the package, MUN traded off some items in the package by adding some items in and removing others. It was a natural give and take with the desire to reach an agreement. A question was also raised whether it made any sense for MUNFA to not go on strike but the lecturers to go on strike. This question could not be answered.

Dr. Erika Merschrod wanted to register her disappointment with the last collective bargaining update issued by the university. She asked Dr. Abrahams to pass along her disappointment to the University Administration.

FSC 2630 Innovation Fund

Dr. Abrahams wanted to reiterate the information sent by email to departments regarding Research Infrastructure/CFI Innovation Fund competition. All departments and faculty members need to think about what is needed and submit a complete list, as it will be harder to add equipment and infrastructure to the list in the future. If the physical space is inadequate for the equipment, then include the infrastructure and renovations needed to support the equipment in the application. It is important to get this information to the VPR to ensure they understand the magnitude of the needs of the Faculty of Science. The deadline is December 3rd and please copy the Dean's office on your requests.

FSC 2631 Report of Teaching Consultant:

CITL is in the process of launching three Communities of Practice (CoP), along with support for the creation of additional communities in the future. These are replacing the former brown bag sessions, and will provide a better model for connecting faculty and instructors across the Faculty of Science departments for collaborative professional development, knowledge sharing, and development of teaching and learning practices in the Faculty. For more information you can refer to the website, or contact Amy (amy.todd@mun.ca). Also, a reminder that Amy is available to support any programming development, curricular development or program review occurring within the departments.

FSC 2632 Reports of Delegates from Other Councils: None

FSC 2633 Report of the Dean

Presented by Mark Abrahams, Dean of Science.

1. Convocation was held on October 18. I thank those faculty who joined the academic procession and note that this convocation marked a first for Memorial University, where the number of graduate students exceeded the number of undergraduate students.
2. The Voluntary Retirement Program has now moved through phase 4. In both phases 3 and 4 I refused to approve any staff positions for the program as doing so would mean we would lose those positions. This is understandably very upsetting for the staff involved but those I spoke to understood my decision, that the loss of their positions would significantly compromise the operations of their home departments.
3. I continue to work with the University's Building Working Group, that group tasked with implementing a plan to facilitate the closure of the old Science building. The group has now agreed that such a decision cannot be made in isolation of a campus master plan, meaning consideration needs to be given to all academic units with the goal of moving towards a campus organization that works for all.
4. As a reminder to all departments, I am happy to attend departmental meetings if invited. This Friday I will be meeting with the Department of Mathematics and Statistics.

FSC 2634

Question Period:

The Dean provided an update on the VRP replacements. Initially, the Dean understood that there would be a 25% replacement rate, then he heard it would be 50%, and now he heard it may be higher than 50%. Our plan as the Faculty of Science remains the same; in order to meet the goals of the University, our faculty should remain its current size and until he is told there is a change in the University's plan, we are planning on staying the same size. However, we want to recruit the best faculty members, so until we have adequate startup funds to offer a competitive package to potential faculty members, we will not be able to initiate searches.

There is currently an external review being completed on the Department of Mathematics and Statistics. Once this goes to the Dean for review and edits, the department will be able to respond to the action items. It was noted that infrastructure for the Department of Mathematics and Statistics is very poor, and the Dean reiterated that he will continue to lobby for a new building for the department during his remaining term, but cannot give any guarantees.

The campus master plan is being reviewed, and in the 2007 iteration, it mostly looked at green spaces and it never foresaw the Core Sciences building. Now, the Dean would like the master plan to take academic neighbourhoods into consideration. The Dean confirmed that there will be some shell space in the new Core Sciences building. Also, there are concerns regarding the potential demolition of the Science building that will result in a lack of lecture theatre space for the University and particularly for the Faculty of Science.

FSC 2635

Adjournment

The meeting adjourned at 1:50 p.m.



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November 28, 2018

TO: All Members of Faculty Council, Faculty of Science

FROM: Tracey Edmunds, Secretary, Committee on Undergraduate Studies
Faculty of Science (Acting)

SUBJECT: **Proposals for Calendar Changes**

At meetings held on November 20 and November 27, 2018, the Faculty of Science Committee on Undergraduate Studies agreed that the following items should be forwarded to Faculty Council for approval:

1. Department of Earth Sciences

Calendar Change to Existing Courses: Earth Sciences 1002 and 499A/B

2. Department of Biology

- (a) Calendar Change to Existing Programs: Biology Majors to Concentrations
- (b) Calendar Proposal New Program: Joint Honours in Marine Biology
- (c) Calendar Change to Existing Program: Joint Major in Marine Biology
- (d) Amend Course – Biology 4605

3. Department of Ocean Sciences

- (a) Calendar Proposal New Course: Ocean Sciences 4400
- (b) Calendar Change to Existing Program: Major in Ocean Sciences and Ocean Sciences (Environmental Systems)

4. Department of Computer Science

- (a) Calendar Proposal New Course - Computer Science 1003
- (b) Calendar Change to Existing Courses:
 - Amend Computer Science 1000, 4770, 4300, 3550, 3301 and 3202
 - Delete course being phased out because of new curriculum (including Computer Science 4748)
- (c) Calendar Changes to Existing Programs:
 - Add COMP 3200 to Visual Computing and Games Major
 - Add COMP 3731 to Computer Science/Statistics Joint Major
 - Add paragraph to Computer Science/Physics Joint Major
 - Amend Computer Science Internship
 - Amend programs which require Computer Science 1000 to new course Computer Science 1003

- (d) Calendar Changes to Departmental Regulations:
 - Amend Computer Science Minor regulations to replace COMP 1000 with new course COMP 1003
 - Amend admission criteria for acceptance as a Computer Science Major

5. Department of Psychology

- (a) Calendar Change to Existing Course: Psychology 3250 to 3810
- (b) Calendar Proposal for New Course: Psychology 3251
- (c) Calendar Proposal for New Course: Psychology 3840
- (d) Calendar Proposal for New Course: Psychology 3860
- (e) Calendar Proposal for New Course: Psychology 2521
- (f) Calendar Proposal for New Course: Add lab to Psychology 3800
- (g) Calendar Proposal for New Selected Topics Courses: Psychology 4852, 4853 and 4854
- (h) Calendar Change to Existing Program: Behavioral Neuroscience

6. Department of Mathematics and Statistics

- (a) Amend Course - Mathematics 2320
- (b) Amend Course - Mathematics 3000

7. Department of Biochemistry

- (a) Amend Courses - Biochemistry 2901, 3402, 3906, 3907, 4200, 4210, 4230, 4240, 499A and 499B
- (b) Amend Program – Major in Biochemistry, Major in Nutrition, and Honours Degree in Nutrition

8. Faculty of Science Dean's List Criteria

Tracey Edmunds

Tracey Edmunds

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):
 - EASC 1002 Concepts and Methods in Earth Sciences
 - EASC 499A and 499B Dissertation
- ☐ 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 1002 Concepts and Methods in Earth Sciences

RATIONALE

We would like to add “geophysics” to the course description of EASC 1002. EASC 1002 is the entry course for students who intend to major or minor in Earth Sciences. We noticed that while geophysics is a major component of our department it is not explicitly mentioned in this entry course.

CALENDAR CHANGES

1002 Concepts and Methods in Earth Sciences is an introduction to a broad range of concepts concerning the development of the geological record and the Earth; practical methods for collection of field based data; topics in map interpretation and geometric analysis, stratigraphy, paleontology, structure, ~~and~~ petrology, and geophysics. The course is presented with an emphasis on the development of practical skills needed to pursue a career in Earth Sciences.

LH: 3

PR: EASC 1000; Science 1807

CALENDAR ENTRY AFTER CHANGES

1002 Concepts and Methods in Earth Sciences is an introduction to a broad range of concepts concerning the development of the geological record and the Earth; practical methods for collection of field based data; topics in map interpretation and geometric analysis, stratigraphy, paleontology, structure, petrology, and geophysics. The course is presented with an emphasis on the development of practical skills needed to pursue a career in Earth Sciences.

LH: 3

PR: EASC 1000; Science 1807

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

COURSE NUMBER AND TITLE

EASC 499A and 499B Dissertation

RATIONALE

We propose to make the EASC 499B dissertation presentation mandatory. A presentation has historically been expected, and this presentation is part of the grading scheme for this course. However, we would like it explicitly stated that this presentation is not optional for this course. We also removed extraneous words so to meet the 75 word maximum requirement, and corrected one typographical error.

CALENDAR CHANGES

499A and 499B Dissertation is an independent study ~~of an approved problem in the Earth Sciences. The~~ with the subject of study will be decided in consultation with Faculty Advisors and ~~must be~~ approved in advance by the Head of Department. The first semester will ~~normally involve directed background reading, supervised field and/or laboratory work, and preparation of a dissertation outline,~~ and draft of a first chapter of the thesis. The second semester will be devoted to data synthesis and interpretation, ~~to a~~ mandatory seminar presenting the thesis study results, and ~~to preparation of a formal written thesis report accompanied by appropriate illustrations, to be submitted for grading one week before the end of classes.~~

CH: 6

PR: admission to the Honours program

UL: The dissertation cannot be based on the same study used to obtain credit for EASC 4950. May be used as Science credits by students not in the Honours program with permission of the Head of the Department.

CALENDAR ENTRY AFTER CHANGES

499A and 499B Dissertation is an independent study with the subject decided in consultation with Faculty Advisors and approved in advance by the Head of Department. The first semester will involve background reading, field and/or laboratory work, a dissertation outline, and a draft of a first chapter of the thesis. The second semester will be devoted to data synthesis and interpretation, a mandatory seminar presenting study results, and a formal written thesis.

CH: 6

PR: admission to the Honours program

UL: The dissertation cannot be based on the same study used to obtain credit for EASC 4950. May be used as Science credits by students not in the Honours program with permission of the Head of the Department.

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

We consulted the following:

Academic Unit	Response Received?	
Chemistry	Yes	
Computer Science		No
Math and Stats		No
Ocean Sciences		No
Psychology		No
Biology	Yes	
Biochemistry		No
Physics		No
Computer Science		No

LIBRARY REPORT

N/A

RESOURCE IMPLICATIONS

N/A

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

N/A

Consultation responses for EASC499 and EASC1002 calendar changes

Subject Proposed calendar changes, EASC 1002, EASC 499A, EASC 499B

From Department of Chemistry Consult 

To eascugcon@mun.ca 

Date Fri 15:56


Hello Penny,


I would like to lend my support on behalf of the chemistry department for the the minor changes in the course description for EASC 1002 and EASC 499A and EASC 499B. Chemistry honours students must present their honours thesis results and often go on to conferences to present their work such as the Science Atlantic Chemistry conference. Honing the presentation skills of our students is important. It is always good to have things in "writing".

Sincerely,

Chris Flinn
Deputy Head, Undergraduate Studies
Chemistry department

Subject Fwd: FW: Consultation on Calendar Change: Earth Sciences EASC1002 and 499A and B

From Suzanne Dufour 

To eascugcon@mun.ca 

Date 2018-11-15 16:22

- UCCPF_-_Cover_Page_EASC_20181101.pdf (~90 KB)

Hi Penny,

The BUGS committee met yesterday and reviewed the two proposals from Earth Sciences (EASC 1002 and 499A and B). We have no concerns with those changes.

Best wishes,

Suzanne

--

Dr. Suzanne Dufour
Associate Professor
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<http://www.mun.ca/biology/dufour/index.php>

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): Biology Concentrations
- ☒ Amended or deleted program(s):
 - Major, Honours, Major (Co-operative), Honours (Co-operative) in Biology (Cell & Molecular);
 - Major, Honours, Major (Co-operative), Honours (Co-operative) in Biology (Ecology & Conservation);
 - Honours and Honours (Co-operative) in Biology (Marine)
- ☐ 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

Major and Honours in Biology

Major, Honours, Major (Co-operative), Honours (Co-operative) in Biology (Cell & Molecular)

Major, Honours, Major (Co-operative), Honours (Co-operative) in Biology (Ecology & Conservation)

Honours and Honours (Co-operative) in Biology (Marine)

REVISED PROGRAM TITLE

Major, Major (Co-operative), Honours, and Honours (Co-operative) in Biology
Biology Concentrations

RATIONALE

The Department of Biology recognizes that its current program structure of multiple Majors is unnecessarily restrictive and has contributed to scheduling difficulties for students, particularly cooperative students.

The Department of Biology proposes moving towards a single Biology Major with multiple, optional areas of concentration to allow students to customize their studies. Students may choose to focus on specific Biology electives in order to complete a concentration in one of the following areas: Applied Ecology and Conservation; Aquatic Life; Biological Tools and Techniques; Biology for Health Professions; Comparative Biology; Evolutionary Ecology; and Molecular, Microbial and Cell Biology. The area of concentration will be noted on a student's transcript.

CALENDAR CHANGES

11.2 Biology

www.mun.ca/biology

The following undergraduate programs are available in the Department:

1. [Biochemistry and Cell Biology Joint Honours](#)
2. [Biology and Earth Sciences \(Geology\) Joint Honours](#)
3. [Biology and Psychology Joint Honours](#)
4. [Biology and Psychology \(Behavioural Neuroscience\) Joint Honours](#)
5. [Biology and Statistics Joint Honours](#)

6. [Joint Major in Marine Biology](#)
7. [Major or Honours or Major \(Co-operative\) or Honours \(Co-operative\) in Biology](#)
8. ~~[Major or Honours, or Major \(Co-operative\) or Honours \(Co-operative\), in Biology \(Cell and Molecular\)](#)~~
9. ~~[Major or Honours, or Major \(Co-operative\) or Honours \(Co-operative\), in Biology \(Ecology and Conservation\)](#)~~
10. ~~[Honours, or Honours \(Co-operative\), in Biology \(Marine\)](#)~~
11. [Biology Concentrations](#)
12. [Minor in Biology](#)

Details of joint programs are given after the [Regulations for the Honours Degree of Bachelor of Science](#).

Biology course descriptions are found at the end of the Faculty of Science section under [Course Descriptions, Biology](#).

For the purposes of a Major, or Honours degree in Biology, Medicine 310A/B count as Biology courses.

11.2.1 Entrance Requirements

Entry to the Biology Majors Program is competitive and based on academic standing.

To be considered for admission to the program students must have completed Biology 1001/1002 with an average of at least 65%. In addition, applicants will normally have completed the following courses (or their equivalents) and must have a minimum overall average of 60% in these courses.

1. Six credit hours in [Critical Reading and Writing \(CRW\)](#) courses, including at least 3 credit hours in English courses.
2. Mathematics 1090 and Mathematics 1000 (or Mathematics 109A/B and Mathematics 1000, or Mathematics 1000 only)
3. Chemistry 1050/1051 (or 1200 and 1001) or Physics 1020/1021 (or equivalent)
4. If Mathematics 1000 taken, any one other first year course.

Chemistry 1050/1051 (or 1200 and 1001) should be taken in the first year, as it is a prerequisite for other required courses in the programs, and delaying chemistry until second year may make it difficult to complete the program in the normal eight semesters.

11.2.2 Minor in Biology

A minor in Biology will consist of 24 credit hours in Biology courses: 1001 and 1002 (or equivalent) plus any 18 credit hours chosen from the list of Biology courses except Biology 2040, 2041, 2120, 3053, and 3820. The choice of courses must be made in

consultation with the ~~Head of Biology or delegate~~ Academic Program Officer and it is recommended (but not required) that students take at least two Biology courses at the 3000 level or above.

11.2.3 General Degrees

Each Major is assigned an faculty academic advisor who should be consulted on academic problems, including course selection.

11.2.3.1 Major in Biology

All students majoring in Biology are required to complete a minimum of 45 credit hours in courses from the Department of Biology offering. Those 45 credit hours must include: Biology 1001 and 1002 or their equivalents; the 15 credit hours in core courses listed below; and 24 credit hours in Biology electives at the 2000, 3000 or 4000 level except Biology 2040, 2041, 2120, 3053, and 3820.

Biology Core (15 credit hours): Biology 2060, 2250, 2600, 2900, plus one of Biology 3401, 3402, 4245 or 4404.

A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.

All majors must also successfully complete the following courses or their equivalents:

1. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
2. Physics 1020 and 1021 (or equivalent)
3. Mathematics 1000
4. Chemistry 1050/1051 (or 1200 and 1001), Chemistry 2400 and 2401
5. Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550
6. Biochemistry 2201 or the former 2101, and 3106 or 3206
7. Extra Science courses as necessary to fulfil the requirement for 78 credit hours in Science as stipulated in Clause 3.a. of the **Regulations for the General Degree of Bachelor of Science**.

It is recommended, but not required, that a Computer Science course be included and the Department of Biology strongly recommends Computer Science 1000 or 1600.

Note: To minimize timetabling problems, students on the St. John's campus are advised to take Biology 2250 and 2600 in their third semester (Fall), and 2060 and 2900 in their fourth semester (Winter).

~~11.2.3.2 Major in Biology (Cell and Molecular)~~

All students majoring in Biology (Cell and Molecular) are required to complete a minimum of 45 credit hours in courses from the Department of Biology offering. Those 45 credit hours must include: Biology 1001 and 1002 or their equivalents; the 15 credit hours in core courses listed below; Biology 3530 and 4241; 6 credit hours from the recommended Biology courses for Biology (Cell and Molecular) listed below; and 12 credit hours from Biology electives at the 2000, 3000 or 4000 level except Biology 2040, 2041, 2120, 3053, and 3820.

Biology Core (15 credit hours): Biology 2060, 2250, 2600, 2900, plus one of Biology 3401, 3402, 4245 or 4404.

Recommended Biology courses for Biology (Cell and Molecular)) are 3050, 3052, 3401, 3402, 3500, 3620, 3950, 3951, 4010, 4040, 4050, 4200, 4245, 4250, 4251, 4255, 4404, 4550, 4605, and 4607.

A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.

All majors must also successfully complete the following courses or their equivalents:

1. English 1090 or the former English 1080 and 1110 (or equivalent)
2. Physics 1020 and 1021 (or equivalent)
3. Mathematics 1000
4. Chemistry 1010 and 1011 (or equivalent), Chemistry 2440
5. Statistics 2550
6. Biochemistry 2101 and 3106
7. Extra Science courses as necessary to fulfil the requirement for 78 credit hours in Science as stipulated in Clause 3.a. of the [Regulations for the General Degree of Bachelor of Science](#).

It is recommended, but not required, that a Computer Science course be included and the Department of Biology strongly recommends Computer Science 1000 or 1600.

Note: To minimize timetabling problems, students on the St. John's campus are advised to take Biology 2250 and 2600 in their third semester (Fall), and 2060 and 2900 in their fourth semester (Winter).

11.2.3.3 Major in Biology (Ecology and Conservation)

All students majoring in Biology (Ecology and Conservation) are required to complete a minimum of 45 credit hours in courses from the Department of Biology offering. Those 45 credit hours must include: Biology 1001 and 1002 or their equivalents; the 15 credit hours in core courses listed below; Biology 4650 and 4651; 6 credit hours from the recommended Biology courses for Biology (Ecology and Conservation) listed below; and 12 credit hours from Biology electives at the 2000, 3000 or 4000 level except Biology 2040, 2041, 2120, 3053, and 3820.

~~Biology Core (15 credit hours): Biology 2060, 2250, 2600, 2900, plus one of Biology 3401, 3402, 4245 or 4404.~~

~~Recommended Biology courses for Biology (Ecology and Conservation) are 3041, 3050, 3295, 3300, 3610, 3620, 3640, 3709, 3710, 3711, 3714, 3715, 3750, 4040, 4141, 4180, 4182, 4250, 4306, 4307, 4360, 4405, 4505, 4605, 4607, 4620, 4630, 4701, 4710, 4750, and 4820.~~

~~A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.~~

~~All majors must also successfully complete the following courses or their equivalents:~~

- ~~1. English 1090 or the former English 1080 and 1110 (or equivalent)~~
- ~~2. Physics 1020 and 1021 (or equivalent)~~
- ~~3. Mathematics 1000~~
- ~~4. Chemistry 1010 and 1011 (or equivalent), Chemistry 2440~~
- ~~5. Statistics 2550~~
- ~~6. Biochemistry 2101 and 3106~~
- ~~7. Extra Science courses as necessary to fulfil the requirement for 78 credit hours in Science as stipulated in Clause 3.a. of the [Regulations for the General Degree of Bachelor of Science](#).~~

~~It is recommended, but not required, that a Computer Science course be included and the Department of Biology strongly recommends Computer Science 1000 or 1600.~~

~~Note:-~~

~~To minimize timetabling problems, students on the St. John's campus are advised to take Biology 2250 and 2600 in their third semester (Fall), and 2060 and 2900 in their fourth semester (Winter).~~

~~11.2.3.4 Major in Biology (Marine)~~

~~Important Notice~~

~~The Major in Biology (Marine) is no longer being offered. Students who have already declared this major may complete the program in accordance with [UNIVERSITY REGULATIONS, Degree and Departmental Regulations, Year of Degree and Departmental Regulations - Faculty of Humanities and Social Sciences and Faculty of Science](#), or may instead switch to the [Joint Major in Marine Biology](#) by completing a Change of Academic Program form.~~

11.2.3.52 Major in Biology (Co-operative) Program (BCOP)

This program is available to full-time Biology majors only.

The Biology (Co-operative) Program (BCOP) provides an opportunity for students to

learn valuable practical skills while working in fields related to Biology. Students complete three Work Terms, which consist of full-time, normally paid employment in the field of Biology of at least 12 weeks in duration. The timing of the Work Terms is such that employers stand to gain from the acquired skills of biology majors in training. The objectives of the Work Term component of the BCOP are embodied in the Work Term descriptions found at the end of the Faculty of Science section under Course Descriptions, Biology, [Work Term Descriptions](#).

1. Admission Requirements

- a. Admission is limited, competitive, and selective.
- b. The primary criteria used in reaching decisions on applications for admission are motivation and overall academic achievement. Students may be required to participate in an interview as part of the selection process.
- c. A student must first be admitted to the Biology Major.
- d. Application deadline: October 15 for the following Spring semester work term (normally the third semester in year two).
- e. To be eligible for admission, a student must have completed the second year Biology Core, with an overall average of at least 65%, and an overall average of at least 65% in all Biology courses before the start of the first work term. A student must have an overall average of 65% in all other required courses, and must be registered as a full-time student in the semester in which application is made.

2. Program of Study

- a. In addition to the requirements below, a student must fulfill all requirements for ~~one of a Major in Biology; Major in Biology (Cell and Molecular); Major in Biology (Ecology and Conservation); Honours in Biology; Honours in Biology (Cell and Molecular); or Honours in Biology (Ecology and Conservation); or Honours in Biology (Marine).~~
- b. Students' status in the program is assessed at the end of each semester. To remain in BCOP, a student must receive a passing grade in all required courses, and must maintain an overall average of at least 65% in all Biology courses and an overall average of at least 65% in all courses, including electives. A student who fails a required course, fails to maintain an overall average of 65% in Biology courses, or fails to maintain an overall average of 65%, will be required to withdraw from BCOP. The student in question may apply for readmission in a subsequent year after passing the specified required course(s) previously failed, or re-establishing the required average.
- c. A student is required to complete three work terms, one of which will normally be either in the Fall or Winter semester.

3. Work Term Placement

- a. General management of the BCOP is the responsibility of the designated Academic Staff Member in Co-operative Education (ASM-CE). ASM-CE's are responsible for facilitating the engagement of potential employers in the

program, organizing competitions for Work Term employment, arranging job interviews and facilities, managing the co-op data base, and developing employment opportunities and monitoring and evaluating students during the work term.

- b. Students are ultimately responsible for securing their work term placements. ASM-CEs provide support for the job search and inform students of potential opportunities.
- c. A student who is admitted to the co-op program gives permission to the University to provide a copy of the applicant's resume, university transcript and work term evaluations to potential employers.
- d. A student who has been accepted to BCOP may independently obtain a work term placement in consultation with the ASM-CE. Such employment positions must satisfy the criteria for work terms, be confirmed in writing by the employer and be approved by the ASM-CE before the first day of the work term according to the University Diary.

4. Registration and Evaluation of Performance

- a. In Work Terms I, II, and III, a student must register for Biology 199W, 299W, and 399W respectively.
- b. The Work Term evaluations shall consist of two components:
 - i. On-the-job Student Performance:
Job performance shall be assessed by Co-operative Education in consultation with the department using information gathered during the Work Term and input from the employer towards the end of the Work Term. Formal written documentation from the employer shall be sought. Evaluation of the job performance will result in one of the following classifications: OUTSTANDING, ABOVE EXPECTATIONS, SATISFACTORY, MARGINAL PASS, FAIL.
 - ii. Assignment(s):
 - 1. A student is required to submit one or more assignment(s) to Co-operative Education as outlined in the course syllabus
 - 2. Assignments(s) are evaluated by a faculty member and an ASM-CE.

Evaluation of the work term assignments will result in one of the following classifications: OUTSTANDING, ABOVE EXPECTATIONS, SATISFACTORY, MARGINAL PASS, FAIL.

The evaluation of the job performance and the assignment(s) are recorded separately on the transcript. Overall evaluation of the work term will result in one of the following final grades being awarded:

- Pass with Distinction: Indicates OUTSTANDING PERFORMANCE in both the assignment(s) and the job performance.

- Pass: Indicates that PERFORMANCE MEETS EXPECTATIONS in both the assignment(s) and the job performance.
 - Fail: Indicates FAILING PERFORMANCE in the assignment(s) or the job performance, or both. To remain in BCOP, a student must obtain a final grade of Pass or higher.
- c. If a student fails to achieve the Work Term standards specified above, the student will be required to withdraw from BCOP. Such a student may reapply to the program, at which time the student will be required to repeat the Work Term with satisfactory performance. Only one Work Term may be repeated in the entire program.
 - d. A student who withdraws from a Work Term without acceptable cause subsequent to a job placement will be required to withdraw permanently from BCOP.
 - e. A student who drops a Work Term without prior approval from both Co-operative Education and the Biology Co-op Liaison, or who fails to honour an agreement to work with an employer, or conducts him/herself in such a manner as to cause the discharge from the job, will be awarded an overall grade of FAIL for the Work Term in question and will be required to withdraw permanently from BCOP.
 - f. Permission to drop a Work Term does not constitute a waiver of degree requirements, and a student who has obtained such permission must complete an approved Work Term in lieu of the one dropped.

11.2.4 Honours Degrees

The attention of students wishing to take Honours is called to those sections of the Calendar dealing with Regulations for the Degree of Bachelor of Science (Honours).

Sixty-nine credit hours in courses, including the 6 first year credit hours and the 15 required core credit hours outlined in the regulations for the General Degree, and the Honours Dissertation (Biology 499A/499B), shall be taken from the Department of Biology offering. Students may elect to complete an Honours Program in Biology or in one of the joint Honours Programs listed under the heading "Programs in Biology". Programs of students taking Honours shall be drawn up in consultation with the student's supervisor, and must be approved by the Head of the Department (or his/her delegate) in accordance with [Admission and Registration](#), clause 2. of the [Regulations for the Honours Degree of Bachelor of Science](#).

Note: Some Graduate Courses may be taken in the final year of the Honours Program with the permission of the Head of the Department and the course instructor.

A dissertation (6 credit hours) is to be presented on some original piece of work undertaken by the candidate, under the guidance of a faculty member of the

department, as appointed by the Head of Department. For students electing to take one of the Joint Honours Programs, the dissertation shall be on a topic representative of the selected program. The Department of Biology considers the dissertation to be an important part of the Honours Program.

The dissertation will be based on a 6 credit hours course (Biology 499A/499B). It will involve directed reading relevant to the dissertation topic, preparation of a dissertation outline, supervised research, data synthesis and interpretation, and preparation and defence of the dissertation.

Two typed copies of the dissertation, complete with figures and tables, are to be submitted not less than two weeks before the end of lectures in the semester in which the candidate is registered for Biology 499B. These copies must be submitted to the Head of Department, and must have met the prior approval of the candidate's Honours supervisor.

Before the last day for examinations in the semester, the candidate will be examined orally on the contents of the dissertation. The examining committee shall consist of the Head of the Department, or delegate, the candidate's supervisor, and an examiner appointed by the Head of the Department in consultation with the candidate's supervisor.

11.2.4.1 Honours in Biology

An Honours degree in Biology may comprise a broadly based selection of courses according to the student's interests, or it may be more narrowly focussed. An Honours student may focus on any area of Biology where an appropriate supervisor can be found. All Honours students should choose courses in consultation with their supervisors, but it is particularly important that students wishing to focus within the Honours degree should discuss course selection with an Honours supervisor within their area of interest.

1. Biology Course Requirements

Students seeking an honours degree in Biology are required to successfully complete a minimum of 69 credit hours in courses from the Department of Biology offering. Those 69 credit hours must include:

- a. Biology 1001 and 1002 or their equivalents;
- b. 15 credit hours in the following core courses: Biology 2060, 2250, 2600, 2900, plus one of Biology 3401, 3402, 4245 or 4404; and
- c. 42 credit hours from Biology electives at the 2000, 3000 or 4000 level (except Biology 2040, 2041, 2120, 3053, and 3820) and Biology 499A and 499B.
- d. A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.

2. Core Course Requirements

All honours students must also successfully complete the following courses or their equivalents:

- a. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
- b. Physics 1020 and 1021 (or equivalent)
- c. Mathematics 1000
- d. Chemistry 1050 and 1051 (or 1200 and 1001), Chemistry 2400 and 2401
- e. Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550
- f. Biochemistry 2201 or the former 2101, and 3106 or 3206
- g. Electives to make up 120 credit hours

To minimize timetabling problems, students on the St. John's Campus are advised to take Biology 2250 and 2600 in their third semester (Fall), and Biology 2060 and 2900 in their fourth semester (Winter).

~~11.2.4.2 Honours in Cell and Molecular Biology~~

~~1. Cell and Molecular Biology Course Requirements~~

~~Students seeking an honours degree in Cell and Molecular Biology are required to complete a minimum of 69 credit hours in courses from the Department of Biology offering. Those 69 credit hours must include:~~

- ~~a. Biology 1001 and 1002 or their equivalents;~~
- ~~b. 15 credit hours in the following core courses: Biology 2060, 2250, 2600, 2900, plus one of Biology 3401, 3402, 4245 or 4404;~~
- ~~c. Biology 3530 and Biology 4241;~~
- ~~d. 12 credit hours from the following recommended Biology courses for Cell and Molecular Biology:
Biology 3050, 3052, 3401, 3402, 3500, 3620, 3950, 3951, 4010, 4040, 4050, 4200, 4245, 4250, 4251, 4255, 4404, 4550, 4605, 4607; and~~
- ~~e. 24 credit hours in Biology electives at the 2000, 3000 or 4000 level (except Biology 2040, 2041, 2120, 3053, and 3820) and Biology 499A and 499B.~~
- ~~f. A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.~~

~~2. Core Course Requirements~~

~~All honours students must also successfully complete the following courses or their equivalents:~~

- ~~a. English 1090 or the former English 1080 and 1110 (or equivalent)~~
- ~~b. Physics 1020 and 1021 (or equivalent)~~

- ~~c. Mathematics 1000~~
- ~~d. Chemistry 1010 and 1011 (or equivalent), Chemistry 2440~~
- ~~e. Statistics 2550~~
- ~~f. Biochemistry 2101 and 3106~~
- ~~g. Electives to make up 120 credit hours~~

~~To minimize timetabling problems, students on the St. John's Campus are advised to take Biology 2250 and 2600 in their third semester (Fall), and Biology 2060 and 2900 in their fourth semester (Winter).~~

~~11.2.4.3 Honours in Ecology and Conservation Biology~~

~~1. Ecology and Conservation Biology Course Requirements~~

~~Students seeking an honours degree in Ecology and Conservation Biology are required to complete a minimum of 69 credit hours in courses from the Department of Biology offering. Those 69 credit hours must include:~~

- ~~a. Biology 1001 and 1002 or their equivalents;~~
- ~~b. 15 credit hours in the following core courses: Biology 2060, 2250, 2600, 2900, plus one of Biology 3401, 3402, 4245 or 4404;~~
- ~~c. Biology 4650 and 4651;~~
- ~~d. 12 credit hours from the following recommended biology courses for Ecology and Conservation Biology:
Biology 3041, 3050, 3295, 3300, 3610, 3620, 3640, 3709, 3710, 3711, 3714, 3715, 3750, 4040, 4141, 4180, 4182, 4250, 4306, 4307, 4360, 4405, 4505, 4605, 4607, 4620, 4630, 4701, 4710, 4750, 4820; and~~
- ~~e. 24 credit hours in Biology electives at the 2000, 3000 or 4000 level (except Biology 2040, 2041, 2120, 3053, and 3820) and Biology 499A and 499B.~~
- ~~f. A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.~~

~~2. Core Course Requirements~~

~~All honours students must also successfully complete the following courses or their equivalents:~~

- ~~a. English 1090 or the former English 1080 and 1110 (or equivalent)~~
- ~~b. Physics 1020 and 1021 (or equivalent)~~
- ~~c. Mathematics 1000~~
- ~~d. Chemistry 1010 and 1011 (or equivalent), Chemistry 2440~~
- ~~e. Statistics 2550~~
- ~~f. Biochemistry 2101 and 3106~~
- ~~g. Electives to make up 120 credit hours~~

~~To minimize timetabling problems, students on the St. John's Campus are advised to take Biology 2250 and 2600 in their third semester (Fall), and Biology 2060 and 2900 in their fourth semester (Winter).~~

~~11.2.4.4 Honours in Marine Biology~~

~~1. Marine Biology Course Requirements~~

~~Students seeking an honours degree in Marine Biology are required to complete a minimum of 69 credit hours in courses from the Department of Biology offering. Those 69 credit hours must include:~~

- ~~a. Biology 1001 and 1002 or their equivalents;~~
- ~~b. 15 credit hours in the following core courses: Biology 2060, 2250, 2600, 2900, plus one of Biology 3401, 3402, 4245 or 4404;~~
- ~~c. Biology 3710 and 3711;~~
- ~~d. 12 credit hours from the following recommended biology courses for Marine Biology:
Biology 3014, 3050, 3295, 3620, 3640, 3709, 3712, 3714, 3715, 3951, 4122, 4141, 4182, 4360, 4601, 4605, 4607, 4620, 4630, 4710, 4750, 4810, 4912; and~~
- ~~e. 24 credit hours in Biology electives at the 2000, 3000 or 4000 level (except Biology 2040, 2041, 2120, 3053, and 3820) and Biology 499A and 499B.~~
- ~~f. A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.~~

~~2. Core Course Requirements~~

~~All honours students must also successfully complete the following courses or their equivalents:~~

- ~~a. English 1090 or the former English 1080 and 1110 (or equivalent)~~
- ~~b. Physics 1020 and 1021 (or equivalent)~~
- ~~c. Mathematics 1000~~
- ~~d. Chemistry 1010 and 1011 (or equivalent), Chemistry 2440~~
- ~~e. Statistics 2550~~
- ~~f. Biochemistry 2101 and 3106~~
- ~~g. Electives to make up 120 credit hours~~

~~To minimize timetabling problems, students on the St. John's Campus are advised to take Biology 2250 and 2600 in their third semester (Fall), and Biology 2060 and 2900 in their fourth semester (Winter).~~

11.2.4.52 Honours in Biology (Co-operative)

1. Admission Requirements

See Major in Biology (Co-operative)

2. Program of Study

1. In addition to the requirements below, a student must fulfill all requirements for either an Honours in Biology, Honours in Biology (Cell and Molecular), Honours in Biology (Ecology and Conservation), or Honours in Biology (Marine) as described under each specific program.

2. To remain in BCOP Honours, a student must receive a passing grade in all required courses, and must maintain an average of at least 65% in all Biology courses and an overall average of at least 70% in all courses, including electives.
3. A student is required to complete three work terms, one of which will normally be either in the Fall or Winter semester.

11.2.4.6 Biology Concentrations

While meeting the requirements for a program in Biology, other than a Minor in Biology, students may choose to select courses in one of the following formal concentrations which, if completed, will be noted on the student's transcript.

Particular attention should be paid to necessary prerequisites when scheduling courses. Students should consult with the Academic Program Officer regarding the availability of courses applicable to their chosen concentration.

11.2.4.6.1. Applied Ecology and Conservation

Students selecting an Applied Ecology and Conservation concentration are required to complete 18 credit hours from the following courses:

Biology 4122, 4307, 4360, 4405, 4650, 4651, 4710, 4810, 4820, 4911

11.2.4.6.2. Aquatic Life

Students selecting an Aquatic Life concentration are required to complete 18 credit hours from the following courses:

Biology 3014, 3050, 3709, 3710, 3711, 3712, 3714, 3715, 4122, 4601, 4710, 4750, 4912

11.2.4.6.3. Biological Tools and Techniques

Students selecting a Biological Tools and Techniques concentration are required to complete 18 credit hours from the following courses:

Biology 3050, 3709, 3950, 3951, 4270, 4605, 4606, 4607, 4710, 4770, 4810, 4820, 4360, 4405

11.2.4.6.4. Biology for Health Professions

Students selecting a Biology for Health Professions concentration are required to complete 18 credit hours from the following courses:

- a. Biology 3050, 3052, 3500, 3530 4010, 4050, 4200, 4241, 4245, 4404, 4550
- b. Medicine 310A/B

11.2.4.6.5. Comparative Biology

Students selecting a Comparative Biology concentration are required to complete 18 credit hours from the following courses:

Biology 3202, 3300, 3401, 3402, 3640, 3715, 3750, 4122, 4620, 4630, 4701, 4770, 4910

11.2.4.6.6. Evolutionary Ecology

Students selecting an Evolutionary Ecology concentration are required to complete 18 credit hours from the following courses:

Biology 3295, 3715, 3811, 3951, 4250, 4270, 4505, 4620, 4630, 4701, 4710, 4800, 4910

11.2.4.6.7. Molecular, Microbial, and Cell Biology

Students selecting a Molecular, Microbial and Cell Biology concentration are required to complete 18 credit hours from the following courses:

- a. Biology 3050, 3052, 3401, 3402, 3530, 3950, 3951, 4050, 4241, 4250, 4251, 4404, 4606
- b. Biochemistry 3207

12.2 Biology

According to the nature of particular courses, the specified number of laboratory hours may consist of some combination of laboratory work, seminars or directed independent study relevant to the practical aspects of the subject matter.

Biology courses are designated by BIOL.

2900 Principles of Evolution and Systematics is an introduction to the processes and patterns of evolution, and the principles of classification. Natural selection and other microevolutionary processes, variation and adaptation, species and speciation, phylogenetic systematics, reconstruction of phylogeny, macro-evolutionary patterns in the fossil record and their interpretation.

CO: Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550

CR: the former BIOL 3900

LH: 3

PR: Science 1807; BIOL 1001, 1002, 2250

PR: Statistics 2550 ~~(or equivalent)~~ or any of the courses listed in the credit restrictions of Statistics 2550

3401 Comparative Animal Physiology is a comparative study of the basic physiological processes, with special attention paid to those strategies invoked by animals which enable them to adapt to environmental changes.

CO: Biochemistry 3106 or 3206

CR: the former BIOL 4401

LH: 3

PR: Science 1807; BIOL 2060 and 2210

PR: Biochemistry 3106 or 3206

3402 Principles of Plant Physiology is a consideration of the principles of plant physiology, including water relations, nutrition, metabolism, growth and development.

CO: Biochemistry 3106 or 3206

CR: the former BIOL 4403

LH: 3

PR: Science 1807; BIOL 2010 and 2060

PR: Biochemistry 3106 or 3206

3610 Boreal Ecology is a study of the principal features of terrestrial ecosystems, with emphasis on the boreal region. This course may be offered in a usual 13 week semester or as a two-week field course.

CR: Environmental Science 3131

LC: either three hours of lecture and three hours of laboratory per week or a two week field course that embodies equivalent instructional time

LH: either three hours of lecture and three hours of laboratory per week or a two week field course that embodies equivalent instructional time

PR: Science 1807; BIOL 2010, 2250, 2600 and 2900; Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550

3620 Aquatic Microbial Ecology (same as the former Ocean Sciences 3620) is a study of the nature, distribution and activities of microorganisms in the freshwater and marine environments. Field and laboratory work illustrate some of the investigative techniques used in this area of study.

CR: the former Ocean Sciences 3620, the former BIOL 3603

LH: 3

PR: Science 1807; BIOL 2600 and 3050; Statistics 2550 or equivalent

3709 Field Course in Marine Principles and Techniques begins with a two-week field school immediately prior to the beginning of the Fall Semester. In the Fall Semester there are follow-up lectures, readings and submission of reports. The course is designed to introduce the principal marine environments, organisms and techniques. It is strongly recommended that this course be taken before either BIOL 3710, 3711 or 4810.

PR: Science 1807; BIOL 2600; Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550 or equivalent and permission of the Head of Department

3750 Animal Behaviour I (same as Psychology 3750) is an introduction to the mechanisms, development, function and evolution of behaviour in animals. Topics include the history of ethology and comparative psychology, and behavioural ecology; methods of animal behaviour study, behaviour of animals in relation to physiology, learning, communication, mating systems, and other areas in Biology and Psychology.

CR: Psychology 3750

PR: BIOL 1001 and 1002; Statistics 2550 or equivalent or any of the courses listed in the credit restrictions of Statistics 2550

4200 Immunology (same as Biochemistry 4105 and Pharmacy 3006) is an introduction to the cells and organs of the innate and adaptive immune systems. The molecular and cellular basis of allergy, autoimmunity, vaccination and cancer immunology will also be discussed.

CR: Biochemistry 4105, Pharmacy 3006, and the former Pharmacy 4105

PR: Science 1807; BIOL 2060 and BIOL 3050

4360 Community and Ecosystem Ecology is a study of the basic principles, patterns and processes of ecological communities and ecosystems.

OR: a seminar/discussion group each week

PR: Science 1807; BIOL 2250, 2600 and 2900 and one of BIOL 2010, 2122 or 2210; Statistics 2550 or equivalent or any of the courses listed in the credit restrictions of Statistics 2550

4405 Landscape Ecology is an introduction to the theory and principles of landscape pattern and processes, including issues related to scale, networks, landform and vegetation patterns, species distributions, and natural and human-caused aspects of landscape change.

CO: Statistics 2550 ~~or equivalent~~ or any course that is credit restricted with Statistics 2550

LC: ~~either three hours of lecture and three hours of laboratory per week or a two-week intensive course that embodies equivalent instructional time~~

LH: ~~either three hours of lecture and three hours of laboratory per week or a two-week intensive course that embodies equivalent instructional time~~

PR: Science 1807; BIOL 2600 and 18 credit hours in Biology; Statistics 2550 ~~or equivalent~~, or any of the courses listed in the credit restrictions of Statistics 2550 or permission from the course instructor

4550 Principles of Endocrinology comprises an introduction to basic concepts concerned with how chemical messages are transmitted and received between cells to coordinate body functions. Hormonal control of adaptation, reproduction, metabolism, growth, digestion, and electrolyte homeostasis will be discussed. Although the endocrinology of invertebrates and lower vertebrates will be mentioned as appropriate, the main emphasis will be on mammalian and human endocrinology at the level of the whole organism.

LH: 3

PR: Science 1807; BIOL 3401; Biochemistry 3106 or 3206

4607 Models in Biology is a study of the design and analysis of statistical and mathematical models for exploring the biology of cells, genes, species, populations, communities and ecosystems. Qualitative, quantitative and graphical techniques are used to analyze models and to compare theoretical predictions with empirical data. Classic models of systems biology, population growth, species competition, predator-prey interactions, ecosystem nutrient cycling, immunology, evolutionary invasion analysis, and species distribution will be covered.

LH: 3

PR: BIOL 2060, 2600 and 2900; Statistics 2550 ~~or equivalent~~ or any of the courses listed in the credit restrictions of Statistics 2550. It is recommended that students complete BIOL 3295.

4800 Advanced Palaeontology (same as Earth Sciences 4800) is a field, lecture, laboratory and seminar course dealing with selected topics in general and applied paleontology. Topics include measuring evolution and extinction, population paleontology, functional morphology, paleoecology, statistical methods for paleontological studies, and applications in petroleum, mining, and environmental studies. This course is taught and administered by the Department of Earth Sciences.

CR: Earth Sciences 4800

LH: 3

PR: Earth Sciences/BIOL 3811, and one of Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550, the former Statistics 2510 or Mathematics 2000

CALENDAR ENTRY AFTER CHANGES

11.2 Biology

www.mun.ca/biology

The following undergraduate programs are available in the Department:

1. Biochemistry and Cell Biology Joint Honours
2. Biology and Earth Sciences (Geology) Joint Honours
3. Biology and Psychology Joint Honours
4. Biology and Psychology (Behavioural Neuroscience) Joint Honours
5. Biology and Statistics Joint Honours
6. Joint Major in Marine Biology
7. Major or Honours or Major (Co-operative) or Honours (Co-operative) in Biology
8. Biology Concentrations
9. Minor in Biology

Details of joint programs are given after the [Regulations for the Honours Degree of Bachelor of Science](#).

Biology course descriptions are found at the end of the Faculty of Science section under [Course Descriptions, Biology](#).

For the purposes of a Major, or Honours degree in Biology, Medicine 310A/B count as Biology courses.

11.2.1 Entrance Requirements

Entry to the Biology Majors Program is competitive and based on academic standing.

To be considered for admission to the program students must have completed Biology 1001/1002 with an average of at least 65%. In addition, applicants will normally have completed the following courses (or their equivalents) and must have a minimum overall average of 60% in these courses.

5. Six credit hours in [Critical Reading and Writing \(CRW\)](#) courses, including at least 3 credit hours in English courses.
6. Mathematics 1090 and Mathematics 1000 (or Mathematics 109A/B and Mathematics 1000, or Mathematics 1000 only)
7. Chemistry 1050/1051 (or 1200 and 1001) or Physics 1020/1021 (or equivalent)
8. If Mathematics 1000 taken, any one other first year course.

Chemistry 1050/1051 (or 1200 and 1001) should be taken in the first year, as it is a prerequisite for other required courses in the programs, and delaying chemistry until second year may make it difficult to complete the program in the normal eight semesters.

11.2.2 Minor in Biology

A minor in Biology will consist of 24 credit hours in Biology courses: 1001 and 1002 (or equivalent) plus any 18 credit hours chosen from the list of Biology courses except Biology 2040, 2041, 2120, 3053, and 3820. The choice of courses must be made in consultation with the Academic Program Officer and it is recommended (but not required) that students take at least two Biology courses at the 3000 level or above.

11.2.3 General Degrees

Each Major is assigned an academic advisor who should be consulted on academic problems, including course selection.

11.2.3.1 Major in Biology

All students majoring in Biology are required to complete a minimum of 45 credit hours in courses from the Department of Biology offering. Those 45 credit hours must include: Biology 1001 and 1002 or their equivalents; the 15 credit hours in core courses listed below; and 24 credit hours in Biology electives at the 2000, 3000 or 4000 level except Biology 2040, 2041, 2120, 3053, and 3820.

Biology Core (15 credit hours): Biology 2060, 2250, 2600, 2900, plus one of Biology 3401, 3402, 4245 or 4404.

A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.

All majors must also successfully complete the following courses or their equivalents:

8. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
9. Physics 1020 and 1021 (or equivalent)
10. Mathematics 1000
11. Chemistry 1050/1051 (or 1200 and 1001), Chemistry 2400 and 2401
12. Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550
13. Biochemistry 2201 or the former 2101, and 3106 or 3206
14. Extra Science courses as necessary to fulfil the requirement for 78 credit hours in Science as stipulated in Clause 3.a. of the **Regulations for the General Degree of**

Bachelor of Science.

It is recommended, but not required, that a Computer Science course be included and the Department of Biology strongly recommends Computer Science 1000 or 1600.

Note: To minimize timetabling problems, students on the St. John's campus are advised to take Biology 2250 and 2600 in their third semester (Fall), and 2060 and 2900 in their fourth semester (Winter).

11.2.3.2 Major in Biology (Co-operative) Program (BCOP)

This program is available to full-time Biology majors only.

The Biology (Co-operative) Program (BCOP) provides an opportunity for students to learn valuable practical skills while working in fields related to Biology. Students complete three Work Terms, which consist of full-time, normally paid employment in the field of Biology of at least 12 weeks in duration. The timing of the Work Terms is such that employers stand to gain from the acquired skills of biology majors in training. The objectives of the Work Term component of the BCOP are embodied in the Work Term descriptions found at the end of the Faculty of Science section under Course Descriptions, Biology, [Work Term Descriptions](#).

1. Admission Requirements

- a. Admission is limited, competitive, and selective.
- b. The primary criteria used in reaching decisions on applications for admission are motivation and overall academic achievement. Students may be required to participate in an interview as part of the selection process.
- c. A student must first be admitted to the Biology Major.
- d. Application deadline: October 15 for the following Spring semester work term (normally the third semester in year two).
- e. To be eligible for admission, a student must have completed the second year Biology Core, with an overall average of at least 65%, and an overall average of at least 65% in all Biology courses before the start of the first work term. A student must have an overall average of 65% in all other required courses, and must be registered as a full-time student in the semester in which application is made.

2. Program of Study

- a. In addition to the requirements below, a student must fulfill all requirements for a Major in Biology or Honours in Biology.
- b. Students' status in the program is assessed at the end of each semester. To remain in BCOP, a student must receive a passing grade in all required courses, and must maintain an overall average of at least 65% in all Biology courses and an overall average of at least 65% in all courses, including electives. A student

who fails a required course, fails to maintain an overall average of 65% in Biology courses, or fails to maintain an overall average of 65%, will be required to withdraw from BCOP. The student in question may apply for readmission in a subsequent year after passing the specified required course(s) previously failed, or re-establishing the required average.

- c. A student is required to complete three work terms, one of which will normally be either in the Fall or Winter semester.

3. Work Term Placement

- a. General management of the BCOP is the responsibility of the designated Academic Staff Member in Co-operative Education (ASM-CE). ASM-CE's are responsible for facilitating the engagement of potential employers in the program, organizing competitions for Work Term employment, arranging job interviews and facilities, managing the co-op database, and developing employment opportunities and monitoring and evaluating students during the work term.
- b. Students are ultimately responsible for securing their work term placements. ASM-CEs provide support for the job search and inform students of potential opportunities.
- c. A student who is admitted to the co-op program gives permission to the University to provide a copy of the applicant's resume, university transcript and work term evaluations to potential employers.
- d. A student who has been accepted to BCOP may independently obtain a work term placement in consultation with the ASM-CE. Such employment positions must satisfy the criteria for work terms, be confirmed in writing by the employer and be approved by the ASM-CE before the first day of the work term according to the University Diary.

4. Registration and Evaluation of Performance

- a. In Work Terms I, II, and III, a student must register for Biology 199W, 299W, and 399W respectively.
- b. The Work Term evaluations shall consist of two components:
 - i. On-the-job Student Performance:
Job performance shall be assessed by Co-operative Education in consultation with the department using information gathered during the Work Term and input from the employer towards the end of the Work Term. Formal written documentation from the employer shall be sought. Evaluation of the job performance will result in one of the following classifications: OUTSTANDING, ABOVE EXPECTATIONS, SATISFACTORY, MARGINAL PASS, FAIL.
 - ii. Assignment(s):
 - 1. A student is required to submit one or more assignment(s) to Co-operative Education as outlined in the course syllabus
 - 2. Assignments(s) are evaluated by a faculty member and an ASM-CE.

Evaluation of the work term assignments will result in one of the following classifications: OUTSTANDING, ABOVE EXPECTATIONS, SATISFACTORY, MARGINAL PASS, FAIL.

The evaluation of the job performance and the assignment(s) are recorded separately on the transcript. Overall evaluation of the work term will result in one of the following final grades being awarded:

1. Pass with Distinction: Indicates OUTSTANDING PERFORMANCE in both the assignment(s) and the job performance.
 2. Pass: Indicates that PERFORMANCE MEETS EXPECTATIONS in both the assignment(s) and the job performance.
 3. Fail: Indicates FAILING PERFORMANCE in the assignment(s) or the job performance, or both. To remain in BCOP, a student must obtain a final grade of Pass or higher.
- c. If a student fails to achieve the Work Term standards specified above, the student will be required to withdraw from BCOP. Such a student may reapply to the program, at which time the student will be required to repeat the Work Term with satisfactory performance. Only one Work Term may be repeated in the entire program.
 - d. A student who withdraws from a Work Term without acceptable cause subsequent to a job placement will be required to withdraw permanently from BCOP.
 - e. A student who drops a Work Term without prior approval from both Co-operative Education and the Biology Co-op Liaison, or who fails to honour an agreement to work with an employer, or conducts him/herself in such a manner as to cause the discharge from the job, will be awarded an overall grade of FAIL for the Work Term in question and will be required to withdraw permanently from BCOP.
 - f. Permission to drop a Work Term does not constitute a waiver of degree requirements, and a student who has obtained such permission must complete an approved Work Term in lieu of the one dropped.

11.2.4 Honours Degrees

The attention of students wishing to take Honours is called to those sections of the Calendar dealing with Regulations for the Degree of Bachelor of Science (Honours).

Sixty-nine credit hours in courses, including the 6 first year credit hours and the 15 required core credit hours outlined in the regulations for the General Degree, and the Honours Dissertation (Biology 499A/499B), shall be taken from the Department of

Biology offering. Students may elect to complete an Honours Program in Biology or in one of the joint Honours Programs listed under the heading "Programs in Biology". Programs of students taking Honours shall be drawn up in consultation with the student's supervisor, and must be approved by the Head of the Department (or his/her delegate) in accordance with [Admission and Registration](#), clause 2. of the [Regulations for the Honours Degree of Bachelor of Science](#).

Note: Some Graduate Courses may be taken in the final year of the Honours Program with the permission of the Head of the Department and the course instructor.

A dissertation (6 credit hours) is to be presented on some original piece of work undertaken by the candidate, under the guidance of a faculty member of the department, as appointed by the Head of Department. For students electing to take one of the Joint Honours Programs, the dissertation shall be on a topic representative of the selected program. The Department of Biology considers the dissertation to be an important part of the Honours Program.

The dissertation will be based on a 6 credit hours course (Biology 499A/499B). It will involve directed reading relevant to the dissertation topic, preparation of a dissertation outline, supervised research, data synthesis and interpretation, and preparation and defence of the dissertation.

Two typed copies of the dissertation, complete with figures and tables, are to be submitted not less than two weeks before the end of lectures in the semester in which the candidate is registered for Biology 499B. These copies must be submitted to the Head of Department, and must have met the prior approval of the candidate's Honours supervisor.

Before the last day for examinations in the semester, the candidate will be examined orally on the contents of the dissertation. The examining committee shall consist of the Head of the Department, or delegate, the candidate's supervisor, and an examiner appointed by the Head of the Department in consultation with the candidate's supervisor.

11.2.4.1 Honours in Biology

An Honours degree in Biology may comprise a broadly based selection of courses according to the student's interests, or it may be more narrowly focussed. An Honours student may focus on any area of Biology where an appropriate supervisor can be found. All Honours students should choose courses in consultation with their supervisors, but it is particularly important that students wishing to focus within the Honours degree should discuss course selection with an Honours supervisor within their area of interest.

1. Biology Course Requirements

Students seeking an honours degree in Biology are required to successfully complete a minimum of 69 credit hours in courses from the Department of Biology offering. Those 69 credit hours must include:

- e. Biology 1001 and 1002 or their equivalents;
- f. 15 credit hours in the following core courses: Biology 2060, 2250, 2600, 2900, plus one of Biology 3401, 3402, 4245 or 4404; and
- g. 42 credit hours from Biology electives at the 2000, 3000 or 4000 level (except Biology 2040, 2041, 2120, 3053, and 3820) and Biology 499A and 499B.
- h. A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.

2. Core Course Requirements

All honours students must also successfully complete the following courses or their equivalents:

- a. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
- b. Physics 1020 and 1021 (or equivalent)
- c. Mathematics 1000
- d. Chemistry 1050 and 1051(or 1200 and 1001), Chemistry 2400 and 2401
- e. Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550
- f. Biochemistry 2201 or the former 2101, and 3106 or 3206
- g. Electives to make up 120 credit hours

To minimize timetabling problems, students on the St. John's Campus are advised to take Biology 2250 and 2600 in their third semester (Fall), and Biology 2060 and 2900 in their fourth semester (Winter).

11.2.4.2 Honours in Biology (Co-operative)

1. Admission Requirements

See **Major in Biology (Co-operative)**

2. Program of Study

- 4. In addition to the requirements below, a student must fulfill all requirements for an Honours in Biology-
- 5. To remain in BCOP Honours, a student must receive a passing grade in all required courses, and must maintain an average of at least 65% in all Biology courses and an overall average of at least 70% in all courses, including electives.
- 6. A student is required to complete three work terms, one of which will normally be either in the Fall or Winter semester.

11.2.5 Biology Concentrations

While meeting the requirements for a program in Biology, other than a Minor in Biology, students may choose to select courses in one of the following formal concentrations which, if completed, will be noted on the student's transcript.

Particular attention should be paid to necessary prerequisites when scheduling courses. Students should consult with the Academic Program Officer regarding the availability of courses applicable to their chosen concentration.

11.2.4.6.1. Applied Ecology and Conservation

Students selecting an Applied Ecology and Conservation concentration are required to complete 18 credit hours from the following courses:

Biology 4122, 4307, 4360, 4405, 4650, 4651, 4710, 4810, 4820, 4911

11.2.4.6.2. Aquatic Life

Students selecting an Aquatic Life concentration are required to complete 18 credit hours from the following courses:

Biology 3014, 3050, 3709, 3710, 3711, 3712, 3714, 3715, 4122, 4601, 4710, 4750, 4912

11.2.4.6.3. Biological Tools and Techniques

Students selecting a Biological Tools and Techniques concentration are required to complete 18 credit hours from the following courses:

Biology 3050, 3709, 3950, 3951, 4270, 4605, 4606, 4607, 4710, 4770, 4810, 4820, 4360, 4405

11.2.4.6.4. Biology for Health Professions

Students selecting a Biology for Health Professions concentration are required to complete 18 credit hours from the following courses:

- a. Biology 3050, 3052, 3500, 3530 4010, 4050, 4200, 4241, 4245, 4404, 4550
- b. Medicine 310A/B

11.2.4.6.5. Comparative Biology

Students selecting a Comparative Biology concentration are required to complete 18 credit hours from the following courses:

Biology 3202, 3300, 3401, 3402, 3640, 3715, 3750, 4122, 4620, 4630, 4701, 4770, 4910

11.2.4.6.6. Evolutionary Ecology

Students selecting an Evolutionary Ecology concentration are required to complete 18 credit hours from the following courses:

Biology 3295, 3715, 3811, 3951, 4250, 4270, 4505, 4620, 4630, 4701, 4710, 4800, 4910

11.2.4.6.7. Molecular, Microbial, and Cell Biology

Students selecting a Molecular, Microbial and Cell Biology concentration are required to complete 18 credit hours from the following courses:

- a. Biology 3050, 3052, 3401, 3402, 3530, 3950, 3951, 4050, 4241, 4250, 4251, 4404, 4606
- b. Biochemistry 3207

12.2 Biology

According to the nature of particular courses, the specified number of laboratory hours may consist of some combination of laboratory work, seminars or directed independent study relevant to the practical aspects of the subject matter.

Biology courses are designated by BIOL.

2900 Principles of Evolution and Systematics is an introduction to the processes and patterns of evolution, and the principles of classification. Natural selection and other microevolutionary processes, variation and adaptation, species and speciation, phylogenetic systematics, reconstruction of phylogeny, macro-evolutionary patterns in the fossil record and their interpretation.

CO: Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550

CR: the former BIOL 3900

LH: 3

PR: Science 1807; BIOL 1001, 1002, 2250

PR: Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550

3401 Comparative Animal Physiology is a comparative study of the basic physiological processes, with special attention paid to those strategies invoked by

animals which enable them to adapt to environmental changes.

CO: Biochemistry 3106 or 3206

CR: the former BIOL 4401

LH: 3

PR: Science 1807; BIOL 2060 and 2210

PR: Biochemistry 3106 or 3206

3402 Principles of Plant Physiology is a consideration of the principles of plant physiology, including water relations, nutrition, metabolism, growth and development.

CO: Biochemistry 3106 or 3206

CR: the former BIOL 4403

LH: 3

PR: Science 1807; BIOL 2010 and 2060

PR: Biochemistry 3106 or 3206

3610 Boreal Ecology is a study of the principal features of terrestrial ecosystems, with emphasis on the boreal region. This course may be offered in a usual 13 week semester or as a two-week field course.

CR: Environmental Science 3131

LC: either three hours of lecture and three hours of laboratory per week or a two week field course that embodies equivalent instructional time

LH: either three hours of lecture and three hours of laboratory per week or a two week field course that embodies equivalent instructional time

PR: Science 1807; BIOL 2010, 2250, 2600 and 2900; Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550

3640 Environmental Physiology of Animals (same as Ocean Sciences 3640) covers physiological adaptations of animals facilitating their survival in natural environments with emphasis on physiological and biochemical responses of animals to extreme environments. Starting with the fundamental basis of physiological mechanisms, the course explores various aspects and the integration of major physiological processes (metabolism, respiration, osmoregulation) and how these relate to ecological niche.

CR: the former BIOL 3403 or the former BIOL 4455, Ocean Sciences 3640

PR: BIOL 2060; Biochemistry 3106 or 3206

UL: may not be used to fulfill the physiology course requirement for a Biology major, honours or joint honours program.

3709 Field Course in Marine Principles and Techniques begins with a two-week field school immediately prior to the beginning of the Fall Semester. In the Fall Semester there are follow-up lectures, readings and submission of reports. The course is designed to introduce the principal marine environments, organisms and techniques. It is strongly recommended that this course be taken before either

BIOL 3710, 3711 or 4810.

PR: Science 1807; BIOL 2600; Statistics 2550 or any of the courses listed in the credit

restrictions of Statistics 2550
and permission of the Head of Department

3750 Animal Behaviour I (same as Psychology 3750) is an introduction to the mechanisms, development, function and evolution of behaviour in animals. Topics include the history of ethology and comparative psychology, and behavioural ecology; methods of animal behaviour study, behaviour of animals in relation to physiology, learning, communication, mating systems, and other areas in Biology and Psychology.
CR: Psychology 3750

PR: BIOL 1001 and 1002; Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550

4200 Immunology (same as Biochemistry 4105 and Pharmacy 3006) is an introduction to the cells and organs of the innate and adaptive immune systems. The molecular and cellular basis of allergy, autoimmunity, vaccination and cancer immunology will also be discussed.

CR: Biochemistry 4105, Pharmacy 3006, and the former Pharmacy 4105

PR: Science 1807; BIOL 2060

4360 Community and Ecosystem Ecology is a study of the basic principles, patterns and processes of ecological communities and ecosystems.

OR: a seminar/discussion group each week

PR: Science 1807; BIOL 2250, 2600 and 2900 and one of BIOL 2010, 2122 or 2210; Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550

4405 Landscape Ecology is an introduction to the theory and principles of landscape pattern and processes, including issues related to scale, networks, landform and vegetation patterns, species distributions, and natural and human-caused aspects of landscape change.

CO: Statistics 2550 or any course that is credit restricted with Statistics 2550

PR: Science 1807; BIOL 2600 and 18 credit hours in Biology; Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550 or permission from the course instructor

4550 Principles of Endocrinology comprises an introduction to basic concepts concerned with how chemical messages are transmitted and received between cells to coordinate body functions. Hormonal control of adaptation, reproduction, metabolism, growth, digestion, and electrolyte homeostasis will be discussed. Although the endocrinology of invertebrates and lower vertebrates will be mentioned as appropriate, the main emphasis will be on mammalian and human endocrinology at the level of the whole organism.

LH: 3

PR: Science 1807; BIOL 3401; Biochemistry 3106 or 3206

4607 Models in Biology is a study of the design and analysis of statistical and mathematical models for exploring the biology of cells, genes, species, populations, communities and ecosystems. Qualitative, quantitative and graphical techniques are used to analyze models and to compare theoretical predictions with empirical data. Classic models of systems biology, population growth, species competition, predator-prey interactions, ecosystem nutrient cycling, immunology, evolutionary invasion analysis, and species distribution will be covered.

LH: 3

PR: BIOL 2060, 2600 and 2900; Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550. It is recommended that students complete BIOL 3295.

4800 Advanced Palaeontology (same as Earth Sciences 4800) is a field, lecture, laboratory and seminar course dealing with selected topics in general and applied paleontology. Topics include measuring evolution and extinction, population paleontology, functional morphology, paleoecology, statistical methods for paleontological studies, and applications in petroleum, mining, and environmental studies. This course is taught and administered by the Department of Earth Sciences.

CR: Earth Sciences 4800

LH: 3

PR: Earth Sciences/BIOL 3811, and one of Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550 or Mathematics 2000

SECONDARY CALENDAR CHANGES

12.5 Earth Sciences

4800 Advanced Paleontology (same as Biology 4800) is a field, lecture, laboratory and seminar course dealing with selected topics in general and applied paleontology. Topics include measuring evolution and extinction, population paleontology, functional morphology, paleoecology, statistical methods for paleontological studies, and applications in petroleum, mining, and environmental studies.

CR: Biology 4800

LH: 3

PR: EASC 3811, and Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550 ~~or the former Statistics 2540~~ or Mathematics 2000

12.9 Ocean Sciences

3640 Environmental Physiology of Animals (same as Ocean Sciences 3640) covers physiological adaptations of animals facilitating their survival in natural environments with emphasis on physiological and biochemical responses of animals to extreme environments. Starting with the fundamental basis of physiological mechanisms, the

course explores various aspects and the integration of major physiological processes (metabolism, respiration, osmoregulation) and how these relate to ecological niche.

CR: the former BIOL 3403 or the former BIOL 4455, Ocean Sciences 3640

PR: BIOL 2060; Biochemistry 3106 or 3206

UL: may not be used to fulfill the physiology course requirement for a Biology major, honours or joint honours program.

SECONDARY CALENDAR ENTRIES AFTER CHANGES

12.5 Earth Sciences

4800 Advanced Paleontology (same as Biology 4800) is a field, lecture, laboratory and seminar course dealing with selected topics in general and applied paleontology. Topics include measuring evolution and extinction, population paleontology, functional morphology, paleoecology, statistical methods for paleontological studies, and applications in petroleum, mining, and environmental studies.

CR: Biology 4800

LH: 3

PR: EASC 3811, and Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550 or Mathematics 2000

12.9 Ocean Sciences

3640 Environmental Physiology of Animals (same as Ocean Sciences 3640) covers physiological adaptations of animals facilitating their survival in natural environments with emphasis on physiological and biochemical responses of animals to extreme environments. Starting with the fundamental basis of physiological mechanisms, the course explores various aspects and the integration of major physiological processes (metabolism, respiration, osmoregulation) and how these relate to ecological niche.

CR: the former BIOL 3403 or the former BIOL 4455, Ocean Sciences 3640

PR: BIOL 2060; Biochemistry 3106 or 3206

UL: may not be used to fulfill the physiology course requirement for a Biology major, honours or joint honours program.

CONSULTATIONS SOUGHT

Academic Unit	Response Received?
Humanities and Social Sciences	No
Business Administration	Yes
Education	No
Engineering and Applied Science	Yes
Grenfell Campus: Arts and Social Science Science and the Environment Fine Arts	No
Human Kinetics and Recreation	Yes
Marine Institute	Yes
Medicine	Yes
Music	No
Nursing	No
Pharmacy	Yes
Science: Math Biochemistry Ocean Sciences	Yes Yes Yes
Social Work	Yes
Library	No

RESOURCE IMPLICATIONS

NA

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

NA

Jody-Lynn Burke

From: Lawrence Bauer <lbauer@mun.ca>
Sent: September-28-18 4:13 PM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology

Importance: High

Categories: Orange Category

Hello:

Thank you for the opportunity to comment on this proposal. The Faculty of Business Administration has no concerns with the proposed changes.

--larry

On Sep 28, 2018, at 4:02 PM, Jody-Lynn Burke <jrotchford@mun.ca> wrote:

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

<Calendar Consultation - Change to Joint Major in Marine Biology.pdf><Calendar Consultation - Joint Honours in Marine Biology.pdf><Calendar Consultation - Change to Biology Majors.pdf>

Larry Bauer, Ph.D.
Associate Professor of Finance
Associate Dean (Undergraduate Programs)
Faculty of Business Administration
Memorial University of Newfoundland
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Fax: (709) 864-8954

SSRN: <http://ssrn.com/author=327175>

Jody-Lynn Burke

From: cvardy@mun.ca
Sent: October-01-18 11:40 AM
To: Jody-Lynn Burke
Subject: FW: Consultation on Calendar Changes - Biology
Attachments: Calendar Consultation - Change to Joint Major in Marine Biology.pdf; ATT00001.htm; Calendar Consultation - Joint Honours in Marine Biology.pdf; ATT00002.htm; Calendar Consultation - Change to Biology Majors.pdf; ATT00003.htm

Categories: Orange Category

Dear Ms. Burke

The Faculty of Medicine has had the opportunity to review the attached calendar consultations, in particular change to the Joint Master in Marine Biology, the Joint Honours in Marine Biology and the change to Biology majors and are supportive of all three.

Sincerely,

CATHY VARDY, MD, FRCPC | VICE DEAN AND PROFESSOR OF PEDIATRICS

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Health Sciences Centre
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From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: September 28, 2018 at 4:02:34 PM NDT
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, "lrobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>, "Rohr, Linda" <lerohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "Sutherland, Ian D" <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>, Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: adeanugradswk
Sent: October-02-18 1:35 PM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hello Jody-Lynn,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs
School of Social Work, Memorial University
St. John's, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

From: Jody-Lynn Burke
Sent: September 28, 2018 4:03 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>; Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology
Importance: High

Dear colleagues,

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- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

Jody-Lynn Burke

From: Math Consult <mathconsult@mun.ca>
Sent: October-03-18 10:13 AM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody,

I'm concerned that the statement of the stats requirement can create an unnecessary advising burden that may fall on the Math & Stats department.

Under 11.2.3.1 Major in Biology, one of the requirements is listed as: "5. Statistics 2550 (or equivalent)". What counts as "equivalent", and who will evaluate what equivalent courses will be accepted?

There are no Memorial courses that we would say are equivalent to STAT 2550. If a student has done an equivalent course at another school, then they should apply for a transfer credit. If the course is equivalent to STAT 2550 then they will get credit for STAT 2550 and so "or equivalent" is not needed.

If a student has done a course similar to, but not equivalent to STAT 2550, then they might get credit for STAT 2500 or STAT 2xx3. In those cases the "or equivalent" statement will create an advising demand that will likely be placed on Math & Stats as well as Biology. STAT 2550 is credit restricted with other courses, but we would not call these "equivalent".

If you want to accept courses like STAT 2500 or 2xx3 or PSYC 2910 then these courses should be specifically listed:

"5. Statistics 2550 or 2500, or Psychology 2910."

You could also say something like, "5. Statistics 2550, or any course with a credit restriction with 2550."

The same comment goes for the "or equivalent" listed in the 11.2.4.1 Honours in Biology section.

Thanks,
Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Dean of Science [mailto:deansci@mun.ca]
Sent: October-01-18 9:03 AM
To: Amina Ahmed Mahmood <aamahmood@mun.ca>; Annie Mercier <amercier@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Valerie Booth <vbooth@mun.ca>; Sharene Bungay <sharene@mun.ca>; 'Math & Stats' <mathconsult@mun.ca>

Subject: FW: Consultation on Calendar Changes - Biology

Importance: High

From: Jody-Lynn Burke

Sent: September-28-18 4:03 PM

Subject: Consultation on Calendar Changes - Biology

Importance: High

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-17-18 4:03 PM
To: 'Math Consult'
Cc: 'Annie Mercier'; 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Hi Tara,

Thank you for your feedback. We are happy to make your suggested changes as it was not the intention of the department to add to the advising burden of the Math and Stats department.

Our undergraduate committee has agreed to replace all references of “Statistics 2550 (or equivalent)” with “Statistics 2550, or any course with a credit restriction with 2550.”

As this change will affect the Joint Major and Honours in Marine Biology, I’ve copied Annie Mercier on my response.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

From: Math Consult <mathconsult@mun.ca>
Sent: October-03-18 10:13 AM
To: Jody-Lynn Burke <jrotchford@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hi Jody,

I’m concerned that the statement of the stats requirement can create an unnecessary advising burden that may fall on the Math & Stats department.

Under 11.2.3.1 Major in Biology, one of the requirements is listed as: “5. Statistics 2550 (or equivalent)”. What counts as “equivalent”, and who will evaluate what equivalent courses will be accepted?

There are no Memorial courses that we would say are equivalent to STAT 2550. If a student has done an equivalent course at another school, then they should apply for a transfer credit. If the course is equivalent to STAT 2550 then they will get credit for STAT 2550 and so “or equivalent” is not needed.

If a student has done a course similar to, but not equivalent to STAT 2550, then they might get credit for STAT 2500 or STAT 2xx3. In those cases the “or equivalent” statement will create an advising demand that will likely be placed on Math & Stats as well as Biology. STAT 2550 is credit restricted with other courses, but we would not call these “equivalent”.

If you want to accept courses like STAT 2500 or 2xx3 or PSYC 2910 then these courses should be specifically listed:

“5. Statistics 2550 or 2500, or Psychology 2910.”

You could also say something like, “5. Statistics 2550, or any course with a credit restriction with 2550.”

The same comment goes for the “or equivalent” listed in the 11.2.4.1 Honours in Biology section.

Thanks,
Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Dean of Science [<mailto:deansci@mun.ca>]

Sent: October-01-18 9:03 AM

To: Amina Ahmed Mahmood <aamahmood@mun.ca>; Annie Mercier <amercier@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Valerie Booth <vbooth@mun.ca>; Sharene Bungay <sharene@mun.ca>; 'Math & Stats' <mathconsult@mun.ca>

Subject: FW: Consultation on Calendar Changes - Biology

Importance: High

From: Jody-Lynn Burke

Sent: September-28-18 4:03 PM

Subject: Consultation on Calendar Changes - Biology

Importance: High

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
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Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021

Jody-Lynn Burke

From: Math Consult <mathconsult@mun.ca>
Sent: October-18-18 1:44 PM
To: Jody-Lynn Burke
Cc: 'Annie Mercier'; 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Cheers, that's great! Thanks, -Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Jody-Lynn Burke [mailto:jrotchford@mun.ca]
Sent: October-17-18 4:03 PM
To: Math Consult <mathconsult@mun.ca>
Cc: Annie Mercier <amercier@mun.ca>; Suzanne Dufour <sdufour@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

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If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

From: Math Consult <mathconsult@mun.ca>
Sent: October-03-18 10:13 AM
To: Jody-Lynn Burke <jrotchford@mun.ca>
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Thanks,
Tara

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Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Dean of Science [<mailto:deansci@mun.ca>]

Sent: October-01-18 9:03 AM

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Subject: FW: Consultation on Calendar Changes - Biology

Importance: High

From: Jody-Lynn Burke

Sent: September-28-18 4:03 PM

Subject: Consultation on Calendar Changes - Biology

Importance: High

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Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Davis,Erin <emdavis@mun.ca>
Sent: October-04-18 11:17 AM
To: jodyb@mun.ca
Subject: FW: Consultation on Calendar Changes - Biology
Attachments: Calendar Consultation - Change to Joint Major in Marine Biology.pdf; Calendar Consultation - Joint Honours in Marine Biology.pdf; Calendar Consultation - Change to Biology Majors.pdf; image001.png; image002.jpg

Importance: High

Categories: Orange Category

Hi Jody,

Pharmacy does not anticipate any impact to our program and we support these changes.

Erin
DR. ERIN DAVIS
ASSOCIATE DEAN UNDERGRADUATE STUDIES
Assistant Professor | School of Pharmacy
Clinical Assistant Professor | Discipline of Family Medicine
Memorial University of Newfoundland

Health Sciences Centre
300 Prince Philip Dr | St. John's, NL | A1B 3V6
P 709 777 7232 | F 709 777 7044

www.mun.ca/pharmacy

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Jody-Lynn Burke

From: Rohr, Linda
Sent: October-05-18 8:24 AM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody,

I have reviewed the proposed changes to Biology and have no concerns.

Linda

Linda E. Rohr PhD
Dean, School of Human Kinetics & Recreation
Memorial University
t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca
PE 2027

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: Friday, September 28, 2018 at 4:02 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, "lrobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>, Linda Rohr <lerohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "Sutherland, Ian D" <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>, Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology

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- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody-Lynn Burke

From: Mackenzie, Theresa
Sent: October-10-18 11:20 AM
To: Jody-Lynn Burke
Cc: Newhook, Rebecca; Yolanda Wiersma; sdufour@mun.ca
Subject: Re: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody—just in case these weren't caught:

- In the document "Changes to Biology Majors 2", under the section "Calendar Entry After changes", the list of degrees is missing the major/honours co-op degree.
- In the document "Joint Honours in Marine Biology (2)", under "Secondary Calendar Changes", the old programs are still listed (cell and molecular, ecology and conservation, marine) but the major/honours co-op degree is missing from the list.

Cheers,
Theresa

Theresa Mackenzie

Academic Staff Member, Co-operative Education
Memorial University (Faculty of Humanities and Social Sciences, Faculty of Science)
t:709.864.2402 f:709.864.4000 e: tmackenz@mun.ca

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: Wednesday, October 10, 2018 at 11:04 AM
To: Rebecca Newhook <rnewhook@mun.ca>, Suzanne Dufour <sdufour@mun.ca>, Yolanda Wiersma <ywiersma@mun.ca>, Theresa Mackenzie <tmackenz@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hi Rebecca,

The first three changes have been incorporated into our proposal.

We don't anticipate significant scheduling conflicts with the new concentrations as we've removed the 2 required courses that were part of the old Majors.

At this point in time there are no plans to offer a co-op option for the Joint Major or Honours. The structure of both programs makes offering a co-op option impossible.

We are confident that our Aquatic Life/Co-op Concentration will meet the needs of any student wishing to pursue a marine biology focused area of study.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

From: Newhook, Rebecca
Sent: October-05-18 3:52 PM
To: Suzanne Dufour <sdufour@mun.ca>; Yolanda Wiersma <ywiersma@mun.ca>; Mackenzie, Theresa <tmackenz@mun.ca>; Jody-Lynn Burke <jrotchford@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hello all,

Thank you for the opportunity to review the Department of Biology's proposed concentrations. We agree that the proposed concentration in Aquatic Life will be beneficial for biology co-op students and will address the loss of the Marine Biology co-op option. We endorse establishing this and the other biology concentrations in the proposal.

We present some comments and minor additions below that we would like to see included if they can be accommodated:

Section 11.2.3.5 Major in Biology (Co-operative) Program (BCOP)

- "Students complete three work terms, which consist of full-time, normally paid employment..." While we expect most students will secure paid work, there are occasions when students might wish to accept an unpaid but valuable opportunity.
- the entry requirements should be clarified to say that "a student must have complete the second year Biology Core before the start of WT1 in the spring semester." Students are confused and think they need to have completed these courses before admission.
- In the general management of the BCOP, "developing employment opportunities and monitoring and evaluating students during the work term."

Section 11.2.4.6 Biology Concentrations

- "Particular attention should be paid to necessary prerequisite when scheduling courses. Students should consult with the Academic Program Officer regarding the availability of courses applicable to their chosen concentration." Might this restrict the ability of student to participate in co-op or require students to complete more spring work terms? Will courses be offered in such a way that co-op students can complete at least one work term in fall or winter?

Is there an intention (or interest) for the Joint Major and Honours in Marine Biology to include a co-op option? This might be a conversation for a future date.

We realize that comments at this late stage are not ideal, however we have not had the opportunity to review these proposals previously. We would welcome the opportunity to be more involved with BUGS in order to participate more fully in departmental changes that have a direct impact on our work with co-op students in Biology.

Best regards,
Rebecca

Rebecca Newhook

Academic Staff Member in Co-operative Education
Faculty of Science and Faculty of Humanities & Social Sciences
Memorial University of Newfoundland
Science Building, SN-1062
t:709.864.4098 f:709.864.4000 e:rnewhook@mun.ca
www.linkedin.com/in/rebeccanewhook @RebeccaNewhook

For a full list of Memorial's Science and Humanities & Social Sciences co-op programs click [here](#)

From: Suzanne Dufour [<mailto:sdufour@mun.ca>]
Sent: October-05-18 9:01 AM
To: Newhook, Rebecca <rnewhook@mun.ca>; Yolanda Wiersma <ywiersma@mun.ca>; Mackenzie, Theresa <tmackenz@mun.ca>; Jody-Lynn Burke <jrotchford@mun.ca>
Subject: Fwd: Consultation on Calendar Changes - Biology

Thanks Rebecca, an email would be great (no need for a formal letter). Here are the proposals that were circulated from our Department on September 28.

Best wishes,

Suzanne

----- Forwarded Message -----

Subject: Consultation on Calendar Changes - Biology

Date: Fri, 28 Sep 2018 18:32:34 +0000

From: Jody-Lynn Burke <jrotchford@mun.ca>

To: Faculty of Humanities and Social Sciences <hss@mun.ca>, Bauer, Larry <lbauer@mun.ca>, Collett, Meghan <mcollett@mun.ca>, engrconsult@mun.ca <engrconsult@mun.ca>, lrobinson@grenfell.mun.ca <lrobinson@grenfell.mun.ca>, ssedean@grenfell.mun.ca <ssedean@grenfell.mun.ca>, thennessey@grenfell.mun.ca <thennessey@grenfell.mun.ca>, Rohr, Linda <lerohr@mun.ca>, miugconsultations@mi.mun.ca <miugconsultations@mi.mun.ca>, deanofmedicine@med.mun.ca <deanofmedicine@med.mun.ca>, Sutherland, Ian D <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, pharminfo@mun.ca <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk@mun.ca <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>

CC: Suzanne Dufour <sdufour@mun.ca>, Annie Mercier <amercier@mun.ca>

Dear colleagues,

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If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Jody-Lynn Burke

From: vbooth <vbooth@mun.ca>
Sent: October-10-18 4:08 PM
To: Jody-Lynn Burke; Suzanne Dufour
Cc: Biochemistry Head
Subject: Fwd: Consultation on Calendar Changes - Biology
Attachments: Calendar Consultation - Change to Joint Major in Marine Biology.pdf; Untitled attachment 00265.htm; Calendar Consultation - Joint Honours in Marine Biology.pdf; Untitled attachment 00268.htm; Calendar Consultation - Change to Biology Majors.pdf; Untitled attachment 00271.htm

Importance: High

Categories: Orange Category

Dear Jody, Suzanne and the Biology undergrad studies committee,

Thank you for the opportunity to provide feedback. The proposal concerning the new Biology Concentrations was discussed at a recent Biochemistry Undergraduate Studies committee meeting. We were grateful for the efforts that had been made to try to address the concerns we'd voiced with the "pre-consultation" version of the proposal. There still remain some concerns, which I will provide here, in particular for the consideration of FoSCUGS and other committees that will be discussing and voting on the proposal. However, the concerns are not so pressing that Biochemistry feels the need to stand in opposition to the proposal as a whole.

We do feel that the general idea of offering "concentrations" is of positive benefit to students - it can be hard to decide which courses to take and the concentrations provide a nice guide for sets of courses that make sense, depending on where the interests of a particular student lie.

The Biochem Undergrad Studies still feel that the Concentration 4 on "Biology of Health Professions" is light on "health"-related content and potentially mis-leading for students. There was also concern expressed about the number of places in Med 310 A/B - especially since these courses are integral to Biochemistry Honours, Biochemistry (Nutrition) Majors, and Biochemistry (Nutrition) Honours programs. Historically, we find that Med 310 A/B fills up and interested Faculty of Science students do get turned away. Recent communications from the Faculty of Medicine about Med 310 A/B have been positive in that there seems to be a willingness to try to accommodate as many students as possible. Hopefully these efforts will continue as the course instructors and administration evolve. We think it will continue to be important to keep in touch with Medicine to try to keep spaces open for Science students in Med 310 A/B. With all those constraints in mind, it was good to see Med 310A/B is not an absolute necessity for the "Health Professions" concentration, though we have to imagine that all or most students who choose to do a concentration in Health Professions will want to get into Med 310.

Finally, it was suggested that you might consider if Bioc 3107 (soon to become 3207) might be appropriate for inclusion in the list for Concentration 7 on "Molecular, Microbial, and Cell Biology."

Best wishes,

Valerie

.....
Valerie Booth
Professor
Deputy Head (undergraduate) Department of Biochemistry and
Department of Physics and Physical Oceanography
Memorial University of Newfoundland
St. John's, NL, A1B 3X9, Canada

phone 709 864-4523 fax: 709 864-2422

homepage: <http://www.faculty.mun.ca/vbooth/>

Begin forwarded message:

From: Dean of Science <deansci@mun.ca>
Subject: FW: Consultation on Calendar Changes - Biology
Date: October 1, 2018 at 9:02:30 AM NDT
To: Amina Ahmed Mahmood <aamahmood@mun.ca>, Annie Mercier <amercier@mun.ca>, Chemistry <chemconsult@mun.ca>, Computer Science consultation <compsci@mun.ca>, Earth Sciences <eascugcon@mun.ca>, Ivan Saika-Voivod <saika@mun.ca>, Psychology consult <psychdeputyhead@mun.ca>, Suzanne Dufour <sdufour@mun.ca>, "Associate Dean of Science (Undergraduate)" <adsu@mun.ca>, Valerie Booth <vbooth@mun.ca>, Sharene Bungay <sharene@mun.ca>, "Math & Stats" <mathconsult@mun.ca>

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If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University

Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-17-18 3:40 PM
To: 'vbooth'
Cc: 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Hi Valerie,

Thank you for your feedback and your support.

Our Biology for Health Professions concentration is designed to assist Biology students in pursuing additional post-secondary training in a broad range of professional health programs (medicine, veterinary medicine, optometry, physical therapy, dentistry, pharmacy, etc); the title emphasizes that this is a Biology program. The courses we have chosen to include will provide students with a firm foundation in genetics, microbiology, molecular and cell biology, physiology, and endocrinology.

We have discussed, at length, with Medicine the number of required seats in MED 310A/B and they are confident they can accommodate our students as we transition to a concentration model.

With regards to BIOC 3107 (soon to be 3207), we would be delighted to include it as an option for our Molecular, Microbial, and Cell Biology concentration.

If you have any questions, please let me know

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

From: vbooth <vbooth@mun.ca>
Sent: October-10-18 4:08 PM
To: Jody-Lynn Burke <jodyb@mun.ca>; Suzanne Dufour <sdufour@mun.ca>
Cc: Biochemistry Head <biohead@mun.ca>
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Finally, it was suggested that you might consider if Bioc 3107 (soon to become 3207) might be appropriate for inclusion in the list for Concentration 7 on “Molecular, Microbial, and Cell Biology.”

Best wishes,

Valerie

.....
Valerie Booth
Professor
Deputy Head (undergraduate) Department of Biochemistry and
Department of Physics and Physical Oceanography
Memorial University of Newfoundland
St. John's, NL, A1B 3X9, Canada

phone 709 864-4523 fax: 709 864-2422

homepage: <http://www.faculty.mun.ca/vbooth/>

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Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Annie Mercier <amercier@mun.ca>
Sent: October-16-18 8:04 AM
To: Jody-Lynn Burke
Cc: Fletcher, Garth
Subject: Re: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody:

We are of course supportive of the updated Joint Major and new Joint Honours in Marine Biology, having worked on this together from the onset. We suggested only a few minor adjustments to the final versions that were circulated, i.e. clarification of the necessity to add "(or Biology 3710)" when indicating that OCSC 2000 must be completed for admission, and encouraging students to consult with both departments early on.

We are also supportive of the proposed revisions to the Biology Majors including the introduction of areas of concentrations. The only comment received during discussions inside our undergraduate committee was a question about the degree to which the concentration in "Aquatic Life" overlaps with the Joint Major in Marine Biology as the concentration is largely marine focused. Also, we were wondering about the courses BIOL 4910, 4911 and 4912, which are not explicitly described in the Calendar, and are listed among the choices for the different concentrations.

All the best,
 Annie

Annie Mercier, PhD
 Professor and Deputy Head,
 Department of Ocean Sciences
 Memorial University (Ocean Sciences Centre)
 St. John's, NL, Canada, A1C 5S7
 Tel: (709) 864-2011
 Email: amercier@mun.ca
www.mun.ca/osc/amercier/bio.php

On 28/09/2018 4:02 PM, Jody-Lynn Burke wrote:

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-17-18 4:02 PM
To: 'Annie Mercier'
Cc: 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Hi Annie,

Thank you for your feedback and your support.

Although there is some overlap between our proposed concentration in Aquatic Life and the Joint Major, the two programs are quite different, as the Joint Major provides students with a more comprehensive foundation in Ocean Sciences/oceanography and applied disciplines (Fisheries and Aquaculture), while the Aquatic Life concentration has a more general focus on the biology of aquatic organisms. In addition to marine content, several of the courses listed within the Aquatic Life listing also explore freshwater, estuarine and fjordic environments (3014, 3050, 3712, 3714, 3715, 4601). The soon to be advertised "Land-Sea Interface" faculty position should allow us to expand our range of freshwater and estuarine courses.

BIOL 4910-4912 are our special topics courses, as indicated in the calendar. They cover a range of topics in specialized fields in Biology and may be offered at the Bonne Bay Field Station, at the Harlow campus or elsewhere, as appropriate.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
 Department of Biology, Memorial University
 Office: (709) 864 8021
 E-mail: jodyb@mun.ca

From: Annie Mercier <amercier@mun.ca>
Sent: October-16-18 8:04 AM
To: Jody-Lynn Burke <jrotchford@mun.ca>
Cc: Fletcher, Garth <fletcher@mun.ca>
Subject: Re: Consultation on Calendar Changes - Biology

Hi Jody:

We are of course supportive of the updated Joint Major and new Joint Honours in Marine Biology, having worked on this together from the onset. We suggested only a few minor adjustments to the final versions that were circulated, i.e. clarification of the necessity to add "(or Biology 3710)" when indicating that OCSC 2000 must be completed for admission, and encouraging students to consult with both departments early on.

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All the best,
Annie

Annie Mercier, PhD
Professor and Deputy Head,
Department of Ocean Sciences
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Tel: (709) 864-2011
Email: amercier@mun.ca
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- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: MIUG Consultations <MIUGconsultations@mi.mun.ca>
Sent: October-17-18 2:19 PM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody,

Thank you for the opportunity to review and comment on the proposal for calendar changes for Biology. These changes were distributed internally and no concerns were raised regarding impacts on Marine Institute programs. We support the proposal.

Regards,
Bev

Bev Fleet
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0369
FAX: 709-778-0535
Bev.Fleet@mi.mun.ca

From: Jody-Lynn Burke [mailto:jrotchford@mun.ca]
Sent: Friday, September 28, 2018 4:03 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Irobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca; Rohr, Linda <lerohr@mun.ca>; MIUG Consultations <MIUGconsultations@mi.mun.ca>; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>; Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology
Importance: High

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

Jody-Lynn Burke

From: Engineering Consult <engrconsult@mun.ca>
Sent: October-17-18 3:08 PM
To: Jody-Lynn Burke
Cc: Fisher, Andrew; Edmunds, Jayde; Bruce Quinton
Subject: Re: Consultation on Calendar Changes - Biology

Importance: High

Categories: Orange Category

Dear Ms. Burke,

Thank you for the opportunity to comment on the proposed Calendar changes to the Biology and Marine Biology programs.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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 2018-09-28 16:02, Jody-Lynn Burke wrote:

> Dear colleagues,
>
> The purpose of this email is to extend an opportunity for you to
> provide feedback on the attached calendar change proposals. Please
> find attached proposals relating to:
>
> * Elimination of multiple Biology Majors and the introduction of
> optional areas of concentration
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> the Department of Biology and the Department of Ocean Sciences
> * Introduction of the Joint Honors in Marine Biology; offered jointly
> by the Department of Biology and the Department of Ocean Sciences
>
> Your feedback, at your earliest convenience, is appreciated.
>
> If you have any questions, please don't hesitate to contact me.
>
> JODY BURKE, BSC.(HONS), M.ED, PGC(QM) – ACADEMIC PROGRAM OFFICER
>
> Department of Biology, Memorial University
>
> Office: (709) 864 8021

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): Joint Honours in Marine Biology
- ☐ 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

Joint Honours in Marine Biology

REVISED PROGRAM TITLE

NA

RATIONALE

The Joint Major in Marine Biology was first offered during the 2017-2018 academic year. As the Major grows and evolves, it is important for students to have the opportunity to continue their studies and ladder their Major into an Honours program.

The Joint Honours in Marine Biology will capitalize on the existing strengths of the Department of Biology and the Department of Ocean Sciences to provide a foundation in ocean-related topics that is complemented by core biology courses. Offering additional undergraduate opportunities in marine biology aligns with Memorial's strategic plan, particularly in the context of the newly funded Ocean Frontier Institute.

A separate proposal from the Department of Biology will address the removal of their existing Honours in Biology (Marine) program.

CALENDAR CHANGES

NA

CALENDAR ENTRY AFTER CHANGES

10.2.21 Joint Honours in Marine Biology

The Joint Honours in Marine Biology is jointly administered by the Department of Ocean Sciences and the Department of Biology. To be eligible for admission, students would normally follow the requirements for the Joint Major in Marine Biology. Specifically, students must have completed Biology 2060, 2250, 2600, and 2900 and Ocean Sciences 2000 (or Biology 3710), 2001, 2100 and 2300 and obtained in these courses a grade of "B" or better, or an average of 75% or higher. Selection is based on academic performance in the required courses.

Students who wish to be admitted to this programs must submit an "Application for Admission to Honours Program Faculties of Humanities and Social Sciences or Science" to the Department of Biology and the Department of Ocean Sciences.

The following courses will be required:

1. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses;
2. Mathematics 1000;
3. Earth Sciences 1000;
4. Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550;
5. Physics 1020 and 1021 (or 1050 and 1051);
6. Chemistry 1050 and 1051 (or Chemistry 1200 and 1001), and Chemistry 2400 and 2401;
7. Biochemistry 2201 or the former 2101;
8. Biology 1001, 1002, 2060, 2122, 2250 (or Biochemistry 2100), 2600, 2900, 3710 (or Ocean Sciences 2000) and 3711;
9. Ocean Sciences 1000, 2000 (or Biology 3710), 2001, 2100, 2300 and 2500;
10. Additional courses to complete a required 69 combined credit hours in Biology and Ocean Sciences with a minimum of 30 credit hours in either subject (except Biology 2040, 2041, 2120, 3053, and 3820). A minimum of 9 credit hours in Biology at the 3000/4000 level and 15 credit hours in Ocean Sciences at the 3000/4000 level is required;
11. Either Biology 499A and 499B or Ocean Sciences 499A and 499B; and
12. A sufficient number of elective courses to bring the degree total to 120 credit hours.

Notes:

1. *Courses cross listed between Biology and Ocean Sciences can only count for one subject or the other.*
2. *A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.*

SECONDARY CALENDAR CHANGES

11.2 Biology

www.mun.ca/biology

The following undergraduate programs are available in the Department:

1. Biochemistry and Cell Biology Joint Honours
2. Biology and Earth Sciences (Geology) Joint Honours
3. Biology and Psychology Joint Honours
4. Biology and Psychology (Behavioural Neuroscience) Joint Honours
5. Biology and Statistics Joint Honours
6. Joint Major or Joint Honours in Marine Biology
7. Major or Honours or Major (Co-operative) or Honours (Co-operative) in Biology
8. Biology Concentrations
9. Minor in Biology

11.9 Ocean Sciences

www.mun.ca/osc

The Department of Ocean Sciences is the newest Department within the Faculty of Science. It was created in 2012, from the transition of the Ocean Sciences Centre, a research unit and facility that was first opened in 1967. The Department's mandate as an interdisciplinary unit is to focus on increasing our understanding of biological and chemical processes within the oceans, and how they relate to aquaculture and other applied marine fields.

The Department offers graduate programs in Marine Biology outlined under School of Graduate Studies.

The Department offers the following undergraduate programs:

1. Minor in Oceanography
2. Minor in Sustainable Aquaculture and Fisheries Ecology
3. Major in Ocean Sciences
4. Major in Ocean Sciences (Environmental Systems)
5. Joint Major or Joint Honours in Marine Biology

~~Details of the Joint Major in Marine Biology programs can be found under Joint Majors are provided under Joint Program Regulations.~~

SECONDARY CALENDAR ENTRIES AFTER CHANGES

11.2 Biology

www.mun.ca/biology

The following undergraduate programs are available in the Department:

1. Biochemistry and Cell Biology Joint Honours
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4. Biology and Psychology (Behavioural Neuroscience) Joint Honours
5. Biology and Statistics Joint Honours
6. Joint Major or Joint Honours in Marine Biology
7. Major or Honours or Major (Co-operative) or Honours (Co-operative) in Biology
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5. Joint Major or Joint Honours in Marine Biology

Details of joint programs are provided under Joint Program Regulations.

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Appendix Page

CONSULTATIONS SOUGHT

Academic Unit	Response Received?
Humanities and Social Sciences	No
Business Administration	Yes
Education	No
Engineering and Applied Science	Yes
Grenfell Campus: Arts and Social Science Science and the Environment Fine Arts	No
Human Kinetics and Recreation	Yes
Marine Institute	Yes
Medicine	Yes
Music	No
Nursing	No
Pharmacy	Yes
Science: Math Biochemistry Ocean Sciences	Yes Yes Yes
Social Work	Yes
Library	No

RESOURCE IMPLICATIONS

NA

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS
NA

Jody-Lynn Burke

From: Lawrence Bauer <lbauer@mun.ca>
Sent: September-28-18 4:13 PM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology

Importance: High

Categories: Orange Category

Hello:

Thank you for the opportunity to comment on this proposal. The Faculty of Business Administration has no concerns with the proposed changes.

--larry

On Sep 28, 2018, at 4:02 PM, Jody-Lynn Burke <jrotchford@mun.ca> wrote:

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

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Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

<Calendar Consultation - Change to Joint Major in Marine Biology.pdf><Calendar Consultation - Joint Honours in Marine Biology.pdf><Calendar Consultation - Change to Biology Majors.pdf>

Larry Bauer, Ph.D.
Associate Professor of Finance
Associate Dean (Undergraduate Programs)
Faculty of Business Administration
Memorial University of Newfoundland
St. John's Nfld, A1B 3X5

www: <http://www.business.mun.ca>

e-mail: lbauer@mun.ca

Tel: (709) 864-8512

Fax: (709) 864-8954

SSRN: <http://ssrn.com/author=327175>

Jody-Lynn Burke

From: cvardy@mun.ca
Sent: October-01-18 11:40 AM
To: Jody-Lynn Burke
Subject: FW: Consultation on Calendar Changes - Biology
Attachments: Calendar Consultation - Change to Joint Major in Marine Biology.pdf; ATT00001.htm; Calendar Consultation - Joint Honours in Marine Biology.pdf; ATT00002.htm; Calendar Consultation - Change to Biology Majors.pdf; ATT00003.htm

Categories: Orange Category

Dear Ms. Burke

The Faculty of Medicine has had the opportunity to review the attached calendar consultations, in particular change to the Joint Master in Marine Biology, the Joint Honours in Marine Biology and the change to Biology majors and are supportive of all three.

Sincerely,

CATHY VARDY, MD, FRCPC | VICE DEAN AND PROFESSOR OF PEDIATRICS

Faculty of Medicine
Health Sciences Centre
Room M2M319
Memorial University of Newfoundland
St. John's, Newfoundland | A1B 3V6

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www.med.mun.ca/

***Vision:** Through excellence, we will integrate education, research and social accountability to advance the health of the people and communities we serve.*

[Destination Excellence: Faculty of Medicine Strategic Plan 2018-2023](#)

Follow us: Facebook www.facebook.com/MUNMedicine | Twitter www.twitter.com/MUNMed (optional)

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: September 28, 2018 at 4:02:34 PM NDT
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, "lrobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>, "Rohr, Linda" <lerohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "Sutherland, Ian D" <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>, Annie Mercier <amercier@mun.ca>
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If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: adeanugradswk
Sent: October-02-18 1:35 PM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hello Jody-Lynn,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs
School of Social Work, Memorial University
St. John's, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

From: Jody-Lynn Burke
Sent: September 28, 2018 4:03 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>; Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology
Importance: High

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- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

Jody-Lynn Burke

From: Math Consult <mathconsult@mun.ca>
Sent: October-03-18 10:13 AM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody,

I'm concerned that the statement of the stats requirement can create an unnecessary advising burden that may fall on the Math & Stats department.

Under 11.2.3.1 Major in Biology, one of the requirements is listed as: "5. Statistics 2550 (or equivalent)". What counts as "equivalent", and who will evaluate what equivalent courses will be accepted?

There are no Memorial courses that we would say are equivalent to STAT 2550. If a student has done an equivalent course at another school, then they should apply for a transfer credit. If the course is equivalent to STAT 2550 then they will get credit for STAT 2550 and so "or equivalent" is not needed.

If a student has done a course similar to, but not equivalent to STAT 2550, then they might get credit for STAT 2500 or STAT 2xx3. In those cases the "or equivalent" statement will create an advising demand that will likely be placed on Math & Stats as well as Biology. STAT 2550 is credit restricted with other courses, but we would not call these "equivalent".

If you want to accept courses like STAT 2500 or 2xx3 or PSYC 2910 then these courses should be specifically listed:

"5. Statistics 2550 or 2500, or Psychology 2910."

You could also say something like, "5. Statistics 2550, or any course with a credit restriction with 2550."

The same comment goes for the "or equivalent" listed in the 11.2.4.1 Honours in Biology section.

Thanks,
Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Dean of Science [mailto:deansci@mun.ca]
Sent: October-01-18 9:03 AM
To: Amina Ahmed Mahmood <aamahmood@mun.ca>; Annie Mercier <amercier@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Valerie Booth <vbooth@mun.ca>; Sharene Bungay <sharene@mun.ca>; 'Math & Stats' <mathconsult@mun.ca>

Subject: FW: Consultation on Calendar Changes - Biology

Importance: High

From: Jody-Lynn Burke

Sent: September-28-18 4:03 PM

Subject: Consultation on Calendar Changes - Biology

Importance: High

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If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-17-18 4:03 PM
To: 'Math Consult'
Cc: 'Annie Mercier'; 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Hi Tara,

Thank you for your feedback. We are happy to make your suggested changes as it was not the intention of the department to add to the advising burden of the Math and Stats department.

Our undergraduate committee has agreed to replace all references of “Statistics 2550 (or equivalent)” with “Statistics 2550, or any course with a credit restriction with 2550.”

As this change will affect the Joint Major and Honours in Marine Biology, I’ve copied Annie Mercier on my response.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

From: Math Consult <mathconsult@mun.ca>
Sent: October-03-18 10:13 AM
To: Jody-Lynn Burke <jrotchford@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

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You could also say something like, “5. Statistics 2550, or any course with a credit restriction with 2550.”

The same comment goes for the “or equivalent” listed in the 11.2.4.1 Honours in Biology section.

Thanks,
Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Dean of Science [<mailto:deansci@mun.ca>]

Sent: October-01-18 9:03 AM

To: Amina Ahmed Mahmood <aamahmood@mun.ca>; Annie Mercier <amercier@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Valerie Booth <vbooth@mun.ca>; Sharene Bungay <sharene@mun.ca>; 'Math & Stats' <mathconsult@mun.ca>

Subject: FW: Consultation on Calendar Changes - Biology

Importance: High

From: Jody-Lynn Burke

Sent: September-28-18 4:03 PM

Subject: Consultation on Calendar Changes - Biology

Importance: High

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021

Jody-Lynn Burke

From: Math Consult <mathconsult@mun.ca>
Sent: October-18-18 1:44 PM
To: Jody-Lynn Burke
Cc: 'Annie Mercier'; 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Cheers, that's great! Thanks, -Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Jody-Lynn Burke [mailto:jrotchford@mun.ca]
Sent: October-17-18 4:03 PM
To: Math Consult <mathconsult@mun.ca>
Cc: Annie Mercier <amercier@mun.ca>; Suzanne Dufour <sdufour@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hi Tara,

Thank you for your feedback. We are happy to make your suggested changes as it was not the intention of the department to add to the advising burden of the Math and Stats department.

Our undergraduate committee has agreed to replace all references of "Statistics 2550 (or equivalent)" with "Statistics 2550, or any course with a credit restriction with 2550."

As this change will affect the Joint Major and Honours in Marine Biology, I've copied Annie Mercier on my response.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

From: Math Consult <mathconsult@mun.ca>
Sent: October-03-18 10:13 AM
To: Jody-Lynn Burke <jrotchford@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hi Jody,

I'm concerned that the statement of the stats requirement can create an unnecessary advising burden that may fall on the Math & Stats department.

Under 11.2.3.1 Major in Biology, one of the requirements is listed as: "5. Statistics 2550 (or equivalent)". What counts as "equivalent", and who will evaluate what equivalent courses will be accepted?

There are no Memorial courses that we would say are equivalent to STAT 2550. If a student has done an equivalent course at another school, then they should apply for a transfer credit. If the course is equivalent to STAT 2550 then they will get credit for STAT 2550 and so "or equivalent" is not needed.

If a student has done a course similar to, but not equivalent to STAT 2550, then they might get credit for STAT 2500 or STAT 2xx3. In those cases the "or equivalent" statement will create an advising demand that will likely be placed on Math & Stats as well as Biology. STAT 2550 is credit restricted with other courses, but we would not call these "equivalent".

If you want to accept courses like STAT 2500 or 2xx3 or PSYC 2910 then these courses should be specifically listed:

"5. Statistics 2550 or 2500, or Psychology 2910."

You could also say something like, "5. Statistics 2550, or any course with a credit restriction with 2550."

The same comment goes for the "or equivalent" listed in the 11.2.4.1 Honours in Biology section.

Thanks,
Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Dean of Science [<mailto:deansci@mun.ca>]

Sent: October-01-18 9:03 AM

To: Amina Ahmed Mahmood <aamahmood@mun.ca>; Annie Mercier <amercier@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Valerie Booth <vbooth@mun.ca>; Sharene Bungay <sharene@mun.ca>; 'Math & Stats' <mathconsult@mun.ca>

Subject: FW: Consultation on Calendar Changes - Biology

Importance: High

From: Jody-Lynn Burke

Sent: September-28-18 4:03 PM

Subject: Consultation on Calendar Changes - Biology

Importance: High

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Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Davis,Erin <emdavis@mun.ca>
Sent: October-04-18 11:17 AM
To: jodyb@mun.ca
Subject: FW: Consultation on Calendar Changes - Biology
Attachments: Calendar Consultation - Change to Joint Major in Marine Biology.pdf; Calendar Consultation - Joint Honours in Marine Biology.pdf; Calendar Consultation - Change to Biology Majors.pdf; image001.png; image002.jpg

Importance: High

Categories: Orange Category

Hi Jody,

Pharmacy does not anticipate any impact to our program and we support these changes.

Erin
DR. ERIN DAVIS
ASSOCIATE DEAN UNDERGRADUATE STUDIES
Assistant Professor | School of Pharmacy
Clinical Assistant Professor | Discipline of Family Medicine
Memorial University of Newfoundland

Health Sciences Centre
300 Prince Philip Dr | St. John's, NL | A1B 3V6
P 709 777 7232 | F 709 777 7044

www.mun.ca/pharmacy

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Jody-Lynn Burke

From: Rohr, Linda
Sent: October-05-18 8:24 AM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody,

I have reviewed the proposed changes to Biology and have no concerns.

Linda

Linda E. Rohr PhD
Dean, School of Human Kinetics & Recreation
Memorial University
t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca
PE 2027

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: Friday, September 28, 2018 at 4:02 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, "lrobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>, Linda Rohr <lerohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "Sutherland, Ian D" <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>, Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody-Lynn Burke

From: Mackenzie, Theresa
Sent: October-10-18 11:20 AM
To: Jody-Lynn Burke
Cc: Newhook, Rebecca; Yolanda Wiersma; sdufour@mun.ca
Subject: Re: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody—just in case these weren't caught:

- In the document "Changes to Biology Majors 2", under the section "Calendar Entry After changes", the list of degrees is missing the major/honours co-op degree.
- In the document "Joint Honours in Marine Biology (2)", under "Secondary Calendar Changes", the old programs are still listed (cell and molecular, ecology and conservation, marine) but the major/honours co-op degree is missing from the list.

Cheers,
Theresa

Theresa Mackenzie

Academic Staff Member, Co-operative Education
Memorial University (Faculty of Humanities and Social Sciences, Faculty of Science)
t:709.864.2402 f:709.864.4000 e: tmackenz@mun.ca

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: Wednesday, October 10, 2018 at 11:04 AM
To: Rebecca Newhook <rnewhook@mun.ca>, Suzanne Dufour <sdufour@mun.ca>, Yolanda Wiersma <ywiersma@mun.ca>, Theresa Mackenzie <tmackenz@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hi Rebecca,

The first three changes have been incorporated into our proposal.

We don't anticipate significant scheduling conflicts with the new concentrations as we've removed the 2 required courses that were part of the old Majors.

At this point in time there are no plans to offer a co-op option for the Joint Major or Honours. The structure of both programs makes offering a co-op option impossible.

We are confident that our Aquatic Life/Co-op Concentration will meet the needs of any student wishing to pursue a marine biology focused area of study.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

From: Newhook, Rebecca
Sent: October-05-18 3:52 PM
To: Suzanne Dufour <sdufour@mun.ca>; Yolanda Wiersma <ywiersma@mun.ca>; Mackenzie, Theresa <tmackenz@mun.ca>; Jody-Lynn Burke <jrotchford@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hello all,

Thank you for the opportunity to review the Department of Biology's proposed concentrations. We agree that the proposed concentration in Aquatic Life will be beneficial for biology co-op students and will address the loss of the Marine Biology co-op option. We endorse establishing this and the other biology concentrations in the proposal.

We present some comments and minor additions below that we would like to see included if they can be accommodated:

Section 11.2.3.5 Major in Biology (Co-operative) Program (BCOP)

- "Students complete three work terms, which consist of full-time, normally paid employment..." While we expect most students will secure paid work, there are occasions when students might wish to accept an unpaid but valuable opportunity.
- the entry requirements should be clarified to say that "a student must have complete the second year Biology Core before the start of WT1 in the spring semester." Students are confused and think they need to have completed these courses before admission.
- In the general management of the BCOP, "developing employment opportunities and monitoring and evaluating students during the work term."

Section 11.2.4.6 Biology Concentrations

- "Particular attention should be paid to necessary prerequisite when scheduling courses. Students should consult with the Academic Program Officer regarding the availability of courses applicable to their chosen concentration." Might this restrict the ability of student to participate in co-op or require students to complete more spring work terms? Will courses be offered in such a way that co-op students can complete at least one work term in fall or winter?

Is there an intention (or interest) for the Joint Major and Honours in Marine Biology to include a co-op option? This might be a conversation for a future date.

We realize that comments at this late stage are not ideal, however we have not had the opportunity to review these proposals previously. We would welcome the opportunity to be more involved with BUGS in order to participate more fully in departmental changes that have a direct impact on our work with co-op students in Biology.

Best regards,
Rebecca

Rebecca Newhook

Academic Staff Member in Co-operative Education
Faculty of Science and Faculty of Humanities & Social Sciences
Memorial University of Newfoundland
Science Building, SN-1062
t:709.864.4098 f:709.864.4000 e:rnewhook@mun.ca
www.linkedin.com/in/rebeccanewhook @RebeccaNewhook

For a full list of Memorial's Science and Humanities & Social Sciences co-op programs click [here](#)

From: Suzanne Dufour [<mailto:sdufour@mun.ca>]
Sent: October-05-18 9:01 AM
To: Newhook, Rebecca <rnewhook@mun.ca>; Yolanda Wiersma <ywiersma@mun.ca>; Mackenzie, Theresa <tmackenz@mun.ca>; Jody-Lynn Burke <jrotchford@mun.ca>
Subject: Fwd: Consultation on Calendar Changes - Biology

Thanks Rebecca, an email would be great (no need for a formal letter). Here are the proposals that were circulated from our Department on September 28.

Best wishes,

Suzanne

----- Forwarded Message -----

Subject: Consultation on Calendar Changes - Biology

Date: Fri, 28 Sep 2018 18:32:34 +0000

From: Jody-Lynn Burke <jrotchford@mun.ca>

To: Faculty of Humanities and Social Sciences <hss@mun.ca>, Bauer, Larry <lbauer@mun.ca>, Collett, Meghan <mcollett@mun.ca>, engrconsult@mun.ca <engrconsult@mun.ca>, lrobinson@grenfell.mun.ca <lrobinson@grenfell.mun.ca>, ssedean@grenfell.mun.ca <ssedean@grenfell.mun.ca>, thennessey@grenfell.mun.ca <thennessey@grenfell.mun.ca>, Rohr, Linda <lerohr@mun.ca>, miugconsultations@mi.mun.ca <miugconsultations@mi.mun.ca>, deanofmedicine@med.mun.ca <deanofmedicine@med.mun.ca>, Sutherland, Ian D <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, pharminfo@mun.ca <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk@mun.ca <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>

CC: Suzanne Dufour <sdufour@mun.ca>, Annie Mercier <amercier@mun.ca>

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
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Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Jody-Lynn Burke

From: vbooth <vbooth@mun.ca>
Sent: October-10-18 4:08 PM
To: Jody-Lynn Burke; Suzanne Dufour
Cc: Biochemistry Head
Subject: Fwd: Consultation on Calendar Changes - Biology
Attachments: Calendar Consultation - Change to Joint Major in Marine Biology.pdf; Untitled attachment 00265.htm; Calendar Consultation - Joint Honours in Marine Biology.pdf; Untitled attachment 00268.htm; Calendar Consultation - Change to Biology Majors.pdf; Untitled attachment 00271.htm

Importance: High

Categories: Orange Category

Dear Jody, Suzanne and the Biology undergrad studies committee,

Thank you for the opportunity to provide feedback. The proposal concerning the new Biology Concentrations was discussed at a recent Biochemistry Undergraduate Studies committee meeting. We were grateful for the efforts that had been made to try to address the concerns we'd voiced with the "pre-consultation" version of the proposal. There still remain some concerns, which I will provide here, in particular for the consideration of FoSCUGS and other committees that will be discussing and voting on the proposal. However, the concerns are not so pressing that Biochemistry feels the need to stand in opposition to the proposal as a whole.

We do feel that the general idea of offering "concentrations" is of positive benefit to students - it can be hard to decide which courses to take and the concentrations provide a nice guide for sets of courses that make sense, depending on where the interests of a particular student lie.

The Biochem Undergrad Studies still feel that the Concentration 4 on "Biology of Health Professions" is light on "health"-related content and potentially mis-leading for students. There was also concern expressed about the number of places in Med 310 A/B - especially since these courses are integral to Biochemistry Honours, Biochemistry (Nutrition) Majors, and Biochemistry (Nutrition) Honours programs. Historically, we find that Med 310 A/B fills up and interested Faculty of Science students do get turned away. Recent communications from the Faculty of Medicine about Med 310 A/B have been positive in that there seems to be a willingness to try to accommodate as many students as possible. Hopefully these efforts will continue as the course instructors and administration evolve. We think it will continue to be important to keep in touch with Medicine to try to keep spaces open for Science students in Med 310 A/B. With all those constraints in mind, it was good to see Med 310A/B is not an absolute necessity for the "Health Professions" concentration, though we have to imagine that all or most students who choose to do a concentration in Health Professions will want to get into Med 310.

Finally, it was suggested that you might consider if Bioc 3107 (soon to become 3207) might be appropriate for inclusion in the list for Concentration 7 on "Molecular, Microbial, and Cell Biology."

Best wishes,

Valerie

.....
Valerie Booth
Professor
Deputy Head (undergraduate) Department of Biochemistry and
Department of Physics and Physical Oceanography
Memorial University of Newfoundland
St. John's, NL, A1B 3X9, Canada

phone 709 864-4523 fax: 709 864-2422

homepage: <http://www.faculty.mun.ca/vbooth/>

Begin forwarded message:

From: Dean of Science <deansci@mun.ca>
Subject: FW: Consultation on Calendar Changes - Biology
Date: October 1, 2018 at 9:02:30 AM NDT
To: Amina Ahmed Mahmood <aamahmood@mun.ca>, Annie Mercier <amercier@mun.ca>, Chemistry <chemconsult@mun.ca>, Computer Science consultation <compsci@mun.ca>, Earth Sciences <eascugcon@mun.ca>, Ivan Saika-Voivod <saika@mun.ca>, Psychology consult <psychdeputyhead@mun.ca>, Suzanne Dufour <sdufour@mun.ca>, "Associate Dean of Science (Undergraduate)" <adsu@mun.ca>, Valerie Booth <vbooth@mun.ca>, Sharene Bungay <sharene@mun.ca>, "Math & Stats" <mathconsult@mun.ca>

From: Jody-Lynn Burke
Sent: September-28-18 4:03 PM
Subject: Consultation on Calendar Changes - Biology
Importance: High

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If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University

Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-17-18 3:40 PM
To: 'vbooth'
Cc: 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Hi Valerie,

Thank you for your feedback and your support.

Our Biology for Health Professions concentration is designed to assist Biology students in pursuing additional post-secondary training in a broad range of professional health programs (medicine, veterinary medicine, optometry, physical therapy, dentistry, pharmacy, etc); the title emphasizes that this is a Biology program. The courses we have chosen to include will provide students with a firm foundation in genetics, microbiology, molecular and cell biology, physiology, and endocrinology.

We have discussed, at length, with Medicine the number of required seats in MED 310A/B and they are confident they can accommodate our students as we transition to a concentration model.

With regards to BIOC 3107 (soon to be 3207), we would be delighted to include it as an option for our Molecular, Microbial, and Cell Biology concentration.

If you have any questions, please let me know

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

From: vbooth <vbooth@mun.ca>
Sent: October-10-18 4:08 PM
To: Jody-Lynn Burke <jodyb@mun.ca>; Suzanne Dufour <sdufour@mun.ca>
Cc: Biochemistry Head <biohead@mun.ca>
Subject: Fwd: Consultation on Calendar Changes - Biology
Importance: High

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Finally, it was suggested that you might consider if Bioc 3107 (soon to become 3207) might be appropriate for inclusion in the list for Concentration 7 on “Molecular, Microbial, and Cell Biology.”

Best wishes,

Valerie

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Valerie Booth
Professor
Deputy Head (undergraduate) Department of Biochemistry and
Department of Physics and Physical Oceanography
Memorial University of Newfoundland
St. John's, NL, A1B 3X9, Canada

phone 709 864-4523 fax: 709 864-2422

homepage: <http://www.faculty.mun.ca/vbooth/>

Begin forwarded message:

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Subject: FW: Consultation on Calendar Changes - Biology
Date: October 1, 2018 at 9:02:30 AM NDT
To: Amina Ahmed Mahmood <aamahmood@mun.ca>, Annie Mercier <amercier@mun.ca>, Chemistry <chemconsult@mun.ca>, Computer Science consultation <compsci@mun.ca>, Earth Sciences <eascugcon@mun.ca>, Ivan Saika-Voivod <saika@mun.ca>, Psychology consult <psychdeputyhead@mun.ca>, Suzanne Dufour <sdufour@mun.ca>, "Associate Dean of Science (Undergraduate)" <adsu@mun.ca>, Valerie Booth <vbooth@mun.ca>, Sharene Bungay <sharene@mun.ca>, "Math & Stats" <mathconsult@mun.ca>

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Sent: September-28-18 4:03 PM
Subject: Consultation on Calendar Changes - Biology
Importance: High

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Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Annie Mercier <amercier@mun.ca>
Sent: October-16-18 8:04 AM
To: Jody-Lynn Burke
Cc: Fletcher, Garth
Subject: Re: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody:

We are of course supportive of the updated Joint Major and new Joint Honours in Marine Biology, having worked on this together from the onset. We suggested only a few minor adjustments to the final versions that were circulated, i.e. clarification of the necessity to add "(or Biology 3710)" when indicating that OCSC 2000 must be completed for admission, and encouraging students to consult with both departments early on.

We are also supportive of the proposed revisions to the Biology Majors including the introduction of areas of concentrations. The only comment received during discussions inside our undergraduate committee was a question about the degree to which the concentration in "Aquatic Life" overlaps with the Joint Major in Marine Biology as the concentration is largely marine focused. Also, we were wondering about the courses BIOL 4910, 4911 and 4912, which are not explicitly described in the Calendar, and are listed among the choices for the different concentrations.

All the best,
 Annie

Annie Mercier, PhD
 Professor and Deputy Head,
 Department of Ocean Sciences
 Memorial University (Ocean Sciences Centre)
 St. John's, NL, Canada, A1C 5S7
 Tel: (709) 864-2011
 Email: amercier@mun.ca
www.mun.ca/osc/amercier/bio.php

On 28/09/2018 4:02 PM, Jody-Lynn Burke wrote:

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

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- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-17-18 4:02 PM
To: 'Annie Mercier'
Cc: 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Hi Annie,

Thank you for your feedback and your support.

Although there is some overlap between our proposed concentration in Aquatic Life and the Joint Major, the two programs are quite different, as the Joint Major provides students with a more comprehensive foundation in Ocean Sciences/oceanography and applied disciplines (Fisheries and Aquaculture), while the Aquatic Life concentration has a more general focus on the biology of aquatic organisms. In addition to marine content, several of the courses listed within the Aquatic Life listing also explore freshwater, estuarine and fjordic environments (3014, 3050, 3712, 3714, 3715, 4601). The soon to be advertised "Land-Sea Interface" faculty position should allow us to expand our range of freshwater and estuarine courses.

BIOL 4910-4912 are our special topics courses, as indicated in the calendar. They cover a range of topics in specialized fields in Biology and may be offered at the Bonne Bay Field Station, at the Harlow campus or elsewhere, as appropriate.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
 Department of Biology, Memorial University
 Office: (709) 864 8021
 E-mail: jodyb@mun.ca

From: Annie Mercier <amercier@mun.ca>
Sent: October-16-18 8:04 AM
To: Jody-Lynn Burke <jrotchford@mun.ca>
Cc: Fletcher, Garth <fletcher@mun.ca>
Subject: Re: Consultation on Calendar Changes - Biology

Hi Jody:

We are of course supportive of the updated Joint Major and new Joint Honours in Marine Biology, having worked on this together from the onset. We suggested only a few minor adjustments to the final versions that were circulated, i.e. clarification of the necessity to add "(or Biology 3710)" when indicating that OCSC 2000 must be completed for admission, and encouraging students to consult with both departments early on.

We are also supportive of the proposed revisions to the Biology Majors including the introduction of areas of concentrations. The only comment received during discussions inside our undergraduate committee was a question about the degree to which the concentration in "Aquatic Life" overlaps with the Joint Major in Marine Biology as the concentration is largely marine focused. Also, we were wondering about the courses BIOL 4910, 4911 and 4912, which are not explicitly described in the Calendar, and are listed among the choices for the different concentrations.

All the best,
Annie

Annie Mercier, PhD
Professor and Deputy Head,
Department of Ocean Sciences
Memorial University (Ocean Sciences Centre)
St. John's, NL, Canada, A1C 5S7
Tel: (709) 864-2011
Email: amercier@mun.ca
www.mun.ca/osc/amercier/bio.php

On 28/09/2018 4:02 PM, Jody-Lynn Burke wrote:

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: MIUG Consultations <MIUGconsultations@mi.mun.ca>
Sent: October-17-18 2:19 PM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody,

Thank you for the opportunity to review and comment on the proposal for calendar changes for Biology. These changes were distributed internally and no concerns were raised regarding impacts on Marine Institute programs. We support the proposal.

Regards,
Bev

Bev Fleet
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0369
FAX: 709-778-0535
Bev.Fleet@mi.mun.ca

From: Jody-Lynn Burke [mailto:jrotchford@mun.ca]
Sent: Friday, September 28, 2018 4:03 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Irobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca; Rohr, Linda <lrohr@mun.ca>; MIUG Consultations <MIUGconsultations@mi.mun.ca>; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>; Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology
Importance: High

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

Jody-Lynn Burke

From: Engineering Consult <engrconsult@mun.ca>
Sent: October-17-18 3:08 PM
To: Jody-Lynn Burke
Cc: Fisher, Andrew; Edmunds, Jayde; Bruce Quinton
Subject: Re: Consultation on Calendar Changes - Biology

Importance: High

Categories: Orange Category

Dear Ms. Burke,

Thank you for the opportunity to comment on the proposed Calendar changes to the Biology and Marine Biology programs.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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 2018-09-28 16:02, Jody-Lynn Burke wrote:

> Dear colleagues,
 >
 > The purpose of this email is to extend an opportunity for you to
 > provide feedback on the attached calendar change proposals. Please
 > find attached proposals relating to:
 >
 > * Elimination of multiple Biology Majors and the introduction of
 > optional areas of concentration
 > * Updates to the Joint Major in Marine Biology; offered jointly by
 > the Department of Biology and the Department of Ocean Sciences
 > * Introduction of the Joint Honors in Marine Biology; offered jointly
 > by the Department of Biology and the Department of Ocean Sciences
 >
 > Your feedback, at your earliest convenience, is appreciated.
 >
 > If you have any questions, please don't hesitate to contact me.
 >
 > JODY BURKE, BSC.(HONS), M.ED, PGC(QM) – ACADEMIC PROGRAM OFFICER
 >
 > Department of Biology, Memorial University
 >
 > Office: (709) 864 8021

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): Joint Major in Marine Biology
- ☐ 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

Joint Major in Marine Biology

REVISED PROGRAM TITLE

NA

RATIONALE

The Joint Major in Marine Biology was approved and offered for the first time in the 2017-2018 academic year. Since then, the Department of Biology and the Department of Ocean Sciences have worked continuously to improve upon the initial design of the program and to provide additional flexibility in course selection for students.

The following proposal recommends removing BIOC 3106 and reducing the admission requirements from 33 to 30 credit hours. These changes will allow students to more easily complete a Minor, if they so choose, and allow for the creation of a complementary Joint Honours in Marine Biology.

CALENDAR CHANGES

10 Joint Program Regulations

The following Joint Major, Joint Honours and Joint Option programs which lead to the awarding of a General Degree of Bachelor of Science or an Honours Degree of Bachelor of Science are offered by departments in the Faculty of Science. They are governed by [Programs of Study for the General Degree of Bachelor of Science](#) and [Programs of Study for the Honours Degree of Bachelor of Science](#) as appropriate.

A joint degree program, which leads to the awarding of both the General Degree of Bachelor of Science and the General Degree of Bachelor of Arts, can be found under the Faculty of Science at [Joint Degrees of Bachelor of Science and Bachelor of Arts](#) and under the Faculty of Humanities and Social Sciences at [Joint Degrees of Bachelor of Arts and Bachelor of Science](#).

Course descriptions are found at the end of the Faculty of Science section under [Course Descriptions](#).

10.1 Joint Majors

10.1.13 Marine Biology Joint Major

The Joint Major in Marine Biology is jointly administered by the Department of Ocean Sciences and the Department of Biology. ~~It consists of core courses in oceanography and biology, and additional courses in various Science subjects.~~ More information on

recommended courses and time tables can be found in the Handbook of Undergraduate Studies available on both departmental websites.

Students who wish to enroll in the program should seek academic advising well in advance to ensure they have completed the appropriate prerequisites. Entry to required courses may be limited and determined by academic performance. Students are advised to consult with the Department of Ocean Sciences and the Department of Biology at their earliest opportunity. Each student registered in the program will be assigned an an ~~faculty~~ advisor who should be consulted on academic issues, including course selection.

10.1.13.1 Admission Requirements

Admission to the program is based on academic standing. To be considered for admission to the program, students ~~must~~ will normally have completed ~~33 credit hours~~ with an overall average of at least 60%. The ~~the~~ following courses ~~must normally have been completed~~ (or their equivalents) with an overall average of at least 60%:

1. Biology 1001 and 1002 with an average grade of 65%;
2. Chemistry 1050 and 1051 ~~(or 1010 and 1011)~~ (or 1200 and 1001);
3. ~~Earth Sciences 1000;~~
4. Six credit hours in [Critical Reading and Writing \(CRW\)](#) courses, including at least 3 credit hours in English courses;
5. Mathematics 1000;
6. Ocean Sciences 1000 with a minimum grade of 65%; ~~and~~
7. Physics 1020 ~~and 1021 (or 1050 and 1051);~~ and
8. Physics 1021 (or 1051) or one Ocean Sciences course at the 2000 level.

~~Chemistry 1050 and 1051 (or 1010 and 1011) should be taken in the first year, as it is a prerequisite for other required courses in the programs, and delaying chemistry until second year may make it difficult to complete the program in the normal four years.~~

Students should be aware that delaying some of the above courses, particularly Chemistry 1050/1051, until second year may make it difficult to complete the program in the normal four years.

10.1.13.2 Program of Study

Students pursuing a Joint Major in Marine Biology are required to complete a minimum of ~~33 credit hours in Biology and 33 credit hours in Ocean Sciences as follows~~ of 60 combined credit hours from Biology and Ocean Sciences, with a minimum of 27 credit hours in either subject:

1. Six credit hours in [Critical Reading and Writing \(CRW\)](#) courses, including at least 3 credit hours in English courses;
2. Mathematics 1000;
3. Earth Sciences 1000;
4. Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550;
5. Physics 1020 and 1021 (or equivalent~~1050 and 1051)~~);

6. Chemistry 1050 and 1051 ~~(or 1010 and 1011)~~ (or 1200 and 1001), and 2440 (or 2400 and 2401);
7. Biochemistry 2201 or the former 2101, ~~and 3106~~;
8. Biology 1001, 1002, 2060, 2122, 2250 (or Biochemistry 2100), 2600, 2900, 3710 (or Ocean Sciences 2000) and 3711;
9. ~~additional courses required to complete 33 credit hours in Biology, except Biology 2040, 2041, 2120, 3053, and 3820, making sure the program includes an overall minimum of 6 credit hours in Biology at the 3000/4000 level;~~
10. Ocean Sciences 1000, 2000 (or Biology 3710), 2001, 2100, and 2500; ~~and at least one of Ocean Sciences 2200 or 2300;~~
- ~~additional courses required to complete 33 credit hours in Ocean Sciences, including a minimum of 12 credit hours at the 3000/4000 level; and~~
11. additional courses to complete the required 60 combined credit hours in Biology and Ocean Sciences with a minimum of 27 credit hours in either subject (except Biology 2040, 2041, 2120, 3053, and 3820). A minimum of 6 credit hours in Biology at the 3000/4000 level and 12 credit hours in Ocean Sciences at the 3000/4000 level is required; and
12. other courses as necessary to complete the minimum of 120 credit hours required for the General Degree of Bachelor of Science.

Notes:

1. *Courses cross listed between Biology and Ocean Sciences can only count for one subject or the other.*
2. *A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.*
3. *~~Students currently enrolled in the former Major in Biology (Marine) have the option of continuing the program as listed previously, or switch to the new Joint Major in Marine Biology outlined above.~~*
3. *Students are encouraged to take Biochemistry 3206 as it is a pre-requisite for several higher-level courses in Biology and in Ocean Sciences.*

CALENDAR ENTRY AFTER CHANGES

10 Joint Program Regulations

The following Joint Major, Joint Honours and Joint Option programs which lead to the awarding of a General Degree of Bachelor of Science or an Honours Degree of Bachelor of Science are offered by departments in the Faculty of Science. They are governed by [Programs of Study for the General Degree of Bachelor of Science](#) and [Programs of Study for the Honours Degree of Bachelor of Science](#) as appropriate.

A joint degree program, which leads to the awarding of both the General Degree of Bachelor of Science and the General Degree of Bachelor of Arts, can be found under the Faculty of Science at [Joint Degrees of Bachelor of Science and Bachelor of Arts](#) and under the Faculty of Humanities and Social Sciences at [Joint Degrees of Bachelor of Arts and Bachelor of Science](#).

Course descriptions are found at the end of the Faculty of Science section under [Course Descriptions](#).

10.1 Joint Majors

10.1.13 Marine Biology Joint Major

The Joint Major in Marine Biology is jointly administered by the Department of Ocean Sciences and the Department of Biology. More information on recommended courses and time tables can be found in the Handbook of Undergraduate Studies available on both departmental websites.

Students who wish to enroll in the program should seek academic advising well in advance to ensure they have completed the appropriate prerequisites. Entry to required courses may be limited and determined by academic performance. Students are advised to consult with the Department of Ocean Sciences or the Department of Biology at their earliest opportunity. Each student registered in the program will be assigned an advisor who should be consulted on academic issues, including course selection.

10.1.13.1 Admission Requirements

Admission to the program is based on academic standing. To be considered for admission to the program, students will normally have the following courses (or their equivalents) with an overall average of at least 60%:

1. Biology 1001 and 1002 with an average grade of 65%;
2. Chemistry 1050 and 1051 (or 1200 and 1001);
3. Six credit hours in [Critical Reading and Writing \(CRW\)](#) courses, including at least 3 credit hours in English courses;
4. Mathematics 1000;
5. Ocean Sciences 1000 with a minimum grade of 65%;
6. Physics 1020 (or 1050); and
7. Physics 1021 (or 1051) or one Ocean Sciences course at the 2000 level.

Students should be aware that delaying some of the above courses, particularly Chemistry 1050/1051, until second year may make it difficult to complete the program in the normal four years.

10.1.13.2 Program of Study

Students pursuing a Joint Major in Marine Biology are required to complete a minimum of 60 combined credit hours from Biology and Ocean Sciences, with a minimum of 27 credit hours in either subject:

1. Six credit hours in [Critical Reading and Writing \(CRW\)](#) courses, including at least 3 credit hours in English courses;
2. Mathematics 1000;
3. Earth Sciences 1000;
4. Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550;
3. Physics 1020 and 1021 (or 1050 and 1051);
4. Chemistry 1050 and 1051 (or 1200 and 1001), and 2400 and 2401;
5. Biochemistry 2201 or the former 2101;

6. Biology 1001, 1002, 2060, 2122, 2250 (or Biochemistry 2100), 2600, 2900, 3710 (or Ocean Sciences 2000) and 3711;
7. Ocean Sciences 1000, 2000 (or Biology 3710), 2001, 2100, and 2500;
8. additional courses to complete the required 60 combined credit hours in Biology and Ocean Sciences with a minimum of 27 credit hours in either subject (except Biology 2040, 2041, 2120, 3053, and 3820). A minimum of 6 credit hours in Biology at the 3000/4000 level and 12 credit hours in Ocean Sciences at the 3000/4000 level is required; and
9. other courses as necessary to complete the minimum of 120 credit hours required for the General Degree of Bachelor of Science.

Notes:

1. *Courses cross listed between Biology and Ocean Sciences can only count for one subject or the other.*
2. *A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.*
3. *Students are encouraged to take Biochemistry 3206 as an elective as it is a pre-requisite for several higher-level elective courses in Biology and in Ocean Sciences.*

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Appendix Page

CONSULTATIONS SOUGHT

Academic Unit	Response Received?
Humanities and Social Sciences	No
Business Administration	Yes
Education	No
Engineering and Applied Science	Yes
Grenfell Campus: Arts and Social Science Science and the Environment Fine Arts	No
Human Kinetics and Recreation	Yes
Marine Institute	Yes
Medicine	Yes
Music	No
Nursing	No
Pharmacy	Yes
Science: Math Biochemistry Ocean Sciences	Yes Yes Yes
Social Work	Yes
Library	No

RESOURCE IMPLICATIONS

NA

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

NA

Jody-Lynn Burke

From: Lawrence Bauer <lbauer@mun.ca>
Sent: September-28-18 4:13 PM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology

Importance: High

Categories: Orange Category

Hello:

Thank you for the opportunity to comment on this proposal. The Faculty of Business Administration has no concerns with the proposed changes.

--larry

On Sep 28, 2018, at 4:02 PM, Jody-Lynn Burke <jrotchford@mun.ca> wrote:

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

<Calendar Consultation - Change to Joint Major in Marine Biology.pdf><Calendar Consultation - Joint Honours in Marine Biology.pdf><Calendar Consultation - Change to Biology Majors.pdf>

Larry Bauer, Ph.D.
Associate Professor of Finance
Associate Dean (Undergraduate Programs)
Faculty of Business Administration
Memorial University of Newfoundland
St. John's Nfld, A1B 3X5

www: <http://www.business.mun.ca>

e-mail: lbauer@mun.ca

Tel: (709) 864-8512

Fax: (709) 864-8954

SSRN: <http://ssrn.com/author=327175>

Jody-Lynn Burke

From: cvardy@mun.ca
Sent: October-01-18 11:40 AM
To: Jody-Lynn Burke
Subject: FW: Consultation on Calendar Changes - Biology
Attachments: Calendar Consultation - Change to Joint Major in Marine Biology.pdf; ATT00001.htm; Calendar Consultation - Joint Honours in Marine Biology.pdf; ATT00002.htm; Calendar Consultation - Change to Biology Majors.pdf; ATT00003.htm

Categories: Orange Category

Dear Ms. Burke

The Faculty of Medicine has had the opportunity to review the attached calendar consultations, in particular change to the Joint Master in Marine Biology, the Joint Honours in Marine Biology and the change to Biology majors and are supportive of all three.

Sincerely,

CATHY VARDY, MD, FRCPC | VICE DEAN AND PROFESSOR OF PEDIATRICS

Faculty of Medicine
Health Sciences Centre
Room M2M319
Memorial University of Newfoundland
St. John's, Newfoundland | A1B 3V6

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***Vision:** Through excellence, we will integrate education, research and social accountability to advance the health of the people and communities we serve.*

[Destination Excellence: Faculty of Medicine Strategic Plan 2018-2023](#)

Follow us: Facebook www.facebook.com/MUNMedicine | Twitter www.twitter.com/MUNMed (optional)

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: September 28, 2018 at 4:02:34 PM NDT
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, "lrobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>, "Rohr, Linda" <lerohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "Sutherland, Ian D" <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>, Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology

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- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: adeanugradswk
Sent: October-02-18 1:35 PM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hello Jody-Lynn,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs
School of Social Work, Memorial University
St. John's, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

From: Jody-Lynn Burke
Sent: September 28, 2018 4:03 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>; Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology
Importance: High

Dear colleagues,

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- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

Jody-Lynn Burke

From: Math Consult <mathconsult@mun.ca>
Sent: October-03-18 10:13 AM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology
Categories: Orange Category

Hi Jody,

I'm concerned that the statement of the stats requirement can create an unnecessary advising burden that may fall on the Math & Stats department.

Under 11.2.3.1 Major in Biology, one of the requirements is listed as: "5. Statistics 2550 (or equivalent)". What counts as "equivalent", and who will evaluate what equivalent courses will be accepted?

There are no Memorial courses that we would say are equivalent to STAT 2550. If a student has done an equivalent course at another school, then they should apply for a transfer credit. If the course is equivalent to STAT 2550 then they will get credit for STAT 2550 and so "or equivalent" is not needed.

If a student has done a course similar to, but not equivalent to STAT 2550, then they might get credit for STAT 2500 or STAT 2xx3. In those cases the "or equivalent" statement will create an advising demand that will likely be placed on Math & Stats as well as Biology. STAT 2550 is credit restricted with other courses, but we would not call these "equivalent".

If you want to accept courses like STAT 2500 or 2xx3 or PSYC 2910 then these courses should be specifically listed:

"5. Statistics 2550 or 2500, or Psychology 2910."

You could also say something like, "5. Statistics 2550, or any course with a credit restriction with 2550."

The same comment goes for the "or equivalent" listed in the 11.2.4.1 Honours in Biology section.

Thanks,
 Tara

--

Tara Stuckless
 HH 3004, ext. 8914
 Chair, Undergraduate Studies Committee
 Dept. of Mathematics and Statistics

From: Dean of Science [mailto:deansci@mun.ca]
Sent: October-01-18 9:03 AM
To: Amina Ahmed Mahmood <aamahmood@mun.ca>; Annie Mercier <amercier@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Valerie Booth <vbooth@mun.ca>; Sharene Bungay <sharene@mun.ca>; 'Math & Stats' <mathconsult@mun.ca>

Subject: FW: Consultation on Calendar Changes - Biology

Importance: High

From: Jody-Lynn Burke

Sent: September-28-18 4:03 PM

Subject: Consultation on Calendar Changes - Biology

Importance: High

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

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- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
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Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-17-18 4:03 PM
To: 'Math Consult'
Cc: 'Annie Mercier'; 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Hi Tara,

Thank you for your feedback. We are happy to make your suggested changes as it was not the intention of the department to add to the advising burden of the Math and Stats department.

Our undergraduate committee has agreed to replace all references of “Statistics 2550 (or equivalent)” with “Statistics 2550, or any course with a credit restriction with 2550.”

As this change will affect the Joint Major and Honours in Marine Biology, I’ve copied Annie Mercier on my response.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

From: Math Consult <mathconsult@mun.ca>
Sent: October-03-18 10:13 AM
To: Jody-Lynn Burke <jrotchford@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hi Jody,

I’m concerned that the statement of the stats requirement can create an unnecessary advising burden that may fall on the Math & Stats department.

Under 11.2.3.1 Major in Biology, one of the requirements is listed as: “5. Statistics 2550 (or equivalent)”. What counts as “equivalent”, and who will evaluate what equivalent courses will be accepted?

There are no Memorial courses that we would say are equivalent to STAT 2550. If a student has done an equivalent course at another school, then they should apply for a transfer credit. If the course is equivalent to STAT 2550 then they will get credit for STAT 2550 and so “or equivalent” is not needed.

If a student has done a course similar to, but not equivalent to STAT 2550, then they might get credit for STAT 2500 or STAT 2xx3. In those cases the “or equivalent” statement will create an advising demand that will likely be placed on Math & Stats as well as Biology. STAT 2550 is credit restricted with other courses, but we would not call these “equivalent”.

If you want to accept courses like STAT 2500 or 2xx3 or PSYC 2910 then these courses should be specifically listed:

“5. Statistics 2550 or 2500, or Psychology 2910.”

You could also say something like, “5. Statistics 2550, or any course with a credit restriction with 2550.”

The same comment goes for the “or equivalent” listed in the 11.2.4.1 Honours in Biology section.

Thanks,
Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Dean of Science [<mailto:deansci@mun.ca>]

Sent: October-01-18 9:03 AM

To: Amina Ahmed Mahmood <aamahmood@mun.ca>; Annie Mercier <amercier@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Valerie Booth <vbooth@mun.ca>; Sharene Bungay <sharene@mun.ca>; 'Math & Stats' <mathconsult@mun.ca>

Subject: FW: Consultation on Calendar Changes - Biology

Importance: High

From: Jody-Lynn Burke

Sent: September-28-18 4:03 PM

Subject: Consultation on Calendar Changes - Biology

Importance: High

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021

Jody-Lynn Burke

From: Math Consult <mathconsult@mun.ca>
Sent: October-18-18 1:44 PM
To: Jody-Lynn Burke
Cc: 'Annie Mercier'; 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Cheers, that's great! Thanks, -Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Jody-Lynn Burke [mailto:jrotchford@mun.ca]
Sent: October-17-18 4:03 PM
To: Math Consult <mathconsult@mun.ca>
Cc: Annie Mercier <amercier@mun.ca>; Suzanne Dufour <sdufour@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hi Tara,

Thank you for your feedback. We are happy to make your suggested changes as it was not the intention of the department to add to the advising burden of the Math and Stats department.

Our undergraduate committee has agreed to replace all references of "Statistics 2550 (or equivalent)" with "Statistics 2550, or any course with a credit restriction with 2550."

As this change will affect the Joint Major and Honours in Marine Biology, I've copied Annie Mercier on my response.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

From: Math Consult <mathconsult@mun.ca>
Sent: October-03-18 10:13 AM
To: Jody-Lynn Burke <jrotchford@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hi Jody,

I'm concerned that the statement of the stats requirement can create an unnecessary advising burden that may fall on the Math & Stats department.

Under 11.2.3.1 Major in Biology, one of the requirements is listed as: "5. Statistics 2550 (or equivalent)". What counts as "equivalent", and who will evaluate what equivalent courses will be accepted?

There are no Memorial courses that we would say are equivalent to STAT 2550. If a student has done an equivalent course at another school, then they should apply for a transfer credit. If the course is equivalent to STAT 2550 then they will get credit for STAT 2550 and so "or equivalent" is not needed.

If a student has done a course similar to, but not equivalent to STAT 2550, then they might get credit for STAT 2500 or STAT 2xx3. In those cases the "or equivalent" statement will create an advising demand that will likely be placed on Math & Stats as well as Biology. STAT 2550 is credit restricted with other courses, but we would not call these "equivalent".

If you want to accept courses like STAT 2500 or 2xx3 or PSYC 2910 then these courses should be specifically listed:

"5. Statistics 2550 or 2500, or Psychology 2910."

You could also say something like, "5. Statistics 2550, or any course with a credit restriction with 2550."

The same comment goes for the "or equivalent" listed in the 11.2.4.1 Honours in Biology section.

Thanks,
Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Dean of Science [<mailto:deansci@mun.ca>]
Sent: October-01-18 9:03 AM
To: Amina Ahmed Mahmood <aamahmood@mun.ca>; Annie Mercier <amercier@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Valerie Booth <vbooth@mun.ca>; Sharene Bungay <sharene@mun.ca>; 'Math & Stats' <mathconsult@mun.ca>
Subject: FW: Consultation on Calendar Changes - Biology
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Sent: September-28-18 4:03 PM
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If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Davis,Erin <emdavis@mun.ca>
Sent: October-04-18 11:17 AM
To: jodyb@mun.ca
Subject: FW: Consultation on Calendar Changes - Biology
Attachments: Calendar Consultation - Change to Joint Major in Marine Biology.pdf; Calendar Consultation - Joint Honours in Marine Biology.pdf; Calendar Consultation - Change to Biology Majors.pdf; image001.png; image002.jpg

Importance: High

Categories: Orange Category

Hi Jody,

Pharmacy does not anticipate any impact to our program and we support these changes.

Erin
DR. ERIN DAVIS
ASSOCIATE DEAN UNDERGRADUATE STUDIES
Assistant Professor | School of Pharmacy
Clinical Assistant Professor | Discipline of Family Medicine
Memorial University of Newfoundland

Health Sciences Centre
300 Prince Philip Dr | St. John's, NL | A1B 3V6
P 709 777 7232 | F 709 777 7044

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Jody-Lynn Burke

From: Rohr, Linda
Sent: October-05-18 8:24 AM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody,

I have reviewed the proposed changes to Biology and have no concerns.

Linda

Linda E. Rohr PhD
Dean, School of Human Kinetics & Recreation
Memorial University
t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca
PE 2027

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: Friday, September 28, 2018 at 4:02 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, "lrobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>, Linda Rohr <lerohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "Sutherland, Ian D" <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>, Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
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- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody-Lynn Burke

From: Mackenzie, Theresa
Sent: October-10-18 11:20 AM
To: Jody-Lynn Burke
Cc: Newhook, Rebecca; Yolanda Wiersma; sdufour@mun.ca
Subject: Re: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody—just in case these weren't caught:

- In the document "Changes to Biology Majors 2", under the section "Calendar Entry After changes", the list of degrees is missing the major/honours co-op degree.
- In the document "Joint Honours in Marine Biology (2)", under "Secondary Calendar Changes", the old programs are still listed (cell and molecular, ecology and conservation, marine) but the major/honours co-op degree is missing from the list.

Cheers,
Theresa

Theresa Mackenzie

Academic Staff Member, Co-operative Education
Memorial University (Faculty of Humanities and Social Sciences, Faculty of Science)
t:709.864.2402 f:709.864.4000 e: tmackenz@mun.ca

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: Wednesday, October 10, 2018 at 11:04 AM
To: Rebecca Newhook <rnewhook@mun.ca>, Suzanne Dufour <sdufour@mun.ca>, Yolanda Wiersma <ywiersma@mun.ca>, Theresa Mackenzie <tmackenz@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hi Rebecca,

The first three changes have been incorporated into our proposal.

We don't anticipate significant scheduling conflicts with the new concentrations as we've removed the 2 required courses that were part of the old Majors.

At this point in time there are no plans to offer a co-op option for the Joint Major or Honours. The structure of both programs makes offering a co-op option impossible.

We are confident that our Aquatic Life/Co-op Concentration will meet the needs of any student wishing to pursue a marine biology focused area of study.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

From: Newhook, Rebecca
Sent: October-05-18 3:52 PM
To: Suzanne Dufour <sdufour@mun.ca>; Yolanda Wiersma <ywiersma@mun.ca>; Mackenzie, Theresa <tmackenz@mun.ca>; Jody-Lynn Burke <jrotchford@mun.ca>
Subject: RE: Consultation on Calendar Changes - Biology

Hello all,

Thank you for the opportunity to review the Department of Biology's proposed concentrations. We agree that the proposed concentration in Aquatic Life will be beneficial for biology co-op students and will address the loss of the Marine Biology co-op option. We endorse establishing this and the other biology concentrations in the proposal.

We present some comments and minor additions below that we would like to see included if they can be accommodated:

Section 11.2.3.5 Major in Biology (Co-operative) Program (BCOP)

- "Students complete three work terms, which consist of full-time, normally paid employment..." While we expect most students will secure paid work, there are occasions when students might wish to accept an unpaid but valuable opportunity.
- the entry requirements should be clarified to say that "a student must have complete the second year Biology Core before the start of WT1 in the spring semester." Students are confused and think they need to have completed these courses before admission.
- In the general management of the BCOP, "developing employment opportunities and monitoring and evaluating students during the work term."

Section 11.2.4.6 Biology Concentrations

- "Particular attention should be paid to necessary prerequisite when scheduling courses. Students should consult with the Academic Program Officer regarding the availability of courses applicable to their chosen concentration." Might this restrict the ability of student to participate in co-op or require students to complete more spring work terms? Will courses be offered in such a way that co-op students can complete at least one work term in fall or winter?

Is there an intention (or interest) for the Joint Major and Honours in Marine Biology to include a co-op option? This might be a conversation for a future date.

We realize that comments at this late stage are not ideal, however we have not had the opportunity to review these proposals previously. We would welcome the opportunity to be more involved with BUGS in order to participate more fully in departmental changes that have a direct impact on our work with co-op students in Biology.

Best regards,
 Rebecca

Rebecca Newhook

Academic Staff Member in Co-operative Education
 Faculty of Science and Faculty of Humanities & Social Sciences
 Memorial University of Newfoundland
 Science Building, SN-1062
 t:709.864.4098 f:709.864.4000 e:rnewhook@mun.ca
www.linkedin.com/in/rebeccanewhook @RebeccaNewhook

For a full list of Memorial's Science and Humanities & Social Sciences co-op programs click [here](#)

From: Suzanne Dufour [<mailto:sdufour@mun.ca>]
Sent: October-05-18 9:01 AM
To: Newhook, Rebecca <rnewhook@mun.ca>; Yolanda Wiersma <ywiersma@mun.ca>; Mackenzie, Theresa <tmackenz@mun.ca>; Jody-Lynn Burke <jrotchford@mun.ca>
Subject: Fwd: Consultation on Calendar Changes - Biology

Thanks Rebecca, an email would be great (no need for a formal letter). Here are the proposals that were circulated from our Department on September 28.

Best wishes,

Suzanne

----- Forwarded Message -----

Subject: Consultation on Calendar Changes - Biology

Date: Fri, 28 Sep 2018 18:32:34 +0000

From: Jody-Lynn Burke <jrotchford@mun.ca>

To: Faculty of Humanities and Social Sciences <hss@mun.ca>, Bauer, Larry <lbauer@mun.ca>, Collett, Meghan <mcollett@mun.ca>, engrconsult@mun.ca <engrconsult@mun.ca>, lrobinson@grenfell.mun.ca <lrobinson@grenfell.mun.ca>, ssedean@grenfell.mun.ca <ssedean@grenfell.mun.ca>, thennessey@grenfell.mun.ca <thennessey@grenfell.mun.ca>, Rohr, Linda <lerohr@mun.ca>, miugconsultations@mi.mun.ca <miugconsultations@mi.mun.ca>, deanofmedicine@med.mun.ca <deanofmedicine@med.mun.ca>, Sutherland, Ian D <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, pharminfo@mun.ca <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk@mun.ca <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>

CC: Suzanne Dufour <sdufour@mun.ca>, Annie Mercier <amercier@mun.ca>

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

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- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
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Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Jody-Lynn Burke

From: vbooth <vbooth@mun.ca>
Sent: October-10-18 4:08 PM
To: Jody-Lynn Burke; Suzanne Dufour
Cc: Biochemistry Head
Subject: Fwd: Consultation on Calendar Changes - Biology
Attachments: Calendar Consultation - Change to Joint Major in Marine Biology.pdf; Untitled attachment 00265.htm; Calendar Consultation - Joint Honours in Marine Biology.pdf; Untitled attachment 00268.htm; Calendar Consultation - Change to Biology Majors.pdf; Untitled attachment 00271.htm

Importance: High

Categories: Orange Category

Dear Jody, Suzanne and the Biology undergrad studies committee,

Thank you for the opportunity to provide feedback. The proposal concerning the new Biology Concentrations was discussed at a recent Biochemistry Undergraduate Studies committee meeting. We were grateful for the efforts that had been made to try to address the concerns we'd voiced with the "pre-consultation" version of the proposal. There still remain some concerns, which I will provide here, in particular for the consideration of FoSCUGS and other committees that will be discussing and voting on the proposal. However, the concerns are not so pressing that Biochemistry feels the need to stand in opposition to the proposal as a whole.

We do feel that the general idea of offering "concentrations" is of positive benefit to students - it can be hard to decide which courses to take and the concentrations provide a nice guide for sets of courses that make sense, depending on where the interests of a particular student lie.

The Biochem Undergrad Studies still feel that the Concentration 4 on "Biology of Health Professions" is light on "health"-related content and potentially mis-leading for students. There was also concern expressed about the number of places in Med 310 A/B - especially since these courses are integral to Biochemistry Honours, Biochemistry (Nutrition) Majors, and Biochemistry (Nutrition) Honours programs. Historically, we find that Med 310 A/B fills up and interested Faculty of Science students do get turned away. Recent communications from the Faculty of Medicine about Med 310 A/B have been positive in that there seems to be a willingness to try to accommodate as many students as possible. Hopefully these efforts will continue as the course instructors and administration evolve. We think it will continue to be important to keep in touch with Medicine to try to keep spaces open for Science students in Med 310 A/B. With all those constraints in mind, it was good to see Med 310A/B is not an absolute necessity for the "Health Professions" concentration, though we have to imagine that all or most students who choose to do a concentration in Health Professions will want to get into Med 310.

Finally, it was suggested that you might consider if Bioc 3107 (soon to become 3207) might be appropriate for inclusion in the list for Concentration 7 on "Molecular, Microbial, and Cell Biology."

Best wishes,

Valerie

.....
Valerie Booth
Professor
Deputy Head (undergraduate) Department of Biochemistry and
Department of Physics and Physical Oceanography
Memorial University of Newfoundland
St. John's, NL, A1B 3X9, Canada

phone 709 864-4523 fax: 709 864-2422

homepage: <http://www.faculty.mun.ca/vbooth/>

Begin forwarded message:

From: Dean of Science <deansci@mun.ca>
Subject: FW: Consultation on Calendar Changes - Biology
Date: October 1, 2018 at 9:02:30 AM NDT
To: Amina Ahmed Mahmood <aamahmood@mun.ca>, Annie Mercier <amercier@mun.ca>, Chemistry <chemconsult@mun.ca>, Computer Science consultation <compsci@mun.ca>, Earth Sciences <eascugcon@mun.ca>, Ivan Saika-Voivod <saika@mun.ca>, Psychology consult <psychdeputyhead@mun.ca>, Suzanne Dufour <sdufour@mun.ca>, "Associate Dean of Science (Undergraduate)" <adsu@mun.ca>, Valerie Booth <vbooth@mun.ca>, Sharene Bungay <sharene@mun.ca>, "Math & Stats" <mathconsult@mun.ca>

From: Jody-Lynn Burke
Sent: September-28-18 4:03 PM
Subject: Consultation on Calendar Changes - Biology
Importance: High

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If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University

Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-17-18 3:40 PM
To: 'vbooth'
Cc: 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Hi Valerie,

Thank you for your feedback and your support.

Our Biology for Health Professions concentration is designed to assist Biology students in pursuing additional post-secondary training in a broad range of professional health programs (medicine, veterinary medicine, optometry, physical therapy, dentistry, pharmacy, etc); the title emphasizes that this is a Biology program. The courses we have chosen to include will provide students with a firm foundation in genetics, microbiology, molecular and cell biology, physiology, and endocrinology.

We have discussed, at length, with Medicine the number of required seats in MED 310A/B and they are confident they can accommodate our students as we transition to a concentration model.

With regards to BIOC 3107 (soon to be 3207), we would be delighted to include it as an option for our Molecular, Microbial, and Cell Biology concentration.

If you have any questions, please let me know

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

From: vbooth <vbooth@mun.ca>
Sent: October-10-18 4:08 PM
To: Jody-Lynn Burke <jodyb@mun.ca>; Suzanne Dufour <sdufour@mun.ca>
Cc: Biochemistry Head <biohead@mun.ca>
Subject: Fwd: Consultation on Calendar Changes - Biology
Importance: High

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Finally, it was suggested that you might consider if Bioc 3107 (soon to become 3207) might be appropriate for inclusion in the list for Concentration 7 on “Molecular, Microbial, and Cell Biology.”

Best wishes,

Valerie

.....
Valerie Booth
Professor
Deputy Head (undergraduate) Department of Biochemistry and
Department of Physics and Physical Oceanography
Memorial University of Newfoundland
St. John's, NL, A1B 3X9, Canada

phone 709 864-4523 fax: 709 864-2422

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Sent: September-28-18 4:03 PM
Subject: Consultation on Calendar Changes - Biology
Importance: High

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Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Annie Mercier <amercier@mun.ca>
Sent: October-16-18 8:04 AM
To: Jody-Lynn Burke
Cc: Fletcher, Garth
Subject: Re: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody:

We are of course supportive of the updated Joint Major and new Joint Honours in Marine Biology, having worked on this together from the onset. We suggested only a few minor adjustments to the final versions that were circulated, i.e. clarification of the necessity to add "(or Biology 3710)" when indicating that OCSC 2000 must be completed for admission, and encouraging students to consult with both departments early on.

We are also supportive of the proposed revisions to the Biology Majors including the introduction of areas of concentrations. The only comment received during discussions inside our undergraduate committee was a question about the degree to which the concentration in "Aquatic Life" overlaps with the Joint Major in Marine Biology as the concentration is largely marine focused. Also, we were wondering about the courses BIOL 4910, 4911 and 4912, which are not explicitly described in the Calendar, and are listed among the choices for the different concentrations.

All the best,
 Annie

Annie Mercier, PhD
 Professor and Deputy Head,
 Department of Ocean Sciences
 Memorial University (Ocean Sciences Centre)
 St. John's, NL, Canada, A1C 5S7
 Tel: (709) 864-2011
 Email: amercier@mun.ca
www.mun.ca/osc/amercier/bio.php

On 28/09/2018 4:02 PM, Jody-Lynn Burke wrote:

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

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Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-17-18 4:02 PM
To: 'Annie Mercier'
Cc: 'Suzanne Dufour'
Subject: RE: Consultation on Calendar Changes - Biology

Hi Annie,

Thank you for your feedback and your support.

Although there is some overlap between our proposed concentration in Aquatic Life and the Joint Major, the two programs are quite different, as the Joint Major provides students with a more comprehensive foundation in Ocean Sciences/oceanography and applied disciplines (Fisheries and Aquaculture), while the Aquatic Life concentration has a more general focus on the biology of aquatic organisms. In addition to marine content, several of the courses listed within the Aquatic Life listing also explore freshwater, estuarine and fjordic environments (3014, 3050, 3712, 3714, 3715, 4601). The soon to be advertised "Land-Sea Interface" faculty position should allow us to expand our range of freshwater and estuarine courses.

BIOL 4910-4912 are our special topics courses, as indicated in the calendar. They cover a range of topics in specialized fields in Biology and may be offered at the Bonne Bay Field Station, at the Harlow campus or elsewhere, as appropriate.

If you have any questions, please let me know.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
 Department of Biology, Memorial University
 Office: (709) 864 8021
 E-mail: jodyb@mun.ca

From: Annie Mercier <amercier@mun.ca>
Sent: October-16-18 8:04 AM
To: Jody-Lynn Burke <jrotchford@mun.ca>
Cc: Fletcher, Garth <fletcher@mun.ca>
Subject: Re: Consultation on Calendar Changes - Biology

Hi Jody:

We are of course supportive of the updated Joint Major and new Joint Honours in Marine Biology, having worked on this together from the onset. We suggested only a few minor adjustments to the final versions that were circulated, i.e. clarification of the necessity to add "(or Biology 3710)" when indicating that OCSC 2000 must be completed for admission, and encouraging students to consult with both departments early on.

We are also supportive of the proposed revisions to the Biology Majors including the introduction of areas of concentrations. The only comment received during discussions inside our undergraduate committee was a question about the degree to which the concentration in "Aquatic Life" overlaps with the Joint Major in Marine Biology as the concentration is largely marine focused. Also, we were wondering about the courses BIOL 4910, 4911 and 4912, which are not explicitly described in the Calendar, and are listed among the choices for the different concentrations.

All the best,
Annie

Annie Mercier, PhD
Professor and Deputy Head,
Department of Ocean Sciences
Memorial University (Ocean Sciences Centre)
St. John's, NL, Canada, A1C 5S7
Tel: (709) 864-2011
Email: amercier@mun.ca
www.mun.ca/osc/amercier/bio.php

On 28/09/2018 4:02 PM, Jody-Lynn Burke wrote:

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: MIUG Consultations <MIUGconsultations@mi.mun.ca>
Sent: October-17-18 2:19 PM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology

Categories: Orange Category

Hi Jody,

Thank you for the opportunity to review and comment on the proposal for calendar changes for Biology. These changes were distributed internally and no concerns were raised regarding impacts on Marine Institute programs. We support the proposal.

Regards,
Bev

Bev Fleet
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0369
FAX: 709-778-0535
Bev.Fleet@mi.mun.ca

From: Jody-Lynn Burke [mailto:jrotchford@mun.ca]
Sent: Friday, September 28, 2018 4:03 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Irobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca; Rohr, Linda <lrohr@mun.ca>; MIUG Consultations <MIUGconsultations@mi.mun.ca>; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Cc: Suzanne Dufour <sdufour@mun.ca>; Annie Mercier <amercier@mun.ca>
Subject: Consultation on Calendar Changes - Biology
Importance: High

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposals. Please find attached proposals relating to:

- Elimination of multiple Biology Majors and the introduction of optional areas of concentration
- Updates to the Joint Major in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences
- Introduction of the Joint Honors in Marine Biology; offered jointly by the Department of Biology and the Department of Ocean Sciences

Your feedback, at your earliest convenience, is appreciated.

Jody-Lynn Burke

From: Engineering Consult <engrconsult@mun.ca>
Sent: October-17-18 3:08 PM
To: Jody-Lynn Burke
Cc: Fisher, Andrew; Edmunds, Jayde; Bruce Quinton
Subject: Re: Consultation on Calendar Changes - Biology

Importance: High

Categories: Orange Category

Dear Ms. Burke,

Thank you for the opportunity to comment on the proposed Calendar changes to the Biology and Marine Biology programs.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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 2018-09-28 16:02, Jody-Lynn Burke wrote:

> Dear colleagues,
 >
 > The purpose of this email is to extend an opportunity for you to
 > provide feedback on the attached calendar change proposals. Please
 > find attached proposals relating to:
 >
 > * Elimination of multiple Biology Majors and the introduction of
 > optional areas of concentration
 > * Updates to the Joint Major in Marine Biology; offered jointly by
 > the Department of Biology and the Department of Ocean Sciences
 > * Introduction of the Joint Honors in Marine Biology; offered jointly
 > by the Department of Biology and the Department of Ocean Sciences
 >
 > Your feedback, at your earliest convenience, is appreciated.
 >
 > If you have any questions, please don't hesitate to contact me.
 >
 > JODY BURKE, BSC.(HONS), M.ED, PGC(QM) – ACADEMIC PROGRAM OFFICER
 >
 > Department of Biology, Memorial University
 >
 > Office: (709) 864 8021

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): BIOL 4605 Quantitative Methods in Biology
- ☐ 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 4605 Quantitative Methods in Biology

RATIONALE

The removal of the topics covering of autocorrelation, geographic statistics, estimates of population size and the addition of topics highlighting mixed models, Poisson and logistic regression, will bring the calendar description in line with the concepts currently taught in Biology 4605.

The pre-requisite of “Statistics 2550” has been updated to “Statistics 2550 or any course that is credit restricted with Statistics 2550” after consultation with the Department of Math and Statistics. This change is highlighted in the department’s recent proposal to transition from multiple majors to areas of concentration and was recommended to bring the degree regulations in line with currently accepted statistic pre-requisites for Biology courses.

CALENDAR CHANGES

12.2 Biology

According to the nature of particular courses, the specified number of laboratory hours may consist of some combination of laboratory work, seminars or directed independent study relevant to the practical aspects of the subject matter.
Biology courses are designated by BIOL.

4605 Quantitative Methods in Biology (same as Statistics 4581 and the former Statistics 4605) is quantitative reasoning using verbal, graphical and statistical models of scaled quantities (units and dimensions). Exploratory and confirmatory analysis of field and laboratory data. Hypothesis testing, including randomization tests. Topics include the general linear model (t-tests, ancova etc), correlation, ~~autocorrelation,~~ ~~geographic statistics,~~ ~~estimates of population size and~~ multivariate methods, mixed models, Poisson and logistic regression.

CR: Statistics 4581 and the former Statistics 4605

LH: 3

PR: Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550

CALENDAR ENTRY AFTER CHANGES

12.2 Biology

According to the nature of particular courses, the specified number of laboratory hours may consist of some combination of laboratory work, seminars or directed independent study relevant to the practical aspects of the subject matter.

Biology courses are designated by BIOL.

4605 Quantitative Methods in Biology (same as Statistics 4581 and the former Statistics 4605) is quantitative reasoning using verbal, graphical and statistical models of scaled quantities (units and dimensions). Exploratory and confirmatory analysis of field and laboratory data. Hypothesis testing, including randomization tests. Topics include the general linear model (t-tests, ancova etc), correlation, multivariate methods, mixed models, Poisson and logistic regression.

CR: Statistics 4581 and the former Statistics 4605

LH: 3

PR: Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Academic Unit	Response Received
Humanities and Social Sciences	No
Business Administration	Yes
Education	No
Engineering and Applied Science	Yes
Grenfell Campus: Fine Arts	Yes
Human Kinetics and Recreation	Yes
Marine Institute	Yes
Medicine	Yes
Music	Yes
Nursing	No
Pharmacy	Yes
Science Chemistry Math Ocean Sciences	Yes Yes Yes Yes
Social Work	Yes

Library	No
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RESOURCE IMPLICATIONS

No resource implications.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

NA

Jody-Lynn Burke

From: Math Consult <mathconsult@mun.ca>
Sent: October-24-18 4:30 PM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology 4605

Hi Jody,

I just realized that STAT 1510 has a one-way credit restriction with STAT 2550, but probably you don't want to accept that course as a prerequisite in place of 2550. Maybe it is better to state:

PR: Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550.

Currently, the CR statement under STAT 2550 is:

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

Sorry for not thinking of this earlier!

Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Dean of Science [mailto:deansci@mun.ca]
Sent: October-24-18 4:13 PM
To: Amina Ahmed Mahmood <aamahmood@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Math & Stats <mathconsult@mun.ca>; Ocean Sciences <amercier@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Sharene Bungay <sharene@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Valerie Booth <vbooth@mun.ca>
Subject: FW: Consultation on Calendar Changes - Biology 4605

From: Jody-Lynn Burke
Sent: October-24-18 2:46 PM
Subject: Consultation on Calendar Changes - Biology 4605

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-24-18 4:48 PM
To: Math Consult
Subject: Re: Consultation on Calendar Changes - Biology 4605

Hi Tara,

Business also responded with the same comment.

Thanks for catching it!

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

From: Math Consult <mathconsult@mun.ca>
Sent: October 24, 2018 4:29:36 PM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology 4605

Hi Jody,

I just realized that STAT 1510 has a one-way credit restriction with STAT 2550, but probably you don't want to accept that course as a prerequisite in place of 2550. Maybe it is better to state:

PR: Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550.

Currently, the CR statement under STAT 2550 is:

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

Sorry for not thinking of this earlier!

Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

From: Dean of Science [mailto:deansci@mun.ca]
Sent: October-24-18 4:13 PM
To: Amina Ahmed Mahmood <aamahmood@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science

consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Math & Stats <mathconsult@mun.ca>; Ocean Sciences <amercier@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Sharene Bungay <sharene@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>; Valerie Booth <vbooth@mun.ca>

Subject: FW: Consultation on Calendar Changes - Biology 4605

From: Jody-Lynn Burke

Sent: October-24-18 2:46 PM

Subject: Consultation on Calendar Changes - Biology 4605

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Lawrence Bauer <lbauer@mun.ca>
Sent: October-24-18 3:32 PM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology 4605

Hello:

Thank you for the opportunity to comment on this proposal. The Faculty of Business Administration has no concerns with the proposed changes, however you might want to be aware of the fact that the credit restrictions for STAT 1510 read:

CR: cannot receive credit for STAT 1510 if completed with, or subsequent to, STAT 2500, 2550 or the former 2510

A student might interpret (and argue that) the wording of your new prerequisite as meaning that STAT 1510 would be an acceptable prerequisite. This may not be an intended consequence of the proposed change. As an alternative, you might want to expand your prerequisite slightly to say something like:

PR: Statistics 2550 or any course that is credit restricted with Statistics 2550 other than Statistics 1510

--larry

On Oct 24, 2018, at 2:45 PM, Jody-Lynn Burke <jrotchford@mun.ca> wrote:

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

<BIOL 4605 Calendar Change.pdf>

Jody-Lynn Burke

From: Jody-Lynn Burke
Sent: October-24-18 4:34 PM
To: Bauer, Larry
Subject: Re: Consultation on Calendar Changes - Biology 4605

Hi Lawrence,

Thank you for bringing this to my attention.

I've spoken to Tara and we will change the PR to "Statistics 2550 or any of the courses listed in the credit restrictions of Statistics 2550."

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

From: Lawrence Bauer <lbauer@mun.ca>
Sent: October 24, 2018 3:31:35 PM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology 4605

Hello:

Thank you for the opportunity to comment on this proposal. The Faculty of Business Administration has no concerns with the proposed changes, however you might want to be aware of the fact that the credit restrictions for STAT 1510 read:

CR: cannot receive credit for STAT 1510 if completed with, or subsequent to, STAT 2500, 2550 or the former 2510

A student might interpret (and argue that) the wording of your new prerequisite as meaning that STAT 1510 would be an acceptable prerequisite. This may not be an intended consequence of the proposed change. As an alternative, you might want to expand your prerequisite slightly to say something like:

PR: Statistics 2550 or any course that is credit restricted with Statistics 2550 other than Statistics 1510

--larry

On Oct 24, 2018, at 2:45 PM, Jody-Lynn Burke <jrotchford@mun.ca> wrote:

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

<BIOL 4605 Calendar Change.pdf>

Larry Bauer, Ph.D.

Associate Professor of Finance
Associate Dean (Undergraduate Programs)
Faculty of Business Administration

Memorial University of Newfoundland
St. John's Nfld, A1B 3X5

www: <http://www.business.mun.ca>

e-mail: lbauer@mun.ca

Tel: (709) 864-8512

Fax: (709) 864-8954

SSRN: <http://ssrn.com/author=327175>

Jody-Lynn Burke

From: Rohr, Linda
Sent: October-26-18 3:53 PM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology 4605

Hi Jody,

No concerns from HKR with the proposed changes to Biology 4605.

Linda

Linda E. Rohr PhD
Dean, School of Human Kinetics & Recreation
Memorial University
t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca
PE 2027

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: Wednesday, October 24, 2018 at 2:45 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, "Irobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>, Linda Rohr <lerohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "Sutherland, Ian D" <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>
Subject: Consultation on Calendar Changes - Biology 4605

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Hennessey, Todd <THENNESSEY@grenfell.mun.ca>
Sent: October-29-18 11:01 AM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology 4605

Hi Jody-Lynn
Thanks for this; Fine Arts has no feedback at this time.

Todd

TODD HENNESSEY, PhD (Birmingham) | DEAN

School of Fine Arts
Grenfell Campus, Memorial University
Corner Brook, Newfoundland
709.637.6277

www.grenfell.mun.ca

From: Jody-Lynn Burke <jrotchford@mun.ca>
Sent: October 24, 2018 2:45:49 PM
To: Faculty of Humanities and Social Sciences; Bauer, Larry; Collett, Meghan; engrconsult@mun.ca; Robinson, Laura; Dean - School of Science and the Environment; Hennessey, Todd; Rohr, Linda; MIUG Consultations; deanofmedicine@med.mun.ca; Sutherland, Ian D; DeanNurse; pharminfo@mun.ca; Dean of Science; adeanugradswk; Library Correspondence
Subject: Consultation on Calendar Changes - Biology 4605

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: adeanugradswk
Sent: November-02-18 8:41 PM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology 4605

Hello Jody-Lynn,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs
School of Social Work, Memorial University
St. John's, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

From: Jody-Lynn Burke
Sent: October 24, 2018 2:46 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Irobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Subject: Consultation on Calendar Changes - Biology 4605

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: MIUG Consultations <MIUGconsultations@mi.mun.ca>
Sent: November-05-18 2:05 PM
To: Jody-Lynn Burke
Subject: RE: Consultation on Calendar Changes - Biology 4605

Hi Jody,

Thank you for the opportunity to review and comment on the proposal for calendar changes for BIOL 4605. These will have no impact on Marine Institute programs and we support the proposal.

Regards,
Bev

Bev Fleet
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0369
FAX: 709-778-0535
Bev.Fleet@mi.mun.ca

From: Jody-Lynn Burke [mailto:jrotchford@mun.ca]
Sent: Wednesday, October 24, 2018 2:46 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Irobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca; Rohr, Linda <lrohr@mun.ca>; MIUG Consultations <MIUGconsultations@mi.mun.ca>; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Subject: Consultation on Calendar Changes - Biology 4605

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Engineering Consult <engrconsult@mun.ca>
Sent: November-21-18 5:24 PM
To: Jody-Lynn Burke
Cc: Fisher, Andrew; Edmunds, Jayde; Bruce Quinton
Subject: Re: Consultation on Calendar Changes - Biology 4605

Dear Ms. Burke,

Thank you for the opportunity to comment on the proposed Calendar change to the course BIOL 4605.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that this change will have no impact on the Engineering program and we are happy to support this change.

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 2018-10-24 14:45, Jody-Lynn Burke wrote:

> Dear colleagues,
>
> The purpose of this email is to extend an opportunity for you to
> provide feedback on the attached calendar change proposal. Please find
> attached a proposal relating to:
>
> * Updated Calendar description and pre-requisites for Biology 4605
> (Quantitative Methods in Biology)
>
> Your feedback, at your earliest convenience, is appreciated.
>
> If you have any questions, please don't hesitate to contact me.
>
> JODY BURKE, BSC.(HONS), M.ED, PGC(QM) – ACADEMIC PROGRAM OFFICER
>
> Department of Biology, Memorial University
>
> Office: (709) 864 8021
>
> E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Sutherland, Ian D
Sent: October-24-18 3:20 PM
To: Jody-Lynn Burke
Subject: Re: Consultation on Calendar Changes - Biology 4605

Hi Jody-Lynn,

The School of Music has no issue with this change.

Ian

.....

IAN SUTHERLAND, PhD (Exon) | DEAN

School of Music
Memorial University
St. John's, Newfoundland
T 709 864 7486

www.mun.ca/music | www.facebook.com/musicatmun/ | [@musicschooldean](https://www.instagram.com/musicschooldean) | [@musicatmemorial](https://www.instagram.com/musicatmemorial) |

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: Wednesday, October 24, 2018 at 2:45 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, "Irobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>, "Rohr, Linda" <lerohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "Sutherland, Ian D" <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>
Subject: Consultation on Calendar Changes - Biology 4605

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: Annie Mercier <amercier@mun.ca>
Sent: November-19-18 2:36 PM
To: jodyb@mun.ca
Cc: Fletcher, Garth
Subject: Re: FW: Consultation on Calendar Changes - Biology 4605

Hi Jody:

Our committee has reviewed your proposal to adjust the description and prerequisites of Biology 4605, and it looks fine to us.

All the best,

Annie

Annie Mercier, PhD
Professor and Deputy Head,
Department of Ocean Sciences
Memorial University (Ocean Sciences Centre)
St. John's, NL, Canada, A1C 5S7
Tel: (709) 864-2011
Email: amercier@mun.ca
www.mun.ca/osc/amercier/bio.php

On 24/10/2018 4:12 p.m., Dean of Science wrote:

From: Jody-Lynn Burke
Sent: October-24-18 2:46 PM
Subject: Consultation on Calendar Changes - Biology 4605

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021

Jody-Lynn Burke

From: Davis,Erin <emdavis@mun.ca>
Sent: October-26-18 10:02 AM
To: jodyb@mun.ca
Cc: Glew, Csop
Subject: FW: Consultation on Calendar Changes - Biology 4605
Attachments: BIOL 4605 Calendar Change.pdf

Hi Jody, Pharmacy has no concerns about the proposed changes.

Erin

--

Dr. Erin Davis

Associate Dean Undergraduate Studies

Chair of the Committee on Undergraduate Studies

Assistant Professor | **School of Pharmacy**

Clinical Assistant Professor | **Discipline of Family Medicine**

Memorial University of Newfoundland

T 709 864-8815

F 709 864-6941

E emdavis@mun.ca

From: "Bugler, Heather" <hbugler@mun.ca>
Date: Wednesday, October 24, 2018 at 3:14 PM
To: "Davis,Erin" <emdavis@mun.ca>, "Glew, Csop" <cglew@mun.ca>
Subject: FW: Consultation on Calendar Changes - Biology 4605

FYI

Heather

Heather Bugler
Assistant to the Dean
School of Pharmacy
Memorial University of Newfoundland
Room 3441, Health Sciences Centre
300 Prince Philip Parkway
St. John's, NL A1B 3V6
Tele: 709-864-4599
Fax: 709-864-4819

www.mun.ca/pharmacy<<http://www.mun.ca/pharmacy>>

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***** Our new Medication Therapy Services Clinic... now open!*****



From: Jody-Lynn Burke [mailto:jrotchford@mun.ca]

Sent: October-24-18 2:46 PM

To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Irobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>

Subject: Consultation on Calendar Changes - Biology 4605

Dear colleagues,

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- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer

Department of Biology, Memorial University

Office: (709) 864 8021

E-mail: jodyb@mun.ca

Jody-Lynn Burke

From: cvardy@mun.ca
Sent: October-25-18 10:33 AM
To: Jody-Lynn Burke
Subject: FW: Consultation on Calendar Changes - Biology 4605
Attachments: BIOL 4605 Calendar Change.pdf

Good morning

The Faculty of Medicine is supportive of the updated calendar description and pre-requisites for Biology 4605.

Regards

CATHY VARDY, MD, FRCPC | VICE DEAN AND PROFESSOR OF PEDIATRICS

Faculty of Medicine
Health Sciences Centre
Room M2M319
Memorial University of Newfoundland
St. John's, Newfoundland | A1B 3V6

T 709 864 6417 | F 709 864 6336
www.med.mun.ca/

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From: Jody-Lynn Burke [<mailto:jrotchford@mun.ca>]

Sent: Wednesday, October 24, 2018 2:46 PM

To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; Steele, Dr. Margaret: Dean of Medicine <DeanofMedicine@med.mun.ca>; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk@mun.ca; Library Correspondence <univlib@mun.ca>

Subject: Consultation on Calendar Changes - Biology 4605

Dear colleagues,

The purpose of this email is to extend an opportunity for you to provide feedback on the attached calendar change proposal. Please find attached a proposal relating to:

- Updated Calendar description and pre-requisites for Biology 4605 (Quantitative Methods in Biology)

Your feedback, at your earliest convenience, is appreciated.

Jody-Lynn Burke

From: Suzanne Dufour <sdufour@mun.ca>
Sent: October-29-18 9:37 AM
To: Jody-Lynn Burke
Subject: Fwd: biology 4605

----- Forwarded Message -----

Subject:biology 4605

Date:Fri, 26 Oct 2018 15:20:51 -0230

From:Department of Chemistry Consult <chemconsult@mun.ca>

To:sdufour@mun.ca

Hi Suzanne,

On behalf of the chemistry department, I would like to lend my support for the proposed changes to Biology 4605.

Sincerely,

Chris Flinn
Deputy Head, Undergraduate Studies
Chemistry Department

NEW COURSE PROPOSAL OCSC 4400 Deep-Sea Ecology

Executive Summary

This is a proposal for a new course in Deep-Sea Ecology, which will focus on the deep-sea system, which occupies more than 50% of the surface of the globe. The course will introduce students to the physical and chemical environment of the deep sea, including hydrothermal vents and seeps. While the deep sea was initially envisioned as a tranquil environment with little environmental variation, this paradigm has shifted. The course will focus on exploring this highly dynamic environment, from benthic storms and seasonal processes to patterns in species and biodiversity, considering novel biological adaptations for life at depth. The course will further take a contemporary focus and provide an overview of human exploration in the deep sea, from cabled observatories for science to deep-sea mining and fishing, and discuss novel impacts and research on climate change and plastic pollution in this remote ecosystem. The course will be an integral part of all the programs delivered by the Department of Ocean Sciences.

Resource Implications: Instructional Costs

Since this new course will be taught by existing faculty members at the Department of Ocean Sciences, no additional instructional costs are required.

Consultations

See Appendix.

Library Holdings and/or Other Resources Required

There are no added library costs associated with the new courses.

Signature of Unit Head (if appropriate): _____

Date: _____

Signature of Dean/Associate Vice-President (Academic)/Vice-President:

Date: _____

SAMPLE COURSE OUTLINE AND METHOD OF EVALUATION

Summary of teaching and learning methods

The course will be delivered via lectures, seminars and discussions, and guided computer-based laboratory work.

The overarching learning objectives will be to:

- Determine which factors are of physico-chemical significance in the deep sea.
- Understand how physico-chemical factors modulate animal communities.
- Describe dominant biodiversity patterns in the deep sea, including species diversity, biomass and zonation.
- Identify opportunities and threats to deep-sea systems in the context of global change.
- Critically evaluate the latest research in the deep sea.

1- Formal lectures and seminars will occur in the first 3-hour time slot of each week.

Formal Lectures: Lectures will be designed to provide important background knowledge and will cover the main concepts and topics by the use of PowerPoint presentations. Where relevant, cutting edge research examples in the appropriate fields will be incorporated into the sessions. References to the applicable background reading and journal articles will be provided as essential reading for each lecture.

Seminar Series: Seminars will be delivered by guest speakers, in person or remotely, covering topics at the forefront of deep-sea ecology, including fishing, mining and other impacts in deep-sea systems.

2- Lab sessions and paper discussions will occur in the second 3-hour time slot of each week.

Laboratory Exercises: Using their own laptops/devices, students will perform an analysis of deep-sea data, e.g. ROV dive video from the Juan de Fuca hydrothermal vents, Canada, which they will work on over successive weeks (interspersed with Paper Discussions). They will provide physical, chemical, geological and biological context in the form of a dive log, dive summary, with species distribution maps using ArcGIS (scheduled intermittently from Week 1 – 9). In the final session (Week 10), students will be asked to write a one-page research project proposal based on their observations made during their annotated analysis.

Paper Discussions: Four scientific papers representing major recent advances in deep-sea biology and ecology will be discussed and critiqued individually or in small groups during lab sessions. Students or groups will be tasked with answering a set of questions about each paper aiming to build critical thinking skills. Detailed feedback will be provided after each submission to facilitate progressive improvement.

3- Tutorial support: All students will be encouraged to discuss any aspect of the course with faculty. There will be four hours of scheduled tutorial time for additional support. A wide range of support will be provided for those students who have further or specific learning and teaching needs.

Proposed Course Outline

Week 1

1.1 Lecture (3 hr)

The history of deep-sea research and water masses in the world ocean

1.2 Lab (3 hr)

Introduction to the lab component of the course

Week 2

2.1 Lecture (3 hr)

Physiology of temperature and pressure adaptation

2.2 Lab (3 hr)

Students will start working on a dive log, recording observations of importance (e.g. chemical, physical, geological, ecological) based on video footage from the Juan de Fuca Ridge, Canada.

Week 3

3.1 Lecture (3 hr)

Life histories of deep-sea organisms

3.2 Lab (3 hr)

Continuing from the previous lab session (2.2), students will be asked to read research cruise reports and formulate their dive summary. The aim will be to provide an overview of the dive for future scientists visiting the area, and a record of events for those scientists participating in the research cruise.

Week 4

4.1 Lecture (3 hr)

Deep-sea biodiversity and biogeography

4.2 Discussion (3 hr)

Students will be critiquing a discussion paper, e.g. *Deep-Sea Diversity Patterns Are Shaped by Energy Availability* doi:10.1038/nature17937

Week 5

5.1 Special Seminar (3 hr)

Specialized deep-sea sampling

5.2 Lab (3 hr)

Continuing from lab sessions 1.2, 2.2 and 3.2, students will use ArcGIS to map species distributions based on their observations of presences from dive video.

Week 6

6.1 Lecture (3 hr)

Deep pelagic zones and bioluminescence

6.2 Discussion Paper (3 hr)

Students will be critiquing a discussion paper, e.g. *Bioluminescence in the Ocean: Origins of Biological, Chemical, and Ecological Diversity* doi:10.1126/science.1174269

Week 7

Break

Week 8

8.1 Lecture (3 hr)

Chemosynthetic environments: hydrothermal vents

8.2 Lab (3 hr)

Students will develop a research proposal based on the dive footage observations and ArcGIS mapping (achieved in lab sessions 1.2, 2.2 and 5.2).

Week 9

9.1 Lecture (3 hr)

Chemosynthetic environments: seeps and whale falls

9.2 Discussion (3 hr)

Students will be critiquing a discussion paper, e.g. *Exponential Decline of Deep-Sea Ecosystem Functioning Linked to Benthic Biodiversity Loss* doi:10.1016/j.cub.2007.11.056

Week 10

10.1 Special Seminar (3 hr)

Deep-sea food webs and fishing pressure

10.2 Lab (3 hr)

Students will be provided the opportunity to present their proposal to the full group for comments/feedback prior to submission of the research proposal

Week 11

Special Seminar 11.1 (3 hr)

Deep-sea mining

Discussion Paper 11.2 (3 hr)

Students will be critiquing a discussion paper, e.g. *Tighten Regulations on Deep-Sea Mining* doi:10.1038/470031a

Week 12

Lecture 12.1 (3 hr)

Climate change and pollution in the deep ocean

Lab 12.2 (3 hr)

Practice exam questions will be provided

Week 13

Lecture 13.1 (3 hr)

Review of lecture material and open question session

Lab 13.2 (3 hr)

Practice exam question answers will be discussed

Week 14

Exam: Final examination

Evaluation Scheme

Due Weeks 4, 6, 9 and 11: Written critiques of discussion papers (4 x 5%) 20%

Due Week 8: Report of analysis of deep-sea data 30%

Due Week 12: Research proposal 10%

Due Week 14: Final exam 40%

Suggested Resources

Peer-reviewed journal articles of relevance will be identified prior to the start of each semester and linked to each lecture and will be offered through the course resources widget. See examples provided in course outline above.

Instructor

Dr. Amanda Bates

Associate Professor, Department of Ocean Sciences

Email: abates@mun.ca

SUMMARY PAGE FOR SENATE**Approval Form****Course Number and Title**

OCSC 4400 Deep-Sea Ecology

Abbreviated Course Titles

Deep-Sea Ecology

Calendar Changes under 12.9 Ocean Sciences (new entry)

4400 Deep-Sea Ecology provides an overview of the physical and chemical environment of the deep sea, including hydrothermal vents and seeps, to explore adaptations in deep-sea organisms and biodiversity in this key oceanic system. The course combines lectures, seminars, discussions and computer-based laboratory tools, such as dive logs from remotely operated vehicles and data from underwater cabled observatories. It introduces students to emerging research, cutting-edge technologies, as well as natural and human impacts in the deep sea.

LH: 3

PR: OCSC 2500 and at least one course in Ocean Sciences at the 3000 or 4000 level

Rationale

All programs offered by the Department of Ocean Sciences would greatly benefit from an advanced course in Deep-Sea Ecology. While there are currently a few courses that touch on topics related to the deep sea being offered at Memorial University, the proposed course will be unique in the breadth/depth of coverage. It will focus on timely case studies and draw on significant and novel expertise in deep-sea biology, ecology, and exploration from within the university and abroad. Because the Department of Ocean Sciences offers BSc programs in ocean sciences and marine biology subjects, it is imperative that it develops and offers a relevant advanced course to provide background knowledge on what is considered the largest marine ecosystem on our planet.

The proposed course will take a contemporary focus, and explore the newly evolving challenges and opportunities in deep-sea ecology as we increase the presence of humans in this remote system through cabled observations, exploitation of resources, and impacts related to climate change and pollution. There is currently no other course at Memorial University that links broad oceanographic processes in the deep sea at such an advanced level, incorporating the most up-to-date research advances.

Consultations Sought From**Comments Received**

Marine Institute	Yes
Grenfell campus	No
Department of Biochemistry	Yes
Department of Biology	No
Department of Chemistry	Yes
Department of Computer Sciences	No
Department of Earth Sciences	No
Department of Economics	No
Department of Geography	Yes
Department of Mathematics and Statistics	No
Department of Physics and Physical Oceanography	Yes
Department of Psychology	No
Faculty of Arts	No
Faculty of Education	No
Faculty of Engineering and Applied Science	Yes
School of Medicine	Yes

Library Report Received

Yes

Approved by Dean, Associate Vice-President (Academic) or Vice President Yes / No

Name: _____

FOR OFFICE USE ONLY**APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES**

Chair: _____

Secretary: _____

Date: _____

APPENDIX – CONSULTATION

Request sent

From: Fletcher, Garth

Sent: September-10-18 12:16 PM

To: Biochemistry Head; Biology Head; Business; chemconsult@mun.ca (chemconsult@mun.ca); 'cs-chair@mun.ca'; Earth Sciences; Locke, Wade; Hicks, Sue; Engineering; Alcock, Erin; Grenfell Campus; Faculty of Humanities and Social Sciences; Jody-Lynn Burke; 'mathconsult@mun.ca'; Medicine; 'miugconsultations@mi.mun.ca'; Catto, Norm; Physics Head; psychology.head@mun.ca

Cc: amercier@mun.ca; Kenny, Gail

Subject: New course proposal

Colleagues; I have attached a new course proposal (OCSC 4400) for your review prior its submission to the Faculty of Science Undergraduate Studies Committee. Please send me your thoughts on these proposals as soon as you are able.

Best regards
Garth

Garth L. Fletcher
Head and Professor Emeritus
Department of Ocean Sciences
Ocean Sciences Centre
Memorial University
St John's NL
Canada, A1C 5S7

TEL: 709-864-3276
FAX 709-864-3220
Email fletcher@mun.ca

Feedback Received

GEOGRAPHY

From: Catto, Norm

Sent: September-10-18 12:52 PM

To: Fletcher, Garth <fletcher@mun.ca>

Subject: RE: New course proposal

No issues from Geography

Norm Catto
Head, Department of Geography
Memorial University
St. John's NL A1B 3X9
Canada
1-709-864-7463
Fax 1-709-864-3119

PHYSICS

From: Ivan Saika-Voivod [mailto:saika@mun.ca]
Sent: September-10-18 1:20 PM
To: Fletcher, Garth <fletcher@mun.ca>
Cc: Physics Head <physicshead@mun.ca>
Subject: Re: New course proposal

Dear Garth,

The proposed course OCSC 4400 does not impact any of our courses or programs as I can see. The course looks reasonable and we are supportive of the proposal.

Best,
Ivan

Dr. Ivan Saika-Voivod, Associate Professor
Undergraduate Studies Committee Chair
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, <http://www.physics.mun.ca/~saika/>

MARINE INSTITUTE

From: MIUG Consultations [mailto:MIUGconsultations@mi.mun.ca]
Sent: September 12, 2018 3:03 PM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: FW: FW: New course proposal Deep Sea Ecology

Hi Garth,

MI is happy to support your proposal.

Bev

Bev Fleet
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0369
FAX: 709-778-0535
Bev.Fleet@mi.mun.ca

Subject: Re: FW: New course proposal Deep Sea Ecology
Date: Tue, 11 Sep 2018 11:51:59 -0230
From: Annie Mercier <amercier@mun.ca>
CC: Fletcher, Garth <fletcher@mun.ca>, Bev Fleet <Bev.Fleet@mi.mun.ca>

Dear Bev and Cyr:

Many thanks for your feedback. The proposed course is not going to be an absolute requirement of any program. We meant an integral part of the programs in the general sense, i.e. all our programs require a

New Course – OCSC 4400 Deep-Sea Ecology – 20 Nov 2018

minimum number of OCSC courses at the 3000/4000 level, so the proposed course will be among the courses eligible to satisfy this requirement.

I hope this makes it clearer.

All the best,

Annie

Annie Mercier, PhD
Professor and Deputy Head,
Department of Ocean Sciences
Memorial University (Ocean Sciences Centre)
St. John's, NL, Canada, A1C 5S7
Tel: (709) 864-2011
Email: amercier@mun.ca
www.mun.ca/osc/amercier/bio.php

From: Bev Fleet [mailto:Bev.Fleet@mi.mun.ca]
Sent: September-11-18 8:43 AM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: FW: New course proposal Deep Sea Ecology

Hello Garth,

I'm forwarding a question on your proposal (see below). Can you please provide some clarification?

Thank you,
Bev

From: Cyr Couturier
Sent: Monday, September 10, 2018 6:27 PM
To: Mary Pippy <Mary.Pippy@mi.mun.ca>; Bev Fleet <Bev.Fleet@mi.mun.ca>; Cyr Couturier <Cyr.Couturier@mi.mun.ca>
Subject: RE: New course proposal Deep Sea Ecology

Hi Bev,

The proposed new course looks good, fairly intensive I think.

The only thing we should ask is for what programs will the course be integral? End of first paragraph, Dr. Bates states it will be integral for all programs the DOS offers, so I think these should be listed. Obviously it is not intended to be an elective, so some clarification there is needed, that is all.

Best,

Cyr

Cyr Couturier
Aquaculture Scientist and Chair Aquaculture Programs

New Course – OCSC 4400 Deep-Sea Ecology – 20 Nov 2018

School of Fisheries
Marine Institute of Memorial University
T (709) 778-0609
C (709) 691-9139
Email: cyr@mi.mun.ca
Twitter: @aquacanada
Web: mi.mun.ca/casd

MEDECINE

From: cvardy@mun.ca [mailto:cvardy@mun.ca]
Sent: September 13, 2018 10:17 AM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: FW: New course proposal

The Faculty of Medicine is supportive of the new course proposal for OCSC4400 Deep-sea Ecology.
Regards
Cathy

CATHY VARDY, MD, FRCPC | VICE DEAN AND PROFESSOR OF PEDIATRICS

Faculty of Medicine
Health Sciences Centre
Room M2M319
Memorial University of Newfoundland
St. John's, Newfoundland | A1B 3V6

T 709 864 6417 | F 709 864 6336

BIOCHEMISTRY

From: [vbooth](mailto:vbooth@mun.ca) [mailto:vbooth@mun.ca]
Sent: September-19-18 11:41 AM
To: Fletcher, Garth <fletcher@mun.ca>
Cc: Biochemistry Head <biohead@mun.ca>
Subject: Re: New course proposal

Hi Garth,

Biochemistry supports the proposed new course.

VB

ENGINEERING

From: Engineering Consult [<mailto:engrconsult@mun.ca>]
Sent: September-19-18 3:18 PM
To: Fletcher, Garth <fletcher@mun.ca>
Cc: Fisher, Andrew <adfisher@mun.ca>; Edmunds, Jayde <edmundsj@mun.ca>; Bruce Quinton <bruce.quinton@mun.ca>
Subject: Re: New course proposal

New Course – OCSC 4400 Deep-Sea Ecology – 20 Nov 2018

Dear Dr. Fletcher,

Thank you for the opportunity to comment on the proposed new course OCSC 4400.

At its regular meeting today, the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science determined that this Calendar change will have no impact on Engineering 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

CHEMISTRY

From: Department of Chemistry Consult <chemconsult@mun.ca>

Sent: Monday, October 29, 2018 4:55 PM

To: Fletcher, Garth

Subject: Re: New course proposal

Hi Garth,

The proposed OSC4400 is a very interesting and highly relevant course. It also looks well thought out and will require a solid effort on the part of students in the class. It should be very popular. I can strongly support this course on behalf of the chemistry department.

Sincerely,

Chris Flinn
Chair, Chemistry Undergraduate Studies committee



Collection Development Division
Queen Elizabeth II Library

15 November 2018

To: Garth Fletcher, Department of Ocean Sciences
From: Erin Alcock, Science Research Liaison Librarian
Subject: New Course Proposal, OCSC 4400

Upon review of the new course proposal for OCSC 4400 – Deep Sea Ecology, I have determined that Memorial University Library system has sufficient resources to support the objectives of this course.

Physical items will be held at several library branches and can easily be retrieved. Online subscriptions and electronic book collections are numerous. Items not currently in the collection can be ordered through Document Delivery or ordered for the collection in paper or e-format, based upon preference.

Table One outlines the results obtained with searches based upon the proposed course topics. In addition to the resources suggested in the proposal there are thousands of electronic books and articles to be found in OneSearch on these topics. Additional items will be discovered in subject specific databases such as ASFA (Aquatic Science and Fisheries Abstracts), as well as, Biological Abstracts, Web of Science and Scopus.

Table One: OCSC 4400 Topics in OneSearch

Course Topics	Library Holdings from OneSearch	
	Catalogue	Books, Articles & More...
Deep sea ecology	132	120000+
Physical environment AND deep sea	30	155000+
Chemical environment AND deep sea	28	115000+
Hydrothermal vents and seeps	98	59000+
Benthic storms	11	12000+
Seasonal processes AND deep sea	36	245000+
Species patterns AND deep sea	61	240000+
Biodiversity AND deep sea	45	44000+
Biological adaptation AND deep sea	17	36000+
Human exploration AND deep sea	17	53000+
Cabled observatories	8	2300+
Mining AND deep sea	35	68000+
Fishing AND deep sea	69	81000+
Climate change AND deep sea	71	165000+
Plastic* AND deep sea	14	81000+

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): Major in Ocean Sciences / Major in Ocean Sciences (Environmental Systems)
- ☐ 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

Major in Ocean Sciences

Major in Ocean Sciences (Environmental Systems)

REVISED PROGRAM TITLE

NA

RATIONALE

The proposal recommends minor changes to the Admission Requirements of two programs in Ocean Sciences to make them more flexible.

CALENDAR CHANGES

11.9.3.1 Admission Requirements for the Major in Ocean Sciences or the Major in Ocean Sciences (Environmental Systems)

Admission to the Ocean Sciences Major Programs is based on academic standing. To be considered for admission ~~to one of the major programs~~, students must normally have completed 30 credit hours with a minimum of 24 credit hours in Science, and an overall average of at least 65%. ~~The~~ It is recommended that the following courses ~~should have been~~be completed before admission:

1. Biology 1001 and 1002;
2. Chemistry 1050 and 1051 (or 1200 and 1001);
3. Earth Sciences 1000;
4. six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses;
5. Mathematics 1000 (or equivalent);
6. Ocean Sciences 1000 with a minimum grade of 65%; and
7. Physics 1020 (or 1050) or one Ocean Sciences course at the 2000 level.

~~Students who wish to enroll in any of these programs should plan well in advance so that they have appropriate prerequisites. Entry to required courses may be limited and determined by academic performance.~~ Students are advised to consult with the Department at the earliest opportunity to prepare adequately for program admission. Each student ~~registered~~majoring in ~~the Major~~Ocean Sciences will be assigned ~~a~~a ~~faculty~~an advisor who should be consulted on academic issues, including course selection.

CALENDAR ENTRY AFTER CHANGES

11.9.3.1 Admission Requirements for the Major in Ocean Sciences or the Major in Ocean Sciences (Environmental Systems)

Admission to the Ocean Sciences Major Programs is based on academic standing. To be considered for admission, students must normally have completed 30 credit hours with a minimum of 24 credit hours in Science, and an overall average of at least 65%. It is recommended that the following courses be completed before admission:

1. Biology 1001 and 1002;
2. Chemistry 1050 and 1051 (or 1200 and 1001);
3. Earth Sciences 1000;
4. six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses;
5. Mathematics 1000 (or equivalent);
6. Ocean Sciences 1000 with a minimum grade of 65%; and
7. Physics 1020 (or 1050) or one Ocean Sciences course at the 2000 level.

Students are advised to consult with the Department at the earliest opportunity to prepare adequately for program admission. Each student majoring in Ocean Sciences will be assigned an advisor who should be consulted on academic issues, including course selection.

SECONDARY CALENDAR CHANGES

NA

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

From	Response Received
Grenfell campus	No
Faculty of Business Administration	No
Faculty of Education	No
Faculty of Engineering & Applied Science	Yes
Faculty of Humanities & Social Science	No
Faculty of Science	Yes
Department of Biochemistry	x
Department of Biology	x
Department of Chemistry	
Department of Computer Sciences	
Department of Earth Sciences	
Department of Economics	
Department of Geography	
Department of Mathematics and Statistics	
Department of Physics and Physical Oceanography	
Department of Psychology	
Marine Institute	Yes
School of Medicine	Yes

The request for feedback and responses received are provided in Appendices 1 and 2.

LIBRARY REPORT

NA

RESOURCE IMPLICATIONS

NA

APPENDIX 1

Request for feedback sent on October 4, 2018

From: Fletcher, Garth

Sent: Thursday, October 4, 2018 1:30 PM

To: Biochemistry Head; Business; chemconsult@mun.ca (chemconsult@mun.ca); 'cs-chair@mun.ca'; Earth Sciences; Locke, Wade; Hicks, Sue; Engineering; Alcock, Erin; Grenfell Campus; Faculty of Humanities and Social Sciences; 'mathconsult@mun.ca'; Medicine; 'miugconsultations@mi.mun.ca'; Catto, Norm; Physics Head; psychology.head@mun.ca; Suzanne Dufour; Chapman, Tom

Cc: amercier@mun.ca

Subject: consultation minor changes in Ocean Sciences majors

Colleagues I have attached a proposal to make minor changes to our major in Ocean Sciences and Ocean Sciences (Environmental Systems).

Could you please review this proposal and return your comments to me in time for the next FoSCUGS meeting.

Regards

Garth

Garth L. Fletcher
Head and Professor Emeritus
Department of Ocean Sciences
Ocean Sciences Centre
Memorial University
St John's NL
Canada, A1C 5S7

TEL: 709-864-3276
FAX 709-864-3220
Email fletcher@mun.ca

<Proposal-CalendarChange-OceanSciences-4Oct.pdf>

APPENDIX 2

Feedback received

From: cvardy@mun.ca
Sent: Friday, October 5, 2018 2:00 PM
To: Fletcher, Garth
Subject: RE: consultation minor changes in Ocean Sciences majors

Dear Dr. Fletcher
The Faculty of Medicine is supportive of the proposal for minor changes in Ocean Sciences and Ocean Sciences (Environmental Systems).
Regards

CATHY VARDY, MD, FRCPC | VICE DEAN AND PROFESSOR OF PEDIATRICS

Faculty of Medicine
Health Sciences Centre
Room M2M319
Memorial University of Newfoundland
St. John's, Newfoundland | A1B 3V6

T 709 864 6417 | F 709 864 6336
www.med.mun.ca/

From: vbooth [<mailto:vbooth@mun.ca>]
Sent: October-10-18 2:44 PM
To: Fletcher, Garth <fletcher@mun.ca>
Cc: Biochemistry Head <biohead@mun.ca>
Subject: Re: consultation minor changes in Ocean Sciences majors

Hi Garth,

I've just had a quick look at this. I'm wondering if it might be appropriate (and clearer for students) if you add some words to the "completed before admission" to tell students if they should apply for admission during the semester they're completing the courses? or if you'd prefer them to apply after the courses are done and the grades are out?

But, no big worries either way.

Valerie

.....
Valerie Booth
Professor
Deputy Head (undergraduate) Department of Biochemistry and
Department of Physics and Physical Oceanography
Memorial University of Newfoundland
St. John's, NL, A1B 3X9, Canada

On 10/10/2018 3:37 PM, Fletcher, Garth wrote:

Hi Annie---question for you.
Regards
Garth

On 11/10/2018 10:54 AM, Annie Mercier wrote:

Hi Valerie:
Many thanks for your feedback and thoughtful comment.
Actually, we have no reason to be too strict at this point since our programs are only starting to be offered. We would have no problem with students being admitted in the semester during which they are fulfilling the admission requirements, or after it. I get your point that we might need to be more specific in the future though.
All the best,
Annie

Annie Mercier, PhD
Professor and Deputy Head,
Department of Ocean Sciences
Memorial University (Ocean Sciences Centre)
St. John's, NL, Canada, A1C 5S7
Tel: (709) 864-2011
Email: amercier@mun.ca
www.mun.ca/osc/amercier/bio.php

From: MIUG Consultations [mailto:MIUGconsultations@mi.mun.ca]
Sent: October-17-18 2:03 PM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: RE: consultation minor changes in Ocean Sciences majors

Dear Garth,

Thank you for the opportunity to review and comment on the proposal for minor changes in Ocean Sciences majors. The Marine Institute supports the proposal.

Regards,
Bev

Bev Fleet
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0369
FAX: 709-778-0535
Bev.Fleet@mi.mun.ca

From: Engineering Consult [<mailto:engrconsult@mun.ca>]
Sent: October-17-18 3:10 PM
To: Fletcher, Garth <fletcher@mun.ca>
Cc: Fisher, Andrew <adfisher@mun.ca>; Edmunds, Jayde <edmundsj@mun.ca>;
Bruce Quinton <bruce.quinton@mun.ca>
Subject: Re: consultation minor changes in Ocean Sciences majors

Dear Dr. Fletcher,

Thank you for the opportunity to comment on the proposed Calendar changes to the major in Ocean Sciences and Ocean Sciences (Environmental Systems).

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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

Subject: Re: consultation minor changes in Ocean Sciences majors
Date: Fri, 19 Oct 2018 12:57:54 -0230
From: Suzanne Dufour <sdufour@mun.ca>

To: Fletcher, Garth <fletcher@mun.ca>, Annie Mercier <amercier@mun.ca>, Jody-Lynn Burke <jrotchford@mun.ca>

Hello Garth,

The Biology Undergraduate Committee has reviewed the proposal to make minor changes to the major in Ocean Sciences and Ocean Sciences (Environmental Systems). We have no concerns with those changes.

Best wishes,

Suzanne

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):
 - *Proposed new course, COMP-1003*
 - *Appendix Page*
- ☐ Amended or deleted course(s):
 - *Amend COMP-1000 course description*
 - *Amend COMP-4770 with additional prerequisite*
 - *Amend COMP-4300 with additional prerequisite*
 - *Amend COMP-3550 with additional prerequisite*
 - *Amend COMP-3301 with additional prerequisite*
 - *Amend COMP-3202 with additional prerequisite*
 - *Delete courses being phased out because of new curriculum (including 4748)*
- ☐ New program(s):
- ☐ Amended or deleted program(s):
 - *Add COMP-3200 to VCG Major*
 - *Add COMP-3731 to CS/STATS Joint Major*
 - *Add paragraph regarding honours topic to CS/PHYSICS joint major*
 - *Amend name of CS Internship program*
 - *Amend programs which require COMP-1000 to new course COMP-1003*
- ☐ 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:
 - *Update CS Minor regulations to replace COMP-1000 with new course, COMP-1003*
 - *Add admission criteria for acceptance as a CS Major*
- ☐ 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

1003 Foundations of Computing Systems

ABBREVIATED COURSE TITLE

Foundations of Computing Sys

RATIONALE

In the Computer Science undergraduate curriculum that began in 2016, there is a perceived gap in knowledge from first-year to second-year Computer Science courses. This course will replace Computer Science 1000 as a major and minor requirement with the goal of closing that gap.

CALENDAR CHANGES

1003 Foundations of Computing Systems provides a solid introduction to foundational topics in computer science: algorithms and data structures, theory of computing, machine architecture and their historical context.

CO: COMP 1002

LH: 3

PR: COMP 1001

CALENDAR ENTRY AFTER CHANGES

1003 Foundations of Computing Systems provides a solid introduction to foundational topics in computer science: algorithms and data structures, theory of computing, machine architecture and their historical context.

CO: COMP 1002

LH: 3

PR: COMP 1001

SECONDARY CALENDAR CHANGES

1000 Computer Science – An Introduction is a gentle introduction to computer science. In a breadth-first overview approach it discusses important aspects of computer science including fundamentals in algorithms, binary data representation, Boolean logic and its implementation, machine architecture, systems software, networking concepts, programming languages, databases, and selected Computer Science subfields.

CR: COMP 1700. Students cannot receive credit for COMP 1000 if they have previously successfully completed, or are currently registered for, COMP 1003.

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

COURSE NUMBER AND TITLE

1000 Computer Science – An Introduction

RATIONALE

This course is currently a required course for Computer Science majors but will be replaced by the newly proposed course, COMP 1003. COMP 1000 will remain as a course for non-majors or for students who are undecided. To minimize the overlap between COMP 1000 and COMP 1003 such that students may take COMP 1000 and later decide to major in Computer Science (and therefore have to complete COMP 1003), some of the topics in COMP 1000 will be removed, while some of the existing topics will be expanded.

CALENDAR CHANGES

1000 Computer Science – An Introduction is a gentle introduction to computer science. In a breadth-first overview approach it discusses important aspects of computer science including fundamentals in algorithms, binary data representation, Boolean logic ~~and its implementation, machine architecture~~, systems software, networking concepts, introductory programming languages, databases, and selected Computer Science subfields.

CALENDAR ENTRY AFTER CHANGES

1000 Computer Science – An Introduction is a gentle introduction to computer science. In a breadth-first overview approach it discusses important aspects of computer science including fundamentals in algorithms, binary data representation, Boolean logic, systems software, networking concepts, introductory programming, databases, and selected Computer Science subfields.

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Senate Summary Page for Courses

COURSE NUMBER AND TITLE

4770 Team Project

RATIONALE

In the new Computer Science undergraduate curriculum, much of the third-year core requirements was moved to the second-year level, as a result the Team Project course, intended to be more of a capstone course has only second-year prerequisites. To ensure that students have the academic maturity to participate and get the most out of COMP 4770, it was felt that third-year course requirements were important.

CALENDAR CHANGES

4770 Team Project has as its main objective to develop a working prototype of a software system as a team effort. A group of students will work on a project for a term, experiencing the advantages and difficulties of team projects.

AR: attendance is required

PR: COMP 3715 ~~or COMP 2006~~, COMP 3716 ~~or COMP 2005~~, COMP 3724 ~~or COMP 2003~~, and COMP 3754 ~~or COMP 2007~~; or COMP 2003, COMP 2005, COMP 2006, COMP 2007, and two Computer Science courses at the 3000 level or above

CALENDAR ENTRY AFTER CHANGES

4770 Team Project has as its main objective to develop a working prototype of a software system as a team effort. A group of students will work on a project for a term, experiencing the advantages and difficulties of team projects.

AR: attendance is required

PR: COMP 3715, COMP 3716, COMP 3724, and COMP 3754; or COMP 2003, COMP 2005, COMP 2006, COMP 2007, and two Computer Science courses at the 3000 level or above

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Senate Summary Page for Courses

COURSE NUMBER AND TITLE

4300 Introduction to Game Programming

RATIONALE

On the first offering of this course in Fall 2018 it was determined that students would benefit from additional background Mathematics knowledge, as well as the maturity of having completed third-year Computer Science courses.

CALENDAR CHANGES

4300 Introduction to Game Programming is an introductory course for students interested in learning the fundamentals of game programming. Topics include vector math for games, fundamentals of rendering, introduction to animation and artificial intelligence, collision detection, game physics and user-interfaces. Students are required to write a fully functional game during the course.

PR: COMP 2001, Mathematics 2050, and two Computer Science courses at the 3000 level or above (COMP 3301 and COMP 3731 are recommended)

CALENDAR ENTRY AFTER CHANGES

4300 Introduction to Game Programming is an introductory course for students interested in learning the fundamentals of game programming. Topics include vector math for games, fundamentals of rendering, introduction to animation and artificial intelligence, collision detection, game physics and user-interfaces. Students are required to write a fully functional game during the course.

PR: COMP 2001, Mathematics 2050, and two Computer Science courses at the 3000 level or above (COMP 3301 and COMP 3731 are recommended)

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Senate Summary Page for Courses

COURSE NUMBER AND TITLE

3550 Introduction to Bioinformatics

RATIONALE

It is intended that the Computer Science prerequisite for Biology students (who fall into the first clause of the prerequisites) is a programming course, thus COMP 1401 should be added to the list of excluded courses.

CALENDAR CHANGES

3550 Introduction to Bioinformatics (same as Biology 3951) deals with the development and application of computational methods to address biological problems. The course will focus on the fundamental concepts, ideas and related biological applications of existing bioinformatics tools. This course will provide hands-on experience in applying bioinformatics software tools and online databases to analyze experimental biological data, and it will also introduce scripting language tools typically used to automate some biological data analysis tasks.

CR: Biology 3951

LH: 3

PR: Biology 2060 or Biochemistry 2101, and one Computer Science course at the 1000-level or above excluding COMP 1400, COMP 1401, COMP 1600 and COMP 2000; or COMP 2500 or COMP 2710 or COMP 2001, and one Biology course at the 1000-level or above excluding Biology 2040 and Biology 2041; or permission of the course instructor

CALENDAR ENTRY AFTER CHANGES

3550 Introduction to Bioinformatics (same as Biology 3951) deals with the development and application of computational methods to address biological problems. The course will focus on the fundamental concepts, ideas and related biological applications of existing bioinformatics tools. This course will provide hands-on experience in applying bioinformatics software tools and online databases to analyze experimental biological data, and it will also introduce scripting language tools typically used to automate some biological data analysis tasks.

CR: Biology 3951

LH: 3

PR: Biology 2060 or Biochemistry 2101, and one Computer Science course at the 1000-level or above excluding COMP 1400, COMP 1401, COMP 1600 and COMP 2000; or COMP 2500 or COMP 2710 or COMP 2001, and one Biology course at the 1000-level or above excluding Biology 2040 and Biology 2041; or permission of the course instructor

SECONDARY CALENDAR CHANGES

In the Biology section of the calendar (12.2):

3951 Introduction to Bioinformatics (same as Computer Science 3550) deals with the development and application of computational methods to address biological problems. The course will focus on the fundamental concepts, ideas and related biological applications of existing bioinformatics tools. This course will provide hands-on experience in applying bioinformatics software tools and online databases to analyze experimental biological data, and it will also introduce scripting language tools typically used to automate some biological data analysis tasks.

CR: Computer Science 3550

LH: 3

PR: Biology 2060 or Biochemistry 2101, and one Computer Science course at the 1000-level or above excluding COMP 1400, COMP 1401, COMP 1600 and COMP 2000; or COMP 2500 or COMP 2710 or COMP 2001, and one Biology course at the 1000-level or above excluding Biology 2040 and Biology 2041; or permission of the course instructor

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

COURSE NUMBER AND TITLE

3301 Visual Computing and Applications

RATIONALE

On the first offering of this course in Winter 2018 it was determined that students would benefit from additional background Mathematics knowledge.

CALENDAR CHANGES

3301 Visual Computing and Applications provides students with the fundamental knowledge and skills in the fields of computer vision, computer graphics, and visualization. Visual perception is responsible for most of our impressions about the world around us. This course introduces how computers are used to both mimic the human visual system (e.g., recognize shapes) and to create visual content (e.g. synthesize images). Related techniques on image synthesis, processing and analysis are discussed under a unified framework. How visual computing principles were used to create visual effects in movies and commercials is also examined.

PR: COMP 2002, Mathematics 2000, and Mathematics 2050

CALENDAR ENTRY AFTER CHANGES

3301 Visual Computing and Applications provides students with the fundamental knowledge and skills in the fields of computer vision, computer graphics, and visualization. Visual perception is responsible for most of our impressions about the world around us. This course introduces how computers are used to both mimic the human visual system (e.g., recognize shapes) and to create visual content (e.g. synthesize images). Related techniques on image synthesis, processing and analysis are discussed under a unified framework. How visual computing principles were used to create visual effects in movies and commercials is also examined.

PR: COMP 2002, Mathematics 2000, and Mathematics 2050

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Senate Summary Page for Courses

COURSE NUMBER AND TITLE

3202 Introduction to Machine Learning

RATIONALE

During development of this course for Winter 2019 it was determined that students would benefit from additional background Mathematics knowledge.

CALENDAR CHANGES

3202 Introduction to Machine Learning introduces concepts and algorithms in machine learning for regression and classification tasks. The course gives the student the basic ideas and intuition behind model selection and evaluation, and selected machine learning methods such as random forests, support vector machines, and hidden Markov models.

PR: COMP 3200; or COMP 2001 and COMP 2002 and Statistics 2550; and Mathematics 2050.

CALENDAR ENTRY AFTER CHANGES

3202 Introduction to Machine Learning introduces concepts and algorithms in machine learning for regression and classification tasks. The course gives the student the basic ideas and intuition behind model selection and evaluation, and selected machine learning methods such as random forests, support vector machines, and hidden Markov models.

PR: COMP 3200; or COMP 2001 and COMP 2002 and Statistics 2550; and Mathematics 2050.

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Undergraduate Calendar Change Proposal Form

Senate Summary Page for Courses

RATIONALE

The Computer Science department began phasing in a new undergraduate program in 2016 and has been phasing out courses from the old program. As a result, we would like to delete the old program courses from the calendar, but keep these former courses as possible prerequisites to new courses. In some instances the alternative old program course is missing from the prerequisite listing and to avoid having to issue prerequisite waivers for students with courses from the old program we would like to add these as alternate prerequisites.

We are also proposing to delete COMP 4748 since it has not been offered in over 15 years.

CALENDAR CHANGES

12.4 Computer Science

Computer Science courses are designated by COMP.

12.4.1 First Year Courses

1000 Computer Science – An Introduction is a gentle introduction to computer science. In a breadth-first overview approach it discusses important aspects of computer science including fundamentals in algorithms, binary data representation, Boolean logic and its implementation, machine architecture, systems software, networking concepts, programming languages, databases, and selected Computer Science subfields.

CR: the former COMP 1700

LH: 3

1001 Introduction to Programming is an introduction to fundamental programming techniques, primitive data types, and to simple algorithms and their design concepts.

CR: the former COMP 1710

LH: 3

1002 Introduction to Logic for Computer Scientists introduces methods of reasoning and logic tools that underlie computer science. In particular, this course covers propositional and predicate logic, sets and other discrete structures, as well as modular arithmetic and basic counting, with emphasis on their applications in computer science.

CR: the former COMP 2742, Engineering 4424, Mathematics 2320. Students cannot receive credit for COMP 1002 if completed with, or subsequent to, Mathematics 2320.

LH: 3

1400 Computing in the 20th Century and Beyond will give an overview of the development of computing technologies over the last 75 years as well as both the perception of these technologies by, and their impact on, society. The course will be organized chronologically by decade, and within each decade will examine the dominant computing developments, their image in various print and pictorial media, and their social impact. The aim is to give students of all disciplines an appreciation of the abilities and limitations of computer technology and how such technologies interact with society.

1401 Computing at the Movies will both examine and counter common misconceptions about computing and the computing profession. This will be done by contrasting depictions of various aspects of computing in various movies and documentaries produced over the last 60 years with the reality of these aspects as given in selected readings and course lecture notes.

1510 An Introduction to Programming for Scientific Computing introduces students to basic programming in the context of numerical methods with the goal of providing the foundation necessary to handle larger scientific programming projects. Numerical methods to solve selected problems from Physics, Chemistry, and Mathematics will be covered.

CR: the former COMP 2602 and the former Mathematics 2120

LH: 2

PR: Mathematics 1000

~~1550 Introduction to Multimedia Application Development is an introduction to programming and computer science with an emphasis on the development of multimedia applications. The course introduces the fundamental principles of programming, including object-oriented and event-driven programming, how to use and create classes and methods and combine them with multimedia libraries to produce animations, handle input from keyboard and mouse, and import sounds and videos to produce multimedia applications which can be directly deployed on the Internet.~~

CR: COMP 2300

~~LH: 3~~

1600 Basic Computing and Information Technology offers an overview of information technology. It provides students with an understanding of basic concepts and necessary skills required to use spreadsheet, database and presentation software to manage, analyze, and present data.

CR: the former Business 2700, the former COMP 2650 and the former COMP 2801

LH: 3

~~**1700 Introduction to Computer Science** lays the foundation for the art and the science of computing. The course contains fundamental and topical issues in computers, languages, programming and applications. This course is designed for potential Computer Science majors without a background in programming, but is also available for non-majors.~~

CR: COMP 1000

~~LH: 3~~

~~**1710 Object-Oriented Programming I** is an introduction to fundamental programming techniques, primitive data types and operations, program control structures and the use of objects, classes and methods.~~

~~CR: COMP 2710 or COMP 1001~~

12.4.2 Second Year Courses

2000 Collaborative and Emergent Behaviour is a survey of computation as a means of understanding, modelling, and describing artificial and natural systems. The emergence of complex behaviour from the interaction of simple rules governing individual components is illustrated and discussed, as well as the role of communication between system components. Selected systems to be studied will be drawn from different topic areas which may include the worldwide web, the mind (cognitive science), formal logic, autonomous robotics, chaos and fractals, and bioinformatics. Each topic will incorporate an associated laboratory experience.

LH: 3 hours bi-weekly

2001 Object-Oriented Programming and Human-Computer Interaction advances from Introduction to Programming and studies object-oriented programming. Additional topics include event-driven programming, program correctness and simple refactoring, as well as interfaces and human-computer interaction. A brief overview of programming languages is also provided.

CR: the former COMP 2710

LH: 3

PR: COMP 1001, Mathematics 1000

2002 Data Structures and Algorithms covers fundamental data structures, algorithms and algorithm design techniques. A problem-driven course, it focuses on computational

problem solving from designing an efficient algorithm to implementing it using appropriate data structures.

CR: the former COMP 2711

LH: 3

PR: COMP 1001, COMP 1002

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, COMP 1002

2004 Introduction to Operating Systems introduces fundamental techniques for interfacing between computer software and hardware platforms, including the composition of, and connections within, a multilevel operating system. Students learn how to design substantial parts of an operating system.

CR: the former COMP 3725

PR: COMP 2002, COMP 2003

2005 Software Engineering introduces students to the different software process models, to project management and the software requirements engineering process, as well as to systems analysis and design as a problem-solving activity.

CR: the former COMP 3716

PR: COMP 2001

2006 Computer Networking introduces students to the use of programming interfaces for computer networking and to understand how the Internet works on the level of protocols. It focuses on the most commonly used of those protocols that are in the vast majority of modern computer systems.

CH: 1

CO: COMP 2004

CR: the former COMP 3715

PR: COMP 2001, COMP 2002

2007 Introduction to Information Management introduces the basic knowledge needed for managing large volumes of data. It covers topics in information management and database systems from storage and retrieval to security and privacy of data.

CH: 1

CO: COMP 2004

CR: the former COMP 3754

PR: COMP 2002

2008 Social Issues and Professional Practice covers ethical and social considerations of computing to provide students with the basis to address these issues by ethical and technical actions. Case studies are used to illustrate ethical and social issues of computing.

CH: 1

CR: the former COMP 2760

PR: COMP 1000

2100 Social Web Analysis covers the analysis of social network structures, the flow of data within them and the methods to extract useful information about these networks, their participants and the content of their communication. Security and trust issues are also covered.

PR: COMP 1000

2300 Introduction to Multimedia Programming is an introduction to programming and computer science with an emphasis on the development of multimedia applications. The course introduces the fundamental principles of programming, including object-oriented and event-driven programming. Students will develop an understanding of how to use and create classes and methods and combine them with multimedia libraries to produce animations, handle input from keyboard and mouse, and import sounds and videos to produce multimedia applications which can be directly deployed on the Internet.

CR: the former COMP 1550

LH: 3

PR: COMP 1000

2500 Data Analysis with Scripting Languages introduces the use of scripting languages to solve common data analysis tasks. The control structures and expressions of the language are first discussed. Script solution to storing/retrieving data sets, searching data sets, and performing numeric and statistical calculation are covered. Plotting and visualization for data sets are also presented.

PR: COMP 1510 or the former COMP 1700 or the former COMP 1710 or COMP 1000 or COMP 1001 (or equivalent)

2510 Programming in C/C++ is a comprehensive treatment of the C/C++ programming languages. It is intended for students with some first programming experience. This course starts with a discussion of fundamentals of C and C++, moves on to the object-oriented aspects of C++, and introduces some advanced topics. It is an essential course for mastering the power of this rich programming language.

CR: Engineering 3891

LH: 3

PR: COMP 1510 or the former COMP 1550 or the former COMP 1700 or the former COMP 1710 or COMP 1000 or COMP 1001 or Engineering 1020 (or equivalent)

~~**2710 Object-Oriented Programming II** continues from Object-Oriented Programming I, and studies object-oriented and event-driven programming. Additional topics include: recursion, basic analysis of algorithms, fundamental data structures such as simple linked structures and stacks, and fundamental computing algorithms such as binary search and quadratic time sorting. A brief overview of programming languages, virtual machines and language translations is also provided.~~

CR: COMP 2001

LH: 3

PR: COMP 1710 and Mathematics 1000

~~**2711 Introduction to Algorithms and Data Structures** includes the study of standard ways of organizing and manipulating data in computer storage. Fundamental concepts in the design and analysis of algorithms are also discussed.~~

CR: COMP 2002

LH: 3

PR: ~~COMP 2710. It is recommended that students complete COMP 2742 prior to registering for COMP 2711~~

2718 Development Tools, Work Flows and Concepts covers tools, work flows and concepts used in software development in a concentrated introductory set of topics. The essential work flows (with their underlying concepts) used to edit, build, test, combine with existing software and find existing software are introduced. The tools covered include text editors, programming language translators, file management tools, debuggers, scripting tools, source control tools, and building, testing and deployment tools. The architecture and use of an Integrated Development Environment are discussed.

LH: 3

PR: COMP 2500 or COMP 2510 or the former COMP 2710

2742 Logic for Computer Science is an introduction to propositional and predicate logic with applications. The use of the system of boolean logic in reasoning and circuit design, as well as basic proof techniques and the resolution principle, for both propositional and predicate logic, will be covered. Concepts involving sets will be used to illustrate different types of proof techniques. The probable intractability of boolean logic and Goedel's incompleteness theorem will be presented.

CR: COMP 1002

PR: COMP 1710 or COMP 1001, and Mathematics 1000

2760 Encountering the Computer: Society and the Individual examines social, ethical, legal and cultural issues surrounding the use of computers in modern society. These broader social issues are followed by an examination of the use of social and individual psychology in user interface design. Students will be expected to demonstrate an understanding of these issues both directly (through verbal and written discourse) and practically, as applied to the creation of actual software artifacts.

CO: COMP 2710 or COMP 2001

CR: COMP 2008

PR: two 1000-level English courses, or equivalent

12.4.3 Third Year Courses

3200 Algorithmic Techniques for Smart Systems covers basic algorithmic techniques and data structures that are used to embed basic intelligent behaviors, such as problem solving, reasoning and learning in software systems and agents.

CR: the former COMP 4753

PR: COMP 2001 or the former COMP 2710, and COMP 2002 or the former COMP 2711, and Statistics 1510 or Statistics 2550

3201 Introduction to Nature-Inspired Computing provides an overview of popular nature-inspired computing methods. Methods that are inspired by both biological and non-biological systems are considered. These methods have been applied to solve problems in various areas of computing such as optimization, machine learning, and robotics. Particular examples of nature-inspired computing methods studied include cellular automata, neural networks, evolutionary computing, swarm intelligence, artificial life, and complex networks. Contributions made in the field of nature-inspired computing that have led to advances in the natural sciences are also discussed.

CR: the former COMP 4752

PR: COMP 2002 or the former COMP 2711

3202 Introduction to Machine Learning introduces concepts and algorithms in machine learning for regression and classification tasks. The course gives the student the basic ideas and intuition behind model selection and evaluation, and selected machine learning methods such as random forests, support vector machines, and hidden Markov models.

PR: COMP 3200; or COMP 2001 or the former COMP 2710, and COMP 2002 or the former COMP 2711, and Statistics 2550

3300 Interactive Technologies provides exposure to traditional desktop, mobile and games contexts with respect to interaction design theory and practice. The impact of context on design principles is explored. An introduction to each programming context will be provided and a minimal set of software development tools for each context will be introduced. Practical application of interaction design principles will involve design and prototyping of desktop, mobile and games applications.

PR: COMP 2001 or the former COMP 2710

3301 Visual Computing and Applications provides students with the fundamental knowledge and skills in the fields of computer vision, computer graphics, and visualization. Visual perception is responsible for most of our impressions about the world around us. This course introduces how computers are used to both mimic the human visual system (e.g., recognize shapes) and to create visual content (e.g. synthesize images). Related techniques on image synthesis, processing and analysis are discussed under a unified framework. How visual computing principles were used to create visual effects in movies and commercials is also examined.

PR: COMP 2002 or the former COMP 2711

3401 Introduction to Data Mining introduces students to the basic concepts and techniques for data mining and knowledge discovery. Students will develop an understanding of the essential data mining technologies, and be able to design and evaluate methods for simple data mining applications.

PR: COMP 2002 or the former COMP 2711, COMP 2007 or the former COMP 3754, and Statistics 2550

3550 Introduction to Bioinformatics (same as Biology 3951) deals with the development and application of computational methods to address biological problems. The course will focus on the fundamental concepts, ideas and related biological applications of existing bioinformatics tools. This course will provide hands-on experience in applying bioinformatics software tools and online databases to analyze experimental biological data, and it will also introduce scripting language tools typically used to automate some biological data analysis tasks.

CR: Biology 3951

LH: 3

PR: Biology 2060 or Biochemistry 2201 or the former 2101, and one Computer Science course at the 1000-level or above excluding COMP 1400, COMP 1600 and COMP 2000; or COMP 2500 or the former COMP 2710 or COMP 2001, and one Biology course at the 1000-level or above excluding Biology 2040 and Biology 2041; or permission of the course instructor

3700 Industrial Experience is a course for students who are admitted to CIIO. Students are required to register for this non-credit course every semester during their internship. This course is open only to students who have been accepted into the Internship Program and provides an opportunity for qualified students to obtain rewarding job experience of 8, 12 or 16 months of continuous duration, during the course of their studies.

CH: 0

PR: admission to the Computer Industry Internship Option (CIIO)

3710 Vocational Languages is a study of several programming languages of vocational significance. The use of appropriate programming paradigms to solve some significant problems will be illustrated.

PR: ~~COMP 2711 or COMP 2002~~ or the former COMP 2711

~~**3715 Network Computing with WEB Applications** studies how distributed applications (e.g., client/server Web applications) are constructed using the Internet. Topics covered include: the socket interface for network communication, client/server applications, browser scripting using Javascript, content generation for web applications (e.g., jsp, php), html/css documents, and the use of cryptography to handle security.~~

~~CR: COMP 2006~~

~~PR: COMP 2711 or COMP 2002~~

~~**3716 Software Methodology** studies the development of software by gathering the requirements of the software program, analysing the requirements to create a development model, and creating the software and documents for the software product. This course studies techniques for all three software development activities.~~

~~CR: COMP 2005~~

~~PR: COMP 2711 or COMP 2002~~

3718 Programming in the Small demonstrates the tools and techniques used in the construction of small software systems. The software tools and techniques to be covered include analysis and design of software components, software construction tools (e.g. linkers, builders, debuggers), software library use and design, and system integration.

PR: ~~COMP 2711 or COMP 2002~~ or the former COMP 2711

3719 Theory of Computation and Algorithms is an introduction to formal algorithmic problem solving. Various algorithm design techniques that sometimes yield efficient solutions are studied. Deterministic and nondeterministic machines (finite state automata, pushdown automata and Turing machines) are discussed and used to efficiently solve problems such as the String Matching Problem, the parsing of Context-free Languages, and to introduce the theory of NP-completeness. In addition, Turing machines are used to prove the unsolvability of certain problems. Tractable, intractable and undecidable problems are contrasted. Basic issues related to parallelization are discussed as well.

CR: the former COMP 3711 and the former COMP 3740

PR: ~~COMP 2711 or COMP 2002~~ or the former COMP 2711; and Mathematics 2320 or COMP 1002

~~**3724 Computer Organization** can be studied at the digital logic implementation level, the instruction set architecture level, and the translation of programming languages to the underlying machine instruction level. This course studies computer organization at these levels.~~

CR: ~~COMP 2003~~

PR: ~~COMP 2711 or COMP 2002; and COMP 2742 and Mathematics 2320, or COMP 1002~~

~~**3725 Computer Architecture and Operating Systems** covers system design and the architectural implementations of these designs. The objective is to develop the basic concepts of processor design, memory management, operating systems, and I/O devices and their interactions.~~

CR: ~~COMP 2004~~

PR: ~~COMP 3724 or COMP 2003~~

3731 Introduction to Scientific Computing main objectives are the development of algorithms for the numerical solution of mathematical problems and the study of the numerical stability of these algorithms. The efficiency of these algorithms with respect to speed and storage requirements is considered as well. Emphasis is also placed on the study of the sensitivity of selected problems to perturbations in the data. There is also a brief introduction to the development of numerical algorithms that take advantage of advanced computer architectures, such as pipeline processors, array processors and parallel processors.

CR: Mathematics 3132

PR: Mathematics 2000 and Mathematics 2050, and ~~COMP 2710 or COMP 1001~~ or the former COMP 2710

3753 Computational Aspects of Linear Programming is an introduction to the Linear Programming Problem (LPP). The emphasis is placed upon developing the most recent and numerically reliable algorithms for the solution of the Linear Programming Problem. The numerical stability of these algorithms will be examined as well. Geometric understanding of the LPP. Simplex method for the LPP. Sparse matrix LPP. Duality and postoptimality analysis. Extensions to the simplex algorithm. Principles of interior algorithms for the LPP.

PR: Mathematics 2050, and ~~COMP 2710 or~~ COMP 2001 or the former COMP 2710

~~**3754 Introduction to Information and Intelligent Systems** introduces students to application areas that are away from usual number-based and text-based processing. Students will learn the basic concepts and become aware of the historical developments and social and ethical issues related to the application areas such as intelligent systems and information management. This exposure will help students to become knowledgeable about managing large volumes of data and dealing with problems that are well defined but whose algorithmic solutions are not feasible or problems that are fuzzily defined.~~

~~CR: COMP 2007~~

~~PR: COMP 2711 or COMP 2002, and COMP 2742 or COMP 1002~~

12.4.4 Fourth Year Courses

4300 Introduction to Game Programming is an introductory course for students interested in learning the fundamentals of game programming. Topics include vector math for games, fundamentals of rendering, introduction to animation and artificial intelligence, collision detection, game physics and user-interfaces. Students are required to write a fully functional game during the course.

PR: COMP 2001 or the former COMP 2710

4301 Computer Vision (same as Engineering 8814) studies how to develop methods that enable a machine to “understand” or analyze images. The course introduces the fundamental problems in computer vision and the state-of-the-art approaches that address them. Topics include feature detection and matching, geometric and multi-view vision, structure from X, segmentation, object tracking and visual recognition.

CR: Engineering 8814

PR: COMP 3301 or Engineering 7854 or permission of the instructor

4302 3D Computer Graphics introduces the students to the state-of-the-art concepts and developments in the field of 3D computer graphics. The underlying algorithms, as well as the basic techniques to develop interactive 3D graphics systems including games and simulators, are presented. Topics of the course include 3D geometrical transformations, 3D projections, 3D modeling and rendering, 3D graphics languages

and systems. Advanced photorealistic rendering and image-based rendering techniques may also be covered.

CR: the former COMP 4751

PR: COMP 3301

4303 Artificial Intelligence in Computer Games provides an introduction to specific state-of-the-art algorithmic techniques and data structures that are used to efficiently implement human-like abilities (e.g., awareness, memory, rational decision-making (under uncertainty), movement, co-operation in groups) in computer game agents.

PR: COMP 3200

4304 Data Visualization covers interactive representation of data using a modern programming library. Topics include an introduction to the software platform and the principles for data selection, analysis, design and creation of dynamic visualizations. Students produce interactive web-based objects, addressing problems in the presentation and understanding of large data collections. The techniques discussed are applicable to different sources and types of data.

CR: the former COMP 4767

PR: COMP 2001 or the former COMP 2710, COMP 2002 or the former COMP 2711

4550 Bioinformatics: Biological Data Analysis (same as Biology 4606) provides students with the basis to analyse a variety of biological data within an integrated programming environment for data manipulation, calculation and graphical display. Students will learn to extract meaningful information from data generated by high-throughput experimentation. The course will introduce one such integrated programming environment and will explore the computational and statistical foundations of the most commonly used biological data analysis procedures.

CR: Biology 4606

LH: 3

PR: Biology 3951 or COMP 3550, and Statistics 2550 (or equivalent), or permission of the course instructor

4711 Structure of Programming Languages covers programming language design considerations; syntactic and semantic structure; survey of typical features and operations; analysis of facilities for control and data structuring; language extensibility; execution models; formal specification of programming languages.

PR: COMP 3719, and ~~COMP 3724~~ or COMP 2003 or the former COMP 3724

4712 Compiler Construction studies properties of formal grammars and languages; syntax-directed parsing and code generation; top-down and bottom-up parsing

methods; LL(k) and LR(k) grammars and parsers; Code optimization; compiler writing tools.

PR: COMP 3719, and ~~COMP 3724~~ or COMP 2003 or the former COMP 3724

4715 and 4717 Special Topics in Programming Languages will have topics to be studied announced by the Department.

4718 Survey of Software Engineering surveys the major topics of software engineering. Areas covered include: requirements capture, system design and design approaches, verification and validation (including formal methods and testing), and management of the software development process.

PR: ~~COMP 3716~~ or COMP 2005 or the former COMP 3716

4721 Operating Systems studies the design and implementation of an operating system's kernel. The main components used in operating system implementations include: context switches, process management, memory management, interprocess communication, file systems and system calls. The data structures and algorithms used in implementing the above components are studied. The different architectural styles of kernel implementation are also considered. Real-time operating systems are also discussed.

CR: Engineering 8894

PR: ~~COMP 3725~~ or COMP 2004 or the former COMP 3725

4723 Introduction to Microprocessors examines the architecture and instruction sets for several microprocessors. The use of microprocessors as device controllers; comparisons of hardware and programmed techniques; microprocessor interfacing with external devices; methods of I/O; bus structures; modern microprocessor support devices are discussed.

LH: Minimum of three hours per week. Practical experience with basic principles will be obtained through laboratory experience.

PR: ~~COMP 3724~~ or COMP 2003 or the former COMP 3724

4726-4729 Special Topics in Computer Systems will have topics to be studied announced by the Department.

4734 Matrix Computations and Applications is an introduction to linear algebra; solution to linear systems; scaling, improving and estimating accuracy; the linear least squares problem; the eigenvalue problem; singular value decomposition of a matrix; the generalized eigenvalue problem.

PR: COMP 3731

4736-4739 Special Topics in Numerical Computations will have topics to be studied announced by the Department.

4740 Design and Analysis of Algorithms will give an overview of techniques for the design of efficient optimal-solution and heuristic algorithms. It will include an introduction to various advanced data structures for set and string processing that are used to further optimize algorithm efficiency.

PR: COMP 3719

4741 Formal Languages and Computability is an in-depth study of various types of formal machines and their associated languages. Effective computability and other formalisms, such as lambda calculus will be studied as well.

CR: the former COMP 3740

PR: COMP 3719

4742 Computational Complexity is an in-depth discussion of computational complexity theory. Topics covered in the course include: models of computation (for both serial and parallel computations); complexity measures; reducibility; complexity classes (NP, PSPACE, NC, LOGSPACE and P); and randomized computations.

PR: COMP 3719

4743 Graph Algorithms and Combinatorial Optimization discusses classical problems in combinatorial optimization and graph algorithms, including matching, colorability, independent sets, isomorphism, network flows and scheduling. Special families of graphs are discussed and algorithms that would otherwise be NP-hard or complete are shown to be polynomial time when restricted to such families.

PR: COMP 3719

4745-4749 (Excluding 4748) Special Topics in Theoretical Aspects will have topics to be studied announced by the Department.

~~**4748 Introduction to the Science of Complexity** is an exploration of the use of computers in the simulation of complex systems. Some theories and models, such as cellular automata, artificial life, fractals, genetic algorithms, chaos, and evolution will be discussed and will be used in the modelling of "real-life" systems. The approach in this course is practical. Students have to write a number of programs of different levels of sophistication including a final project.~~

~~PR: COMP 3719~~

4750 Introduction to Natural Language Processing covers tasks involving human languages, such as speech recognition, text understanding, and keyword-based information retrieval which underlie many modern computing applications and their interfaces. To be truly useful, such natural language processing must be both efficient and robust. This course will give an introduction to the algorithms and data structures used to solve key NLP tasks, including utterance understanding and generation and language acquisition, in both of the major algorithmic paradigms used today (rule-based

and statistical). The emphasis will be primarily on text-based processing though speech-based processing will be addressed where possible.

PR: COMP 3719 and Statistics 1510

~~**4751 Computer Graphics** examines display devices, display processors, display file compilers, display transformations, structured display files, graphical input devices, perspective, hidden line elimination, languages and graphics systems.~~

~~CR: COMP 4302~~

~~LH: 3~~

~~PR: COMP 3719 and Mathematics 2050~~

~~**4752 Introduction to Computational Intelligence** provides an introduction to four of the fundamental computational intelligence methods: artificial neural networks, evolutionary computation, swarm intelligence and fuzzy systems. The integration of these techniques for problem solving will also be introduced.~~

~~CR: COMP 3201~~

~~PR: COMP 3719 and COMP 3754~~

~~**4753 Artificial Intelligence** has selected topics from AI programming languages; heuristic searching; problem solving; game playing; knowledge representations; knowledge-based systems; reasoning in uncertainty situations; planning; natural language understanding; pattern recognition; computer vision; and machine learning.~~

~~CR: COMP 3200~~

~~PR: COMP 3719 and COMP 3754~~

4754 Database Systems introduces students to database processing, database management systems and database design considerations. It will cover the theory and methodologies essential for the relational database design, implementation, manipulation, optimization and management.

PR: ~~COMP 3725 or COMP 2004~~ or the former COMP 3725, and ~~COMP 3754 or COMP 2007~~ or the former COMP 3754

4756 Image Processing will centre on the key analytical and algorithmic tools and concepts of digital image processing. Topics will include Transformations, Enhancement, Encoding, Data Bases, Segmentation and Description.

CR: Engineering 7854

LH: 3

PR: COMP 3719

4759 Computer Networks looks at how the operation of computer networks requires the following: a) communication between two computers, b) information transfer between two computers not directly connected, and c) services that need computer communication. This course focuses on the standard solutions and services used to fulfill the previous requirements. These include: physical transmission of signals, reliable communication based on unreliable communication channels, the routing of messages between connected computers to reach computers that are not directly connected, e-mail, file transfer, name servers, remote terminal access and the World Wide Web. Particular attention will be placed on the workings of the Internet.

PR: ~~COMP 3715 or 2006~~ or the former COMP 3715, and ~~COMP 3725 or COMP 2004~~ or the former COMP 3725

4762 Introduction to Computational Molecular Biology will give an overview of computational problems and algorithms for these problems associated with a variety of analyses of biological molecular data.

PR: COMP 3719

4766 Introduction to Autonomous Robotics examines the fundamental constraints, technologies, and algorithms of autonomous robotics. The focus of this course will be on computational aspects of autonomous wheeled mobile robots. The following topics will be covered: major paradigms in robotics, methods of locomotion, kinematics, simple control systems, sensor technologies, stereo vision, feature extraction, modelling uncertainty of sensors and positional information, localization, SLAM, obstacle avoidance, and 2-D path planning.

LH: 3

PR: ~~COMP 2711 or COMP 2002~~ or the former COMP 2711, Mathematics 2000, Mathematics 2050, and Statistics 1510 or Statistics 2550 or the former Statistics 2510

~~**4767 Information Visualization and Applications** focuses on the design and implementation of interactive visualization techniques for the analysis, comprehension, exploration, and explanation of large collections of abstract information. Topics to be covered include principles of visual perception, information data types, visual encodings of data, representation of relationships, interaction methods, understanding user goals and tasks, and evaluation techniques. Case studies of accepted techniques and the current state of the art in information visualization will be presented.~~

CR: COMP 4304

PR: ~~COMP 2760 or COMP 2008, and COMP 3719~~

4768 Software Development for Mobile Devices focuses on the design and implementation of software in a mobile networking environment. The primary topics to be covered in this course include software engineering, network computing, graphics programming, and human-computer interaction for mobile devices. A modern mobile

device with advanced networking and graphic features, including multi-touch interaction and motion sensors will be used as the primary platform for development in this course.

LH: One and one-half hours per week

PR: ~~COMP 2760 or COMP 2008~~ or the former COMP 2760, COMP 3715 or COMP 2006 or the former COMP 3715, and COMP 3716 or COMP 2005 or the former COMP 3716

4770 Team Project has as its main objective to develop a working prototype of a software system as a team effort. A group of students will work on a project for a term, experiencing the advantages and difficulties of team projects.

AR: attendance is required

PR: ~~COMP 3715 or COMP 2006~~ or the former COMP 3715, COMP 3716 or COMP 2005 or the former COMP 3716, COMP 3724 or COMP 2003 or the former COMP 3724, and COMP 3754 or COMP 2007 or the former COMP 3754

4780 Honours Project introduces computer science honours students to research activities, familiarizes them with a special problem in computer science, and provides independent study on an advanced topic under the direct supervision of a member of the computer science faculty. The topic is decided in consultation with the supervisor. The student is required to produce a written report on the project, to include the literature search on the topic, and to present this work at a departmental seminar prior to the last week of the semester.

PR: admission to the honours program and permission of the Head of Department

4800-4825 Special Topics will be offered as departmental resources permit.

CO: Special topics courses are not offered on a regular basis, but whenever departmental resources permit. For these reasons, the co-requisites can vary each time the courses are offered.

PR: Special topics courses are not offered on a regular basis, but whenever departmental resources permit. For these reasons, the prerequisites can vary each time the courses are offered.

CALENDAR ENTRY AFTER CHANGES

12.4 Computer Science

Computer Science courses are designated by COMP.

12.4.1 First Year Courses

1000 Computer Science – An Introduction is a gentle introduction to computer science. In a breadth-first overview approach it discusses important aspects of

computer science including fundamentals in algorithms, binary data representation, Boolean logic and its implementation, machine architecture, systems software, networking concepts, programming languages, databases, and selected Computer Science subfields.

CR: the former COMP 1700

LH: 3

1001 Introduction to Programming is an introduction to fundamental programming techniques, primitive data types, and to simple algorithms and their design concepts.

CR: the former COMP 1710

LH: 3

1002 Introduction to Logic for Computer Scientists introduces methods of reasoning and logic tools that underlie computer science. In particular, this course covers propositional and predicate logic, sets and other discrete structures, as well as modular arithmetic and basic counting, with emphasis on their applications in computer science.

CR: the former COMP 2742, Engineering 4424, Mathematics 2320. Students cannot receive credit for COMP 1002 if completed with, or subsequent to, Mathematics 2320.

LH: 3

1400 Computing in the 20th Century and Beyond will give an overview of the development of computing technologies over the last 75 years as well as both the perception of these technologies by, and their impact on, society. The course will be organized chronologically by decade, and within each decade will examine the dominant computing developments, their image in various print and pictorial media, and their social impact. The aim is to give students of all disciplines an appreciation of the abilities and limitations of computer technology and how such technologies interact with society.

1401 Computing at the Movies will both examine and counter common misconceptions about computing and the computing profession. This will be done by contrasting depictions of various aspects of computing in various movies and documentaries produced over the last 60 years with the reality of these aspects as given in selected readings and course lecture notes.

1510 An Introduction to Programming for Scientific Computing introduces students to basic programming in the context of numerical methods with the goal of providing the foundation necessary to handle larger scientific programming projects. Numerical methods to solve selected problems from Physics, Chemistry, and Mathematics will be covered.

CR: the former COMP 2602 and the former Mathematics 2120

LH: 2

PR: Mathematics 1000

1600 Basic Computing and Information Technology offers an overview of information technology. It provides students with an understanding of basic concepts and necessary skills required to use spreadsheet, database and presentation software to manage, analyze, and present data.

CR: the former Business 2700, the former COMP 2650 and the former COMP 2801

LH: 3

12.4.2 Second Year Courses

2000 Collaborative and Emergent Behaviour is a survey of computation as a means of understanding, modelling, and describing artificial and natural systems. The emergence of complex behaviour from the interaction of simple rules governing individual components is illustrated and discussed, as well as the role of communication between system components. Selected systems to be studied will be drawn from different topic areas which may include the worldwide web, the mind (cognitive science), formal logic, autonomous robotics, chaos and fractals, and bioinformatics. Each topic will incorporate an associated laboratory experience.

LH: 3 hours bi-weekly

2001 Object-Oriented Programming and Human-Computer Interaction advances from Introduction to Programming and studies object-oriented programming. Additional topics include event-driven programming, program correctness and simple refactoring, as well as interfaces and human-computer interaction. A brief overview of programming languages is also provided.

CR: the former COMP 2710

LH: 3

PR: COMP 1001, Mathematics 1000

2002 Data Structures and Algorithms covers fundamental data structures, algorithms and algorithm design techniques. A problem-driven course, it focuses on computational problem solving from designing an efficient algorithm to implementing it using appropriate data structures.

CR: the former COMP 2711

LH: 3

PR: COMP 1001, COMP 1002

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, COMP 1002

2004 Introduction to Operating Systems introduces fundamental techniques for interfacing between computer software and hardware platforms, including the composition of, and connections within, a multilevel operating system. Students learn how to design substantial parts of an operating system.

CR: the former COMP 3725

PR: COMP 2002, COMP 2003

2005 Software Engineering introduces students to the different software process models, to project management and the software requirements engineering process, as well as to systems analysis and design as a problem-solving activity.

CR: the former COMP 3716

PR: COMP 2001

2006 Computer Networking introduces students to the use of programming interfaces for computer networking and to understand how the Internet works on the level of protocols. It focuses on the most commonly used of those protocols that are in the vast majority of modern computer systems.

CH: 1

CO: COMP 2004

CR: the former COMP 3715

PR: COMP 2001, COMP 2002

2007 Introduction to Information Management introduces the basic knowledge needed for managing large volumes of data. It covers topics in information management and database systems from storage and retrieval to security and privacy of data.

CH: 1

CO: COMP 2004

CR: the former COMP 3754

PR: COMP 2002

2008 Social Issues and Professional Practice covers ethical and social considerations of computing to provide students with the basis to address these issues by ethical and technical actions. Case studies are used to illustrate ethical and social issues of computing.

CH: 1

CR: the former COMP 2760

PR: COMP 1000

2100 Social Web Analysis covers the analysis of social network structures, the flow of data within them and the methods to extract useful information about these networks, their participants and the content of their communication. Security and trust issues are also covered.

PR: COMP 1000

2300 Introduction to Multimedia Programming is an introduction to programming and computer science with an emphasis on the development of multimedia applications. The course introduces the fundamental principles of programming, including object-oriented and event-driven programming. Students will develop an understanding of how to use and create classes and methods and combine them with multimedia libraries to produce animations, handle input from keyboard and mouse, and import sounds and videos to produce multimedia applications which can be directly deployed on the Internet.

CR: the former COMP 1550

LH: 3

PR: COMP 1000

2500 Data Analysis with Scripting Languages introduces the use of scripting languages to solve common data analysis tasks. The control structures and expressions of the language are first discussed. Script solution to storing/retrieving data sets, searching data sets, and performing numeric and statistical calculation are covered. Plotting and visualization for data sets are also presented.

PR: COMP 1510 or the former COMP 1700 or the former COMP 1710 or COMP 1000 or COMP 1001 (or equivalent)

2510 Programming in C/C++ is a comprehensive treatment of the C/C++ programming languages. It is intended for students with some first programming experience. This course starts with a discussion of fundamentals of C and C++, moves on to the object-oriented aspects of C++, and introduces some advanced topics. It is an essential course for mastering the power of this rich programming language.

CR: Engineering 3891

LH: 3

PR: COMP 1510 or the former COMP 1550 or the former COMP 1700 or the former COMP 1710 or COMP 1000 or COMP 1001 or Engineering 1020 (or equivalent)

2718 Development Tools, Work Flows and Concepts covers tools, work flows and concepts used in software development in a concentrated introductory set of topics. The essential work flows (with their underlying concepts) used to edit, build, test, combine with existing software and find existing software are introduced. The tools covered include text editors, programming language translators, file management tools, debuggers, scripting tools, source control tools, and building, testing and deployment tools. The architecture and use of an Integrated Development Environment are discussed.

LH: 3

PR: COMP 2500 or COMP 2510 or the former COMP 2710

12.4.3 Third Year Courses

3200 Algorithmic Techniques for Smart Systems covers basic algorithmic techniques and data structures that are used to embed basic intelligent behaviors, such as problem solving, reasoning and learning in software systems and agents.

CR: the former COMP 4753

PR: COMP 2001 or the former COMP 2710, and COMP 2002 or the former COMP 2711, and Statistics 1510 or Statistics 2550

3201 Introduction to Nature-Inspired Computing provides an overview of popular nature-inspired computing methods. Methods that are inspired by both biological and non-biological systems are considered. These methods have been applied to solve problems in various areas of computing such as optimization, machine learning, and robotics. Particular examples of nature-inspired computing methods studied include cellular automata, neural networks, evolutionary computing, swarm intelligence, artificial life, and complex networks. Contributions made in the field of nature-inspired computing that have led to advances in the natural sciences are also discussed.

CR: the former COMP 4752

PR: COMP 2002 or the former COMP 2711

3202 Introduction to Machine Learning introduces concepts and algorithms in machine learning for regression and classification tasks. The course gives the student the basic ideas and intuition behind model selection and evaluation, and selected machine learning methods such as random forests, support vector machines, and hidden Markov models.

PR: COMP 3200; or COMP 2001 or the former COMP 2710, and COMP 2002 or the former COMP 2711, and Statistics 2550

3300 Interactive Technologies provides exposure to traditional desktop, mobile and games contexts with respect to interaction design theory and practice. The impact of context on design principles is explored. An introduction to each programming context will be provided and a minimal set of software development tools for each context will be introduced. Practical application of interaction design principles will involve design and prototyping of desktop, mobile and games applications.

PR: COMP 2001 or the former COMP 2710

3301 Visual Computing and Applications provides students with the fundamental knowledge and skills in the fields of computer vision, computer graphics, and visualization. Visual perception is responsible for most of our impressions about the world around us. This course introduces how computers are used to both mimic the human visual system (e.g., recognize shapes) and to create visual content (e.g. synthesize images). Related techniques on image synthesis, processing and analysis are discussed under a unified framework. How visual computing principles were used to create visual effects in movies and commercials is also examined.

PR: COMP 2002 or the former COMP 2711

3401 Introduction to Data Mining introduces students to the basic concepts and techniques for data mining and knowledge discovery. Students will develop an understanding of the essential data mining technologies, and be able to design and evaluate methods for simple data mining applications.

PR: COMP 2002 or the former COMP 2711, COMP 2007 or the former COMP 3754, and Statistics 2550

3550 Introduction to Bioinformatics (same as Biology 3951) deals with the development and application of computational methods to address biological problems. The course will focus on the fundamental concepts, ideas and related biological applications of existing bioinformatics tools. This course will provide hands-on experience in applying bioinformatics software tools and online databases to analyze experimental biological data, and it will also introduce scripting language tools typically used to automate some biological data analysis tasks.

CR: Biology 3951

LH: 3

PR: Biology 2060 or Biochemistry 2201 or the former 2101, and one Computer Science course at the 1000-level or above excluding COMP 1400, COMP 1600 and COMP 2000; or COMP 2500 or the former COMP 2710 or COMP 2001, and one Biology course at the 1000-level or above excluding Biology 2040 and Biology 2041; or permission of the course instructor

3700 Industrial Experience is a course for students who are admitted to CIIO. Students are required to register for this non-credit course every semester during their internship. This course is open only to students who have been accepted into the Internship Program and provides an opportunity for qualified students to obtain rewarding job experience of 8, 12 or 16 months of continuous duration, during the course of their studies.

CH: 0

PR: admission to the Computer Industry Internship Option (CIIO)

3710 Vocational Languages is a study of several programming languages of vocational significance. The use of appropriate programming paradigms to solve some significant problems will be illustrated.

PR: COMP 2711 or COMP 2002 or the former COMP 2711

3718 Programming in the Small demonstrates the tools and techniques used in the construction of small software systems. The software tools and techniques to be covered include analysis and design of software components, software construction tools (e.g. linkers, builders, debuggers), software library use and design, and system integration.

PR: COMP 2711 or COMP 2002 or the former COMP 2711

3719 Theory of Computation and Algorithms is an introduction to formal algorithmic problem solving. Various algorithm design techniques that sometimes yield efficient solutions are studied. Deterministic and nondeterministic machines (finite state automata, pushdown automata and Turing machines) are discussed and used to efficiently solve problems such as the String Matching Problem, the parsing of Context-free Languages, and to introduce the theory of NP-completeness. In addition, Turing machines are used to prove the unsolvability of certain problems. Tractable, intractable and undecidable problems are contrasted. Basic issues related to parallelization are discussed as well.

CR: the former COMP 3711 and the former COMP 3740

PR: COMP 2711 or COMP 2002 or the former COMP 2711; and Mathematics 2320 or COMP 1002

3731 Introduction to Scientific Computing main objectives are the development of algorithms for the numerical solution of mathematical problems and the study of the numerical stability of these algorithms. The efficiency of these algorithms with respect to speed and storage requirements is considered as well. Emphasis is also placed on the study of the sensitivity of selected problems to perturbations in the data. There is also a brief introduction to the development of numerical algorithms that take advantage of

advanced computer architectures, such as pipeline processors, array processors and parallel processors.

CR: Mathematics 3132

PR: Mathematics 2000 and Mathematics 2050, and COMP 2710 or COMP 1001 or the former COMP 2710

3753 Computational Aspects of Linear Programming is an introduction to the Linear Programming Problem (LPP). The emphasis is placed upon developing the most recent and numerically reliable algorithms for the solution of the Linear Programming Problem. The numerical stability of these algorithms will be examined as well. Geometric understanding of the LPP. Simplex method for the LPP. Sparse matrix LPP. Duality and postoptimality analysis. Extensions to the simplex algorithm. Principles of interior algorithms for the LPP.

PR: Mathematics 2050, and COMP 2710 or COMP 2001 or the former COMP 2710

12.4.4 Fourth Year Courses

4300 Introduction to Game Programming is an introductory course for students interested in learning the fundamentals of game programming. Topics include vector math for games, fundamentals of rendering, introduction to animation and artificial intelligence, collision detection, game physics and user-interfaces. Students are required to write a fully functional game during the course.

PR: COMP 2001 or the former COMP 2710

4301 Computer Vision (same as Engineering 8814) studies how to develop methods that enable a machine to “understand” or analyze images. The course introduces the fundamental problems in computer vision and the state-of-the-art approaches that address them. Topics include feature detection and matching, geometric and multi-view vision, structure from X, segmentation, object tracking and visual recognition.

CR: Engineering 8814

PR: COMP 3301 or Engineering 7854 or permission of the instructor

4302 3D Computer Graphics introduces the students to the state-of-the-art concepts and developments in the field of 3D computer graphics. The underlying algorithms, as well as the basic techniques to develop interactive 3D graphics systems including games and simulators, are presented. Topics of the course include 3D geometrical transformations, 3D projections, 3D modeling and rendering, 3D graphics languages and systems. Advanced photorealistic rendering and image-based rendering techniques may also be covered.

CR: the former COMP 4751

PR: COMP 3301

4303 Artificial Intelligence in Computer Games provides an introduction to specific state-of-the-art algorithmic techniques and data structures that are used to efficiently implement human-like abilities (e.g., awareness, memory, rational decision-making (under uncertainty), movement, co-operation in groups) in computer game agents.

PR: COMP 3200

4304 Data Visualization covers interactive representation of data using a modern programming library. Topics include an introduction to the software platform and the principles for data selection, analysis, design and creation of dynamic visualizations. Students produce interactive web-based objects, addressing problems in the presentation and understanding of large data collections. The techniques discussed are applicable to different sources and types of data.

CR: the former COMP 4767

PR: COMP 2001 or the former COMP 2710, COMP 2002 or the former COMP 2711

4550 Bioinformatics: Biological Data Analysis (same as Biology 4606) provides students with the basis to analyse a variety of biological data within an integrated programming environment for data manipulation, calculation and graphical display. Students will learn to extract meaningful information from data generated by high-throughput experimentation. The course will introduce one such integrated programming environment and will explore the computational and statistical foundations of the most commonly used biological data analysis procedures.

CR: Biology 4606

LH: 3

PR: Biology 3951 or COMP 3550, and Statistics 2550 (or equivalent), or permission of the course instructor

4711 Structure of Programming Languages covers programming language design considerations; syntactic and semantic structure; survey of typical features and operations; analysis of facilities for control and data structuring; language extensibility; execution models; formal specification of programming languages.

PR: COMP 3719, and COMP 3724 or COMP 2003 or the former COMP 3724

4712 Compiler Construction studies properties of formal grammars and languages; syntax-directed parsing and code generation; top-down and bottom-up parsing methods; LL(k) and LR(k) grammars and parsers; Code optimization; compiler writing tools.

PR: COMP 3719, and COMP 3724 or COMP 2003 or the former COMP 3724

4715 and 4717 Special Topics in Programming Languages will have topics to be studied announced by the Department.

4718 Survey of Software Engineering surveys the major topics of software engineering. Areas covered include: requirements capture, system design and design approaches, verification and validation (including formal methods and testing), and management of the software development process.

PR: COMP 3716 or COMP 2005 or the former COMP 3716

4721 Operating Systems studies the design and implementation of an operating system's kernel. The main components used in operating system implementations include: context switches, process management, memory management, interprocess communication, file systems and system calls. The data structures and algorithms used in implementing the above components are studied. The different architectural styles of kernel implementation are also considered. Real-time operating systems are also discussed.

CR: Engineering 8894

PR: COMP 3725 or COMP 2004 or the former COMP 3725

4723 Introduction to Microprocessors examines the architecture and instruction sets for several microprocessors. The use of microprocessors as device controllers; comparisons of hardware and programmed techniques; microprocessor interfacing with external devices; methods of I/O; bus structures; modern microprocessor support devices are discussed.

LH: Minimum of three hours per week. Practical experience with basic principles will be obtained through laboratory experience.

PR: COMP 3724 or COMP 2003 or the former COMP 3724

4726-4729 Special Topics in Computer Systems will have topics to be studied announced by the Department.

4734 Matrix Computations and Applications is an introduction to linear algebra; solution to linear systems; scaling, improving and estimating accuracy; the linear least squares problem; the eigenvalue problem; singular value decomposition of a matrix; the generalized eigenvalue problem.

PR: COMP 3731

4736-4739 Special Topics in Numerical Computations will have topics to be studied announced by the Department.

4740 Design and Analysis of Algorithms will give an overview of techniques for the design of efficient optimal-solution and heuristic algorithms. It will include an introduction

to various advanced data structures for set and string processing that are used to further optimize algorithm efficiency.

PR: COMP 3719

4741 Formal Languages and Computability is an in-depth study of various types of formal machines and their associated languages. Effective computability and other formalisms, such as lambda calculus will be studied as well.

CR: the former COMP 3740

PR: COMP 3719

4742 Computational Complexity is an in-depth discussion of computational complexity theory. Topics covered in the course include: models of computation (for both serial and parallel computations); complexity measures; reducibility; complexity classes (NP, PSPACE, NC, LOGSPACE and P); and randomized computations.

PR: COMP 3719

4743 Graph Algorithms and Combinatorial Optimization discusses classical problems in combinatorial optimization and graph algorithms, including matching, colorability, independent sets, isomorphism, network flows and scheduling. Special families of graphs are discussed and algorithms that would otherwise be NP-hard or complete are shown to be polynomial time when restricted to such families.

PR: COMP 3719

4745-4749 (Excluding 4748) Special Topics in Theoretical Aspects will have topics to be studied announced by the Department.

4750 Introduction to Natural Language Processing covers tasks involving human languages, such as speech recognition, text understanding, and keyword-based information retrieval which underlie many modern computing applications and their interfaces. To be truly useful, such natural language processing must be both efficient and robust. This course will give an introduction to the algorithms and data structures used to solve key NLP tasks, including utterance understanding and generation and language acquisition, in both of the major algorithmic paradigms used today (rule-based and statistical). The emphasis will be primarily on text-based processing though speech-based processing will be addressed where possible.

PR: COMP 3719 and Statistics 1510

4754 Database Systems introduces students to database processing, database management systems and database design considerations. It will cover the theory and methodologies essential for the relational database design, implementation, manipulation, optimization and management.

PR: COMP 3725 or COMP 2004 or the former COMP 3725, and COMP 3754 or COMP 2007 or the former COMP 3754

4756 Image Processing will centre on the key analytical and algorithmic tools and concepts of digital image processing. Topics will include Transformations, Enhancement, Encoding, Data Bases, Segmentation and Description.

CR: Engineering 7854

LH: 3

PR: COMP 3719

4759 Computer Networks looks at how the operation of computer networks requires the following: a) communication between two computers, b) information transfer between two computers not directly connected, and c) services that need computer communication. This course focuses on the standard solutions and services used to fulfill the previous requirements. These include: physical transmission of signals, reliable communication based on unreliable communication channels, the routing of messages between connected computers to reach computers that are not directly connected, e-mail, file transfer, name servers, remote terminal access and the World Wide Web. Particular attention will be placed on the workings of the Internet.

PR: COMP 3715 or 2006 or the former COMP 3715, and COMP 3725 or COMP 2004 or the former COMP 3725

4762 Introduction to Computational Molecular Biology will give an overview of computational problems and algorithms for these problems associated with a variety of analyses of biological molecular data.

PR: COMP 3719

4766 Introduction to Autonomous Robotics examines the fundamental constraints, technologies, and algorithms of autonomous robotics. The focus of this course will be on computational aspects of autonomous wheeled mobile robots. The following topics will be covered: major paradigms in robotics, methods of locomotion, kinematics, simple control systems, sensor technologies, stereo vision, feature extraction, modelling uncertainty of sensors and positional information, localization, SLAM, obstacle avoidance, and 2-D path planning.

LH: 3

PR: COMP 2711 or COMP 2002 or the former COMP 2711, Mathematics 2000, Mathematics 2050, and Statistics 1510 or Statistics 2550 or the former Statistics 2510

4768 Software Development for Mobile Devices focuses on the design and implementation of software in a mobile networking environment. The primary topics to be covered in this course include software engineering, network computing, graphics programming, and human-computer interaction for mobile devices. A modern mobile

device with advanced networking and graphic features, including multi-touch interaction and motion sensors will be used as the primary platform for development in this course.

LH: One and one-half hours per week

PR: COMP 2760 or COMP 2008 or the former COMP 2760, COMP 3715 or COMP 2006 or the former COMP 3715, and COMP 3716 or COMP 2005 or the former COMP 3716

4770 Team Project has as its main objective to develop a working prototype of a software system as a team effort. A group of students will work on a project for a term, experiencing the advantages and difficulties of team projects.

AR: attendance is required

PR: COMP 3715 or COMP 2006 or the former COMP 3715, COMP 3716 or COMP 2005 or the former COMP 3716, COMP 3724 or COMP 2003 or the former COMP 3724, and COMP 3754 or COMP 2007 or the former COMP 3754

4780 Honours Project introduces computer science honours students to research activities, familiarizes them with a special problem in computer science, and provides independent study on an advanced topic under the direct supervision of a member of the computer science faculty. The topic is decided in consultation with the supervisor. The student is required to produce a written report on the project, to include the literature search on the topic, and to present this work at a departmental seminar prior to the last week of the semester.

PR: admission to the honours program and permission of the Head of Department

4800-4825 Special Topics will be offered as departmental resources permit.

CO: Special topics courses are not offered on a regular basis, but whenever departmental resources permit. For these reasons, the co-requisites can vary each time the courses are offered.

PR: Special topics courses are not offered on a regular basis, but whenever departmental resources permit. For these reasons, the prerequisites can vary each time the courses are offered.

SECONDARY CALENDAR CHANGES

As requested by the Faculty of Business:

6.4 Information Systems

Students electing an Information Systems concentration should complete the following courses:

1. Six of BUSI 5700, BUSI 5701, BUSI 5702, BUSI 5703, BUSI 6700, BUSI 6701, BUSI 7700, and BUSI 7701; and

2. a. either Geography 2195, Geography 3260, and one of Geography 3202, Geography 4202, Geography 4261
- b. or three of the following: the former Computer Science 1710, Computer Science 2500, the former Computer Science 2710, the former Computer Science 2760, Computer Science 3710, the former Computer Science 3715, the former Computer Science 4761, the former Computer Science 4767.

6.7 Operational Research

Students electing a Operational Research concentration should complete the following eight courses:

1. BUSI 5401, BUSI 5402, BUSI 6400, and BUSI 7400; and
2. any four of: the former Computer Science 1710, the former Computer Science 2710, Mathematics 1001, Mathematics 2050, and any Business Information Systems course (or courses) at the 5000 level or above.

7 Business Electives

Only those courses listed below are acceptable as Business electives towards the Bachelor of Commerce (Co-operative), Joint Degrees of Bachelor of Commerce (Co-operative) and Bachelor of Arts, and Bachelor of Business Administration programs.

Table 3 Business Electives

the former BUSI 3101	BUSI 6040	BUSI 6700	BUSI 7510	Economics 4026
BUSI 3210	BUSI 6041- 6060	BUSI 6701	BUSI 7600	Economics 4090
BUSI 3610	BUSI 6100	BUSI 7005	BUSI 7700	Engineering 8671
BUSI 3630	BUSI 6110	BUSI 7010	BUSI 7701	Geography 2195
BUSI 5000	BUSI 6120	BUSI 7110	BUSI 7320	Geography 2425
BUSI 5020	BUSI 6130	BUSI 7120	<u>the former</u> Computer Science 1710	Geography 3202
BUSI 5160	BUSI 6217	BUSI 7125	Computer Science 2500	Geography 3260
BUSI 5210	BUSI 6230	BUSI 7150	<u>the former</u> Computer Science 2710	Geography 3425
BUSI 5217	BUSI 6241	BUSI 7160	<u>the former</u> Computer Science 2711	Geography 4202

BUSI 5220	BUSI 6250	BUSI 7218	the former Computer Science 2752	Geography 4261
BUSI 5250	BUSI 6301	BUSI 7230	<u>the former</u> Computer Science 2760	Mathematics 1001
BUSI 5302	BUSI 6310	BUSI 7240	Computer Science 3710	Mathematics 2050
BUSI 5401	BUSI 6311	BUSI 7310	<u>the former</u> Computer Science 3715	Mathematics 2090
BUSI 5402	BUSI 6312	BUSI 7315	the former Computer Science 4761	Political Science 2200
BUSI 5500	BUSI 6320	BUSI 7320	<u>the former</u> Computer Science 4767	Political Science 3210
BUSI 5530	BUSI 6400	BUSI 7321	Economics 3000	Political Science 3250
BUSI 5700	BUSI 6410	BUSI 7322	Economics 3010	Sociology 4091
BUSI 5700	BUSI 6415	BUSI 7330	Economics 3030	Sociology 4104
BUSI 5701	BUSI 6510	BUSI 7400	Economics 3080	
BUSI 5702	BUSI 6550	BUSI 7410	Economics 3150	
BUSI 5703	BUSI 6605	BUSI 7415	Economics 3360	
BUSI 6000-6029	BUSI 6610	BUSI 7500	Economics 4025	

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

PROGRAM TITLE

Major in Computer Science (Visual Computing and Games)

RATIONALE

The program currently has a potential hidden prerequisite since COMP 4303 is a potential elective course which has a prerequisite of COMP 3200 which is not required (or an elective) for the program.

CALENDAR CHANGES

10.4.3 Major in Computer Science (Visual Computing and Games) (B.Sc. only)

1. Forty-five credit hours in Computer Science courses are required for a major in Computer Science (Visual Computing and Games):
 - a) Computer Science 1000, 1001, 1002, 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008;
 - b) Computer Science 3300, 3301, and 4300;
 - c) Six additional credit hours in Computer Science courses selected from Computer Science 2300, 3200, 4301, 4302, 4303*, 4304; and
 - d) Three additional credit hours in Computer Science courses selected from those listed in c. above, or Computer Science 2100, 4766, 4768.
2. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

* Students interested in completing COMP 4303 should also complete COMP 3200.

CALENDAR ENTRY AFTER CHANGES

10.4.3 Major in Computer Science (Visual Computing and Games) (B.Sc. only)

3. Forty-five credit hours in Computer Science courses are required for a major in Computer Science (Visual Computing and Games):

- a) Computer Science 1000, 1001, 1002, 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008;
 - b) Computer Science 3300, 3301, and 4300;
 - c) Six additional credit hours in Computer Science courses selected from Computer Science 2300, 3200, 4301, 4302, 4303*, 4304; and
 - d) Three additional credit hours in Computer Science courses selected from those listed in c. above, or Computer Science 2100, 4766, 4768.
4. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

* Students interested in completing COMP 4303 should also complete COMP 3200.

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

PROGRAM TITLE

Computer Science and Statistics Joint Major

RATIONALE

The program currently has a hidden prerequisite since COMP 4734 is a required course which has a prerequisite of COMP 3731 which is not required for the program.

CALENDAR CHANGES

6.2.8 Computer Science and Statistics Joint Major (B.Sc. Only)

The following courses are required:

1. Computer Science 1000, 1001, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2500, 3731, 4734, plus ~~45~~ 12 further credit hours in Computer Science courses numbered 3000 or higher.
2. Statistics 1510 or 2500 or 2550, and 2501 or 2560.
3. Mathematics 1000, 1001, 2000, 2050, 2051, 2320, 3340, Statistics 3410, 3411, 3520, 3521, 3540, 4590.
4. Nine further credit hours in Statistics courses numbered 3000 or higher including at least a 3 credit hour course numbered 4000 or higher excluding Statistics 4581.

CALENDAR ENTRY AFTER CHANGES

6.2.8 Computer Science and Statistics Joint Major (B.Sc. Only)

The following courses are required:

1. Computer Science 1000, 1001, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2500, 3731, 4734, plus 12 further credit hours in Computer Science courses numbered 3000 or higher.
2. Statistics 1510 or 2500 or 2550, and 2501 or 2560.
3. Mathematics 1000, 1001, 2000, 2050, 2051, 2320, 3340, Statistics 3410, 3411, 3520, 3521, 3540, 4590.

4. Nine further credit hours in Statistics courses numbered 3000 or higher including at least a 3 credit hour course numbered 4000 or higher excluding Statistics 4581.

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

PROGRAM TITLE

Computer Science and Physics Joint Honours

RATIONALE

With the update of this program to the new Computer Science undergraduate curriculum, the final paragraph was inadvertently excluded.

CALENDAR CHANGES

10.2.15 Computer Science and Physics Joint Honours (B.Sc. only)

The following courses are prescribed:

1. Chemistry 1050 and 1051 (or Chemistry 1010, 1011, and the former 1031) (or 1200 and 1001).
2. Computer Science 1000, 1001, 1002, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3731.

Nine additional credit hours in Computer Science courses numbered 3000 or higher, including at least 3 credit hours in courses at the 4000 level.
3. Physics 1050 (or 1020) and 1051.

Physics 2053, 2055, 2750, 2820, 3220, 3400, 3500, 3750, 3800, and 3820.

Three additional credit hours in Physics at the 4000 level.
4. Physics 490A and Physics 490B or Computer Science 4780 and 3 additional credit hours in Computer Science at the 4000 level.
5. Mathematics 1000 and 1001.

Mathematics 2000, 2050, 2260, and 3202.
6. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
7. Two electives to bring the total credit hours to 120. Computer Science 2500 and Statistics 2550 are recommended.

The topic for the honours project or thesis, Computer Science 4780 or Physics 490A/B, must be chosen with the prior approval of both departments.

CALENDAR ENTRY AFTER CHANGES

10.2.15 Computer Science and Physics Joint Honours (B.Sc. only)

The following courses are prescribed:

1. Chemistry 1050 and 1051 (or Chemistry 1010, 1011, and the former 1031) (or 1200 and 1001).
2. Computer Science 1000, 1001, 1002, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3731.

Nine additional credit hours in Computer Science courses numbered 3000 or higher, including at least 3 credit hours in courses at the 4000 level.

3. Physics 1050 (or 1020) and 1051.

Physics 2053, 2055, 2750, 2820, 3220, 3400, 3500, 3750, 3800, and 3820.

Three additional credit hours in Physics at the 4000 level.

4. Physics 490A and Physics 490B or Computer Science 4780 and 3 additional credit hours in Computer Science at the 4000 level.

5. Mathematics 1000 and 1001.

Mathematics 2000, 2050, 2260, and 3202.

6. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.

7. Two electives to bring the total credit hours to 120. Computer Science 2500 and Statistics 2550 are recommended.

The topic for the honours project or thesis, Computer Science 4780 or Physics 490A/B, must be chosen with the prior approval of both departments.

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

PROGRAM TITLE

Computer Industry Internship Option (CIIO)

REVISED PROGRAM TITLE

Co-operative Internship in Computer Science (CICS)

RATIONALE

Co-operative education is a widely-used term that is clearly understood to include full-time, paid work that forms part of the academic program; co-operative internship is the term used for a single, extended period of work with one employer that otherwise satisfies all the criteria for a co-op program. Adding “Co-operative” to the name of the program ensures clarity and consistency with similar programs across Canada.

The CIIO is managed and administered by Academic Staff Members in Co-operative Education (ASM-CE) with the Faculty of Science Co-op Office, collective agreement language clearly states the responsibilities of ASMs-CE relate to co-operative education programs.

Thus far, we have been successful “selling” the CIIO as a co-op program to the federal post-secondary co-op program inventory and to the provincially-funded SECPAP subsidy program which provide funding for co-op students and employers. It is conceivable that, should the co-op status of the program be challenged, some opportunities may be closed to CIIO students.

CALENDAR CHANGES

11.4.7 ~~Computer Industry Internship Option (CIIO)~~ Co-operative Internship in Computer Science (CICS)

The ~~Computer Industry Internship Option (CIIO)~~ Co-operative Internship in Computer Science (CICS) provides an opportunity for qualified students to obtain rewarding placements that help them develop practical skills in a real work setting before graduation. The ~~CIIO~~ CICS is available to Computer Science Majors who will typically apply between their third and fourth year of studies.

11.4.7.1 Admission Requirements

In order to be considered for admission to the ~~CIIO~~ CICS, an applicant:

1. must be a declared Computer Science Major;
2. must be registered as a full-time student at the time of application;

3. must have successfully completed Computer Science 1000, 1001, 1002, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 and 6 credit hours at the 3000 level;
 4. must have at least 15 credit hours remaining after the internship in order to satisfy degree requirements, 3 of which must be in Computer Science; and
 5. is expected to return to University as a full-time student after the internship.
- In addition to the above, admission is also subject to academic performance.

11.4.7.2 Internship Duration:

Subject to the availability of job openings, a student may choose either an 8, 12 or 16 consecutive month internship period.

11.4.7.3 Internship Guidelines:

1. Internship employment is normally organized by Co-operative Education; however, students who have been accepted to the ~~CHΘ~~ CICS may also obtain their own internship placements. All placements are subject to the approval of Co-operative Education and of the Head of the Department of Computer Science.
2. Students who have applied to the internship program give permission to Co-operative Education to supply prospective employers with copies of their resume and transcript.
3. After being placed with an employer, students are not permitted to drop their internship without prior approval from Co-operative Education and the Head of the Department of Computer Science. Students who drop an 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 placements, will normally be awarded a fail grade for the internship period and may not be permitted to reapply.

Note: *Students should also refer to the UNIVERSITY REGULATIONS - General Academic Regulations (Undergraduate).*

11.4.7.4 Registration, Assessment of Performance, and Assignment of Grades:

Students must register for the course Computer Science 3700 every semester during their internship.

Computer Science 3700 is a non-credit course open only to students who have been accepted into the Internship Program.

During the internship, the employer and intern will complete student performance evaluations every four months and will submit them to Co-operative Education. The final assessment of total work performed is the responsibility of Co-operative Education, and will be based upon both input from the employer and the intern's report(s).

The Internship evaluation shall consist of two components:

1. On-the-job Student Performance: Job performance shall be assessed by Co-operative Education in consultation with the Department using information gathered during the internship and input from the employer. Evaluation of the on-

the-job student performance will result in one of the following classifications:
PASS WITH DISTINCTION, PASS, FAIL.

2. Internship Report(s): Evaluation of the internship report(s) will result in one of the following classifications: PASS WITH DISTINCTION, PASS, FAIL.

The evaluation of the on-the-job student performance and the internship report(s) are recorded separately on the transcript.

Overall evaluation of the internship will result in one of the following final grades being awarded:

1. PASS WITH DISTINCTION: indicates outstanding performance in both the internship report(s) and the on-the-job student performance. PASS WITH DISTINCTION has been awarded to each of the internship report(s) and the on-the-job student performance.
2. PASS: indicates that performance meets expectations in both the internship report(s) and on-the-job student performance. The student meets the requirements of a passing mark in the internship report(s) and on-the-job student performance.
3. FAIL: indicates failing performance in either the internship report(s) or on-the-job student performance or both.

Also, the following will be noted in the transcript of the intern:

1. Requirements for the ~~Computer Industry Internship Option~~ Co-operative Internship in Computer Science have been completed. Internship Duration: - months.
2. A grade of NC (No Credit) for Computer Science 3700 will be awarded in all semesters of the Co-operative Internship Option prior to the final Semester.

11.4.7.5 ~~GHG~~ CICS and Honours Program

In case a student is enrolled in both the Honours program and the ~~GHG~~ CICS, the requirements of both must be met. Upon approval from the honours project supervisor within the Department, the employer and the Head of the Department of Computer Science, an internship project may be submitted as a component of an honours project. These arrangements must be made within the first semester of the Internship placement.

CALENDAR ENTRY AFTER CHANGES

11.4.7 Co-operative Internship in Computer Science (CICS)

The Co-operative Internship in Computer Science (CICS) provides an opportunity for qualified students to obtain rewarding placements that help them develop practical skills in a real work setting before graduation. The CICS is available to Computer Science Majors who will typically apply between their third and fourth year of studies.

11.4.7.1 Admission Requirements

In order to be considered for admission to the CICS, an applicant:

1. must be a declared Computer Science Major;
2. must be registered as a full-time student at the time of application;
3. must have successfully completed Computer Science 1000, 1001, 1002, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 and 6 credit hours at the 3000 level;
4. must have at least 15 credit hours remaining after the internship in order to satisfy degree requirements, 3 of which must be in Computer Science; and
5. is expected to return to University as a full-time student after the internship.

In addition to the above, admission is also subject to academic performance.

11.4.7.2 Internship Duration:

Subject to the availability of job openings, a student may choose either an 8, 12 or 16 consecutive month internship period.

11.4.7.3 Internship Guidelines:

1. Internship employment is normally organized by Co-operative Education; however, students who have been accepted to the CICS may also obtain their own internship placements. All placements are subject to the approval of Co-operative Education and of the Head of the Department of Computer Science.
2. Students who have applied to the internship program give permission to Co-operative Education to supply prospective employers with copies of their resume and transcript.
3. After being placed with an employer, students are not permitted to drop their internship without prior approval from Co-operative Education and the Head of the Department of Computer Science. Students who drop an 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 placements, will normally be awarded a fail grade for the internship period and may not be permitted to reapply.

Note: *Students should also refer to the UNIVERSITY REGULATIONS - General Academic Regulations (Undergraduate).*

11.4.7.4 Registration, Assessment of Performance, and Assignment of Grades:

Students must register for the course Computer Science 3700 every semester during their internship.

Computer Science 3700 is a non-credit course open only to students who have been accepted into the Internship Program.

During the internship, the employer and intern will complete student performance evaluations every four months and will submit them to Co-operative Education. The final assessment of total work performed is the responsibility of Co-operative Education, and will be based upon both input from the employer and the intern's report(s).

The Internship evaluation shall consist of two components:

1. On-the-job Student Performance: Job performance shall be assessed by Co-operative Education in consultation with the Department using information gathered during the internship and input from the employer. Evaluation of the on-the-job student performance will result in one of the following classifications: PASS WITH DISTINCTION, PASS, FAIL.
2. Internship Report(s): Evaluation of the internship report(s) will result in one of the following classifications: PASS WITH DISTINCTION, PASS, FAIL.

The evaluation of the on-the-job student performance and the internship report(s) are recorded separately on the transcript.

Overall evaluation of the internship will result in one of the following final grades being awarded:

1. PASS WITH DISTINCTION: indicates outstanding performance in both the internship report(s) and the on-the-job student performance. PASS WITH DISTINCTION has been awarded to each of the internship report(s) and the on-the-job student performance.
2. PASS: indicates that performance meets expectations in both the internship report(s) and on-the-job student performance. The student meets the requirements of a passing mark in the internship report(s) and on-the-job student performance.
3. FAIL: indicates failing performance in either the internship report(s) or on-the-job student performance or both.

Also, the following will be noted in the transcript of the intern:

1. Requirements for the Co-operative Internship in Computer Science have been completed. Internship Duration: - months.
2. A grade of NC (No Credit) for Computer Science 3700 will be awarded in all semesters of the Co-operative Internship prior to the final Semester.

11.4.7.5 CICS and Honours Program

In case a student is enrolled in both the Honours program and the CICS, the requirements of both must be met. Upon approval from the honours project supervisor within the Department, the employer and the Head of the Department of Computer Science, an internship project may be submitted as a component of an honours project. These arrangements must be made within the first semester of the Internship placement.

SECONDARY CALENDAR CHANGES

3700 Industrial Experience is a course for students who are admitted to ~~CHO~~ CICS. Students are required to register for this non-credit course every semester during their internship. This course is open only to students who have been accepted into the Internship Program and provides an opportunity for qualified students to obtain rewarding job experience of 8, 12 or 16 months of continuous duration, during the course of their studies.

CH: 0

PR: admission to the ~~Computer Industry Internship Option~~ Co-operative Internship in Computer Science (CIICICS)

6.1 Classification of Students

1. Full-time students:

- a) Students who have been admitted to this University and who are registered for the duration of any semester in at least 9 credit hours or at least 5 credit hours in a session are deemed full-time students.
 - b) Notwithstanding the above and the regulations governing the Marine Institute technology diploma programs, students who have been declared as pre-Bachelor of Technology or pre-Bachelor of Maritime Studies are deemed full-time students if they are registered for either: three non-degree courses and a minimum of 3 degree credit hours, or two non-degree courses and a minimum of 6 degree credit hours.
 - a) Students who are registered for the duration of any semester in a co-operative education work term, the internship required of the ~~Computer Industry Internship Option~~ Co-operative Internship in Computer Science (CIICICS), the International Internship Option in the International Bachelor of Arts (INTL 399W), or the Structured Practice Experiences, the Professional Practice Experiences, and the Advanced Professional Practice Experiences required of the School of Pharmacy will be deemed full-time students.
 - b) Provided they had been admitted to the University, the members of the Executive of the Memorial University of Newfoundland Students' Union (MUNSU), the Grenfell Campus Student Union (GCSU) and the Marine Institute Student Union (MISU) shall be deemed, for the purpose of membership on University committees, the Senate and the Board of Regents, to be full-time students during their tenure.
2. **Part-time students** are students who have been admitted to the University and who are registered for fewer than 9 credit hours in any semester or fewer than 5 credit hours in any session.
 3. **First-year students** are students who have earned fewer than 18 credit hours.
 4. **Second-year students** are students who have earned from 18 to 47 credit hours inclusive.
 5. **Third-Year Students** are students who have earned from 48 to 77 credit hours inclusive.
 6. **Fourth-Year Students** are students who have earned from 78 to 107 credit hours inclusive.
 7. **Fifth-Year Students** are students who have earned not fewer than 108 credit hours.

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

PROGRAM TITLE

Major in Computer Science
Major in Computer Science (Smart Systems)
Major in Computer Science (Visual Computing and Games)
Honours in Computer Science
Honours in Computer Science (Software Engineering)
Applied Mathematics and Computer Science Joint Major
Computer Science and Economics Joint Major
Computer Science and Geography Joint Major
Computer Science and Physics Joint Major
Computer Science and Pure Mathematics Joint Major
Computer Science and Statistics Joint Major

RATIONALE

In the Computer Science undergraduate curriculum that began in 2016, there is a perceived gap in knowledge from first-year to second-year Computer Science courses. The proposed new course, Computer Science 1003, will replace Computer Science 1000 as a major and minor requirement with the goal of closing that gap.

Since COMP 1000 will no longer be required for Computer Science majors, the prerequisite for COMP 2100, COMP 2300 (both possible electives in the Computer Science (Visual Computing and Games) major), and COMP 2008 (a required course) has been changed to COMP 1003.

CALENDAR CHANGES

11.4.1 Major in Computer Science

As a component of the Degree Regulations for the General Degree of Bachelor of Science or the Degree Regulations for the General Degree of Bachelor of Arts, as appropriate, a student must complete the following courses:

1. Forty-five credit hours in Computer Science courses are required for a major in Computer Science:
 - a) Computer Science ~~1000~~, 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008.
 - b) At least 6 additional credit hours in Computer Science at the 4000 level.

- c) Twelve additional credit hours in Computer Science at the 3000 level or beyond.
- 2. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

Note: Students are encouraged to take Mathematics 3000 and Statistics 2560.

11.4.2 Major in Computer Science (Smart Systems) (B.Sc. only)

As a component of the Degree Regulations for the General Degree of Bachelor of Science a student must complete the following courses:

- 1. Forty-five credit hours in Computer Science courses are required for a major in Computer Science (Smart Systems):
 - a) Computer Science ~~1000~~, 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008;
 - b) Computer Science 3200, 3201, 3202 and 3301; and
 - c) Six additional credit hours in Computer Science courses selected from Computer Science 3401, 3550, 4301, 4303, 4750, 4766.
- 2. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

11.4.3 Major in Computer Science (Visual Computing and Games) (B.Sc. only)

As a component of the Degree Regulations for the General Degree of Bachelor of Science a student must complete the following courses:

- 1. Forty-five credit hours in Computer Science courses are required for a major in Computer Science (Visual Computing and Games):
 - a) Computer Science ~~1000~~, 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008;
 - b) Computer Science 3300, 3301, and 4300;
 - c) Six additional credit hours in Computer Science courses selected from Computer Science 2300, 4301, 4302, 4303, 4304; and
 - d) Three additional credit hours in Computer Science courses selected from those listed in c. above, or Computer Science 2100, 4766, 4768.

2. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

11.4.4 Honours in Computer Science

1. See Bachelor of Arts (Honours) Degree Regulations or Degree Regulations for the Honours Degree of Bachelor of Science (as appropriate).
2. Sixty-three credit hours in Computer Science courses are required for the Honours Degree in Computer Science, including:
 - a) Computer Science ~~1000~~, 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 4780.
 - b) Fifteen additional credit hours in Computer Science at the 4000 level.
 - c) Eighteen additional credit hours in Computer Science courses at the 3000 level or beyond.
3. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

Note: Students are encouraged to take Mathematics 3000 and Statistics 2560.

11.4.5 Honours in Computer Science (Software Engineering) (B.Sc. Only)

Completion of the Honours in Computer Science (Software Engineering) Program does not qualify persons to hold the designation "Professional Engineer" as defined by various Provincial Acts governing the Engineering Profession.

1. See Degree Regulations for the Honours Degree of Bachelor of Science.
2. Sixty-three credit hours in Computer Science courses are required for the Honours Degree in Computer Science (Software Engineering), including:
 - a) Computer Science ~~1000~~, 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 4770, 4780.
 - b) Nine additional credit hours in Computer Science chosen from 4718, 4721, 4723, 4751, 4753, 4756, 4759, 4766, and 4768.
 - c) Nine additional credit hours in Computer Science at the 4000 level.
 - d) Twelve additional credit hours in Computer Science at the 3000 level or beyond.
3. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

Note: The Honours project (4780) must be in the area of Software Engineering.

10.1.1 Applied Mathematics and Computer Science 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 ~~4000~~, 1001, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, plus 18 further credit hours in Computer Science courses numbered 3000 or higher.
2. Mathematics 1000, 1001, 2000, 2050, 2051, 2130, 2260, 2320, 3000, 3100, 3132, 3161, 3202, 4160, and 4190.

In addition, Statistics 2550 is highly recommended.

10.1.4 Computer Science and Economics 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

Forty-two credit hours in Computer Science courses are required: ~~4000~~, 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2500, 3731, 3753 plus 6 further credit hours in Computer Science courses numbered 3000 or higher.

2. Economics requirements

A total of 42 credit hours in Economics courses are required: 1010 (or the former 2010), 1020 (or the former 2020), 2550, 3000, 3001, 3010, and 6 credit hours from either 3550 and 3551, or 4550 and 4551 are obligatory.

The remaining 18 credit hours shall be chosen from among the various Economics courses in consultation with the Head of the Department or delegate, and will include at least 9 credit hours in courses at the 4000 level.

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

10.1.5 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: ~~4000~~, 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2500, 4751 plus 6 further credit hours in Computer Science courses numbered 3000 or higher.

2. Geography Requirements

Thirty-nine credit hours in Geography courses are required: 1050, 2001, 2102, 2195, 2302, 2425, 3202, 3222, 3250, 3260, 4202, 4250, 4261.

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

10.1.6 Computer Science and Physics Joint Major (B.Sc. only)

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

1. Chemistry 1050 and 1051 (or Chemistry 1010, 1011, and the former 1031).
2. Thirty-nine credit hours in Computer Science are required for the Joint Major: ~~1000~~, 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3731 plus 9 further credit hours in Computer Science courses numbered 3000 or higher, including at least 3 credit hours at the 4000 level.
3. Physics 1050 (or 1020) and 1051 plus at least 30 additional credit hours in Physics including 2053, 2055, 2750, 2820, 3220, 3400, 3500, 3750, 3800.
4.
 - a. Mathematics 1000 and 1001.
 - b. Mathematics 2000, 2050, 2260, 3202.
 - c. Additional electives to bring the credit hours to 120. Computer Science 2500 and Statistics 2550 are recommended.

10.1.7 Computer Science and Pure Mathematics 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 ~~1000~~, 1001, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008.
2. Eighteen additional credit hours in Computer Science courses numbered 3000 or higher.
3. Mathematics 1000, 1001, 2000, 2050, 2051, 2130, 2260, 2320, 3000, 3202, 3320, 3340, and Statistics 2550.
4. Nine additional credit hours in courses numbered 3000 or higher offered by the Department of Mathematics and Statistics, excluding the former Mathematics 3330.

10.1.8 Computer Science and Statistics 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 ~~1000~~, 1001, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2500, 4734, plus 15 further credit hours in Computer Science courses numbered 3000 or higher.
2. Statistics 1510 or 2500 or 2550, and 2501 or 2560.
3. Mathematics 1000, 1001, 2000, 2050, 2051, 2320, 3340, Statistics 2410 or 3410, 3411, 3520, 3521, 3540, 4590.
4. Nine further credit hours in Statistics courses numbered 3000 or higher including at least a 3 credit hour course numbered 4000 or higher excluding Statistics 4581.

CALENDAR ENTRY AFTER CHANGES

11.4.1 Major in Computer Science

As a component of the Degree Regulations for the General Degree of Bachelor of Science or the Degree Regulations for the General Degree of Bachelor of Arts, as appropriate, a student must complete the following courses:

3. Forty-five credit hours in Computer Science courses are required for a major in Computer Science:
 - a) Computer Science 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008.
 - b) At least 6 additional credit hours in Computer Science at the 4000 level.
 - c) Twelve additional credit hours in Computer Science at the 3000 level or beyond.
4. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

Note: Students are encouraged to take Mathematics 3000 and Statistics 2560.

11.4.2 Major in Computer Science (Smart Systems) (B.Sc. only)

As a component of the Degree Regulations for the General Degree of Bachelor of Science a student must complete the following courses:

1. Forty-five credit hours in Computer Science courses are required for a major in Computer Science (Smart Systems):
 - a) Computer Science 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008;
 - b) Computer Science 3200, 3201, 3202 and 3301; and
 - c) Six additional credit hours in Computer Science courses selected from Computer Science 3401, 3550, 4301, 4303, 4750, 4766.
2. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

11.4.3 Major in Computer Science (Visual Computing and Games) (B.Sc. only)

As a component of the Degree Regulations for the General Degree of Bachelor of Science a student must complete the following courses:

1. Forty-five credit hours in Computer Science courses are required for a major in Computer Science (Visual Computing and Games):
 - a) Computer Science 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008;
 - b) Computer Science 3300, 3301, and 4300;
 - c) Six additional credit hours in Computer Science courses selected from Computer Science 2300, 4301, 4302, 4303, 4304; and
 - d) Three additional credit hours in Computer Science courses selected from those listed in c. above, or Computer Science 2100, 4766, 4768.
2. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

11.4.4 Honours in Computer Science

1. See Bachelor of Arts (Honours) Degree Regulations or Degree Regulations for the Honours Degree of Bachelor of Science (as appropriate).
2. Sixty-three credit hours in Computer Science courses are required for the Honours Degree in Computer Science, including:
 - a) Computer Science 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 4780.
 - b) Fifteen additional credit hours in Computer Science at the 4000 level.

- c) Eighteen additional credit hours in Computer Science courses at the 3000 level or beyond.
- 3. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

Note: Students are encouraged to take Mathematics 3000 and Statistics 2560.

11.4.5 Honours in Computer Science (Software Engineering) (B.Sc. Only)

Completion of the Honours in Computer Science (Software Engineering) Program does not qualify persons to hold the designation "Professional Engineer" as defined by various Provincial Acts governing the Engineering Profession.

- 1. See Degree Regulations for the Honours Degree of Bachelor of Science.
- 2. Sixty-three credit hours in Computer Science courses are required for the Honours Degree in Computer Science (Software Engineering), including:
 - a) Computer Science 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 4770, 4780.
 - b) Nine additional credit hours in Computer Science chosen from 4718, 4721, 4723, 4751, 4753, 4756, 4759, 4766, and 4768.
 - c) Nine additional credit hours in Computer Science at the 4000 level.
 - d) Twelve additional credit hours in Computer Science at the 3000 level or beyond.
- 3. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

Note: The Honours project (4780) must be in the area of Software Engineering.

10.1.1 Applied Mathematics and Computer Science Joint Major

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

- 3. Computer Science 1001, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, plus 18 further credit hours in Computer Science courses numbered 3000 or higher.
- 4. Mathematics 1000, 1001, 2000, 2050, 2051, 2130, 2260, 2320, 3000, 3100, 3132, 3161, 3202, 4160, and 4190.

In addition, Statistics 2550 is highly recommended.

10.1.4 Computer Science and Economics 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

Forty-two credit hours in Computer Science courses are required: 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2500, 3731, 3753 plus 6 further credit hours in Computer Science courses numbered 3000 or higher.

2. Economics requirements

A total of 42 credit hours in Economics courses are required: 1010 (or the former 2010), 1020 (or the former 2020), 2550, 3000, 3001, 3010, and 6 credit hours from either 3550 and 3551, or 4550 and 4551 are obligatory.

The remaining 18 credit hours shall be chosen from among the various Economics courses in consultation with the Head of the Department or delegate, and will include at least 9 credit hours in courses at the 4000 level.

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

10.1.5 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, 4751 plus 6 further credit hours in Computer Science courses numbered 3000 or higher.

2. Geography Requirements

Thirty-nine credit hours in Geography courses are required: 1050, 2001, 2102, 2195, 2302, 2425, 3202, 3222, 3250, 3260, 4202, 4250, 4261.

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

10.1.6 Computer Science and Physics Joint Major (B.Sc. only)

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

1. Chemistry 1050 and 1051 (or Chemistry 1010, 1011, and the former 1031).

2. Thirty-nine credit hours in Computer Science are required for the Joint Major: 1001, 1002, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 3731 plus 9

further credit hours in Computer Science courses numbered 3000 or higher, including at least 3 credit hours at the 4000 level.

3. Physics 1050 (or 1020) and 1051 plus at least 30 additional credit hours in Physics including 2053, 2055, 2750, 2820, 3220, 3400, 3500, 3750, 3800.
4.
 - a. Mathematics 1000 and 1001.
 - b. Mathematics 2000, 2050, 2260, 3202.
 - c. Additional electives to bring the credit hours to 120. Computer Science 2500 and Statistics 2550 are recommended.

10.1.7 Computer Science and Pure Mathematics 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 1001, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008.
2. Eighteen additional credit hours in Computer Science courses numbered 3000 or higher.
3. Mathematics 1000, 1001, 2000, 2050, 2051, 2130, 2260, 2320, 3000, 3202, 3320, 3340, and Statistics 2550.
4. Nine additional credit hours in courses numbered 3000 or higher offered by the Department of Mathematics and Statistics, excluding the former Mathematics 3330.

10.1.8 Computer Science and Statistics 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 1001, 1003, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2500, 4734, plus 15 further credit hours in Computer Science courses numbered 3000 or higher.
2. Statistics 1510 or 2500 or 2550, and 2501 or 2560.
3. Mathematics 1000, 1001, 2000, 2050, 2051, 2320, 3340, Statistics 2410 or 3410, 3411, 3520, 3521, 3540, 4590.

4. Nine further credit hours in Statistics courses numbered 3000 or higher including at least a 3 credit hour course numbered 4000 or higher excluding Statistics 4581.

SECONDARY CALENDAR CHANGES

2100 Social Web Analysis covers the analysis of social network structures, the flow of data within them and the methods to extract useful information about these networks, their participants and the content of their communication. Security and trust issues are also covered.

PR: COMP ~~4000~~1003

2300 Introduction to Multimedia Programming is an introduction to programming and computer science with an emphasis on the development of multimedia applications. The course introduces the fundamental principles of programming, including object-oriented and event-driven programming. Students will develop an understanding of how to use and create classes and methods and combine them with multimedia libraries to produce animations, handle input from keyboard and mouse, and import sounds and videos to produce multimedia applications which can be directly deployed on the Internet.

CR: COMP 1550

LH: 3

PR: COMP ~~4000~~1003

2008 Social Issues and Professional Practice covers ethical and social considerations of computing to provide students with the basis to address these issues by ethical and technical actions. Case studies are used to illustrate ethical and social issues of computing.

CH: 1

CR: COMP 2760

PR: COMP ~~4000~~1003

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PROGRAM TITLE

Minor in Computer Science

RATIONALE

In the Computer Science undergraduate curriculum that began in 2016, there is a perceived gap in knowledge from first-year to second-year Computer Science courses. Computer Science 1000 will be replaced with 1003 as a minor requirement with the goal of closing that gap.

Also, to ensure that students who complete a Computer Science minor complete courses in the core knowledge/skills of the discipline, general interest courses at the first year level should not be permitted to fulfill the requirements of the minor.

CALENDAR CHANGES

11.4.6 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 ~~1000~~, 1001, 1002, 1003, 2001.
2. At least 6 credit hours selected from Computer Science ~~1002~~, 2002, 2003, 2004, 2005, 2006, 2007, 2008.
3. Three additional credit hours at the 3000 level or above.
4. Additional courses as necessary, at the 2000 level or above, to fulfill the requirement for 24 credit hours in Computer Science.

CALENDAR ENTRY AFTER CHANGES

11.4.6 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.

2. At least 6 credit hours selected from Computer Science 2002, 2003, 2004, 2005, 2006, 2007, 2008.
3. Three additional credit hours at the 3000 level or above.
4. Additional courses as necessary, at the 2000 level or above, to fulfill the requirement for 24 credit hours in Computer Science.

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:
- ☐ Department of: Computer Science
- ☐ Other:

RATIONALE

With the recent increase in the demand for the Computer Science major, it has become difficult to accommodate students in required courses. The Department would like to add admission criteria for acceptance into the major program to control the number of students entering the program and therefore ensure that there are sufficient spaces in the required cores to allow students to complete their program in a timely manner. The Department would like to request that these criteria for admission be applicable immediately.

CALENDAR CHANGES

11.4.1 Admission to Major Programs

Admission to the Major programs in the Department of Computer Science is competitive and selective. Students who wish to enter these programs must submit a completed application form to the Department of Computer Science by June 1 for Fall semester registration.

To be eligible for admission to a Bachelor of Science program in Computer Science, students must have normally completed 24 credit hours as listed below:

1. Computer Science 1001, 1002.
2. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
3. Mathematics 1000 and 1001 (or 1090 and 1000)
4. Six credit hours to satisfy the second Science requirement.

Students who fulfill the eligibility requirements compete for a limited number of available spaces. Selection is based on academic performance, normally cumulative average and performance in recent courses.

To be eligible for admission to a Bachelor of Arts program in Computer Science, students must have normally completed 24 credit hours as listed below:

1. Computer Science 1001, 1002.
2. Six credit hours to satisfy the Critical Reading and Writing (CRW) requirement, including at least 3 credit hours in English courses.
3. Six credit hours to satisfy the Language Study requirement.
4. Mathematics 1000 and 1001 (or 1090 and 1000).

Students who fulfill the eligibility requirements compete for a limited number of available spaces. Selection is based on academic performance, normally cumulative average and performance in recent courses.

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 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 by June 1 for Fall semester registration. To be eligible for admission, students must have 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.

Note: 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

Humanities and Social Sciences	No
Business Administration	Yes
Education	No
Engineering and Applied Science	Yes
Human Kinetics and Recreation	Yes
Marine Institute	Yes
Medicine	Yes
Music	No
Nursing	No
Pharmacy	Yes
Science:	
- Mathematics and Statistics	Yes
Social Work	No
Grenfell – Arts and Social Science	No
Grenfell – Science and Environment	No
Fine Arts	No

LIBRARY REPORT

Library Report	Yes
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RESOURCE IMPLICATIONS

We anticipate offering a single section of the new course, COMP1003. This will replace one of the two sections currently offered of COMP1000. As a result, no additional resources would be required.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

PROPOSAL FOR NEW COURSE, COMP1003

Prerequisite(s)

COMP 1001

Corequisite(s)

COMP 1002

Representative Workload

- Assignments 10%
- Lab Quizzes 20%
- Midterm Exam 25%
- Final Exam 45%

Representative Course Outline

- Introduction to Computer Science
- Algorithms and data structures
 - Abstract data types and their implementation; using, designing and creating data types
 - Algorithms for sorting and searching
 - fundamental data structures and their performance characteristics, arrays, linked lists, trees
- Theory of computing
 - Alphabets, formal languages and their descriptions
 - Abstract machines, finite state automata, Turing machines
 - Universality
 - Computability
 - Intractability
- Machine architecture
 - From abstract machines to “real computers”
 - Representation of information, characters, integers and floating point numbers
 - Machine language programming
 - Virtual machines

- Boolean logic and the circuit model, Shannon's expansion, SOP
- Combinational circuits, gates, multiplexors, decoders, arithmetic and logic unit
- Sequential circuits, flip-flops, memory, registers, clocking
- Central processing unit, arithmetic and logic unit, control unit
- Von Neumann Architecture: fetch-execute

Textbook

Robert Sedgewick, Kevin Wayne, *Computer Science: An Interdisciplinary Approach* , 1st Edition, ISBN-13: 978-0134076423, 2017.

Instructors

Manrique Mata-Montero, Miklos Bartha

Subject Re: Fwd: Re: Calendar Changes for Computer Science Programs - Corrected attachment
From Sharene Bungay <sharene@mun.ca>
To <lbauer@mun.ca>
Cc <compsci@mun.ca>
Date 2018-11-27 22:16



Hi Dr. Bauer,

Thank you for your feedback on the calendar change proposals from Computer Science.

I have included secondary calendar changes to insert "the former" in sections 6.4, 6.7, and 7 of the Faculty of Business section of the Calendar, as per your recommendations.

Regards,
Sharene.

Sharene Bungay
Deputy Head, Undergraduate Studies
Department of Computer Science

On 2018-11-13 10:14 AM, CS General wrote:

Further, from Business faculty.

Department of Computer Science
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009

----- Original Message -----

Subject: Re: Calendar Changes for Computer Science Programs -
Corrected attachment
Date: 2018-11-09 14:20
From: Lawrence Bauer <lbauer@mun.ca>
To: CS General <compsci@mun.ca>

Hi again:

Sorry, I have just noticed that two deleted courses also appear in the Operational Research concentration:

6.7 Operational Research

Students electing a Operational Research concentration should complete the following eight courses:

*

* BUSI 5401, BUSI 5402, BUSI 6400, and BUSI 7400; and

*

any four of: Computer Science 1710, Computer Science 2710, Mathematics 1001, Mathematics 2050, and any Business Information Systems course (or courses) at the 5000 level or above.

Subject Re: Calendar Changes for Computer Science Programs
- Corrected attachment

From Lawrence Bauer <lbauer@mun.ca>

To CS General <compsci@mun.ca>

Date 2018-11-09 14:20



Hi again:

Sorry, I have just noticed that two deleted courses also appear in the Operational Research concentration:

6.7 Operational Research

Students electing a Operational Research concentration should complete the following eight courses:

1. BUSI 5401, BUSI 5402, BUSI 6400, and BUSI 7400; and
2. any four of: Computer Science 1710, Computer Science 2710, Mathematics 1001, Mathematics 2050, and any Business Information Systems course (or courses) at the 5000 level or above.

--larry

On Nov 9, 2018, at 2:17 PM, Lawrence Bauer <lbauer@mun.ca> wrote:

Hello:

Thank you for the opportunity to comment on this proposal. I would like to note that a number of the courses that have been deleted by Computer Science appear in both the Information Systems concentration and in Section 7, Business Electives, in the Faculty of Business Administration section of the calendar. The FBA is currently undertaking a comprehensive review of its undergraduate programs and I anticipate that there will be a number of changes related to concentrations and electives resulting from that process so these deletions are not, in themselves, problematic at this time. I do believe that it would be wise to include adding "the former" to the deleted computer science courses in sections 6.4 and 7 of the FBA's section of the calendar as secondary changes, however. I have included copies of those sections below with the relevant courses highlighted for your convenience.

6.4 Information Systems

Students electing an Information Systems concentration should complete the following courses:

1. Six of BUSI 5700, BUSI 5701, BUSI 5702, BUSI 5703, BUSI 6700, BUSI 6701, BUSI 7700, and BUSI 7701; and
2.
 - a. either Geography 2195, Geography 3260, and one of Geography 3202, Geography 4202, Geography 4261
 - b. or three of the following: Computer Science 1710, Computer Science 2500, Computer Science 2710, Computer Science 2760, Computer Science 3710, Computer Science 3715, the former Computer Science 4761, Computer Science 4767.

7 Business Electives

Only those courses listed below are acceptable as Business electives towards the **Bachelor of Commerce (Co-operative)**, **Joint Degrees of Bachelor of Commerce (Co-operative)** and **Bachelor of Arts**, and **Bachelor of Business Administration** programs.

Table 3 Business Electives

the former BUSI 3101	BUSI 6040	BUSI 6700	BUSI 7510	Economics 4026
BUSI 3210	BUSI 6041-6060	BUSI 6701	BUSI 7600	Economics 4090
BUSI 3610	BUSI 6100	BUSI 7005	BUSI 7700	Engineering 8671
BUSI 3630	BUSI 6110	BUSI 7010	BUSI 7701	Geography 2195
BUSI 5000	BUSI 6120	BUSI 7110	BUSI 7320	Geography 2425
BUSI 5020	BUSI 6130	BUSI 7120	Computer Science 1710	Geography 3202
BUSI 5160	BUSI 6217	BUSI 7125	Computer Science 2500	Geography 3260
BUSI 5210	BUSI 6230	BUSI 7150	Computer Science 2710	Geography 3425
BUSI 5217	BUSI 6241	BUSI 7160	Computer Science 2711	Geography 4202
BUSI 5220	BUSI 6250	BUSI 7218	the former Computer Science 2752	Geography 4261
BUSI 5250	BUSI 6301	BUSI 7230	Computer Science 2760	Mathematics 1001
BUSI 5302	BUSI 6310	BUSI 7240	Computer Science 3710	Mathematics 2050
BUSI 5401	BUSI 6311	BUSI 7310	Computer Science 3715	Mathematics 2090
BUSI 5402	BUSI 6312	BUSI 7315	the former Computer Science 4761	Political Science 2200
BUSI 5500	BUSI 6320	BUSI 7320	Computer Science 4767	Political Science 3210
BUSI 5530	BUSI 6400	BUSI 7321	Economics 3000	Political Science 3250
BUSI 5700	BUSI 6410	BUSI 7322	Economics 3010	Sociology 4091
BUSI 5700	BUSI 6415	BUSI 7330	Economics 3030	Sociology 4104
BUSI 5701	BUSI 6510	BUSI 7400	Economics 3080	
BUSI 5702	BUSI 6550	BUSI 7410	Economics 3150	
BUSI 5703	BUSI 6605	BUSI 7415	Economics 3360	
BUSI 6000-6029	BUSI 6610	BUSI 7500	Economics 4025	

I hope this is helpful information.
--larry

On Nov 9, 2018, at 12:47 PM, CS General <compsci@mun.ca> wrote:

Hello,

Please disregard attachment to previous email. The correct one is now attached.

Regards.

Department of Computer Science
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009

On 2018-11-09 12:45, CS General wrote:

Hello,
The Department of Computer Science is proposing calendar changes.
Enclosed are the proposals for these Calendar Changes. We would appreciate receiving any comments by December 4, 2018.
Regards,
Minglun Gong
Department Head
--

Department of Computer Science
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009

<Comp-Sci-Cal-Changes-F2018.pdf>

Larry Bauer, Ph.D.
Associate Professor of Finance
Associate Dean (Undergraduate Programs)
Faculty of Business Administration
Memorial University of Newfoundland
St. John's Nfld, A1B 3X5

www: <http://www.business.mun.ca>
e-mail: lbauer@mun.ca
Tel: (709) 864-8512
Fax: (709) 864-8954

SSRN: <http://ssrn.com/author=327175>

Larry Bauer, Ph.D.
Associate Professor of Finance
Associate Dean (Undergraduate Programs)
Faculty of Business Administration
Memorial University of Newfoundland
St. John's Nfld, A1B 3X5

www: <http://www.business.mun.ca>
e-mail: lbauer@mun.ca
Tel: (709) 864-8512
Fax: (709) 864-8954

Subject Re: Fwd: Re: Fwd: Calendar Changes for Computer Science Programs - Corrected attachment

From Sharene Bungay <sharene@mun.ca>

To <engrconsult@mun.ca>

Cc <compsci@mun.ca>

Date 2018-11-27 22:17



Hi Dr. George,

Thank you for your feedback on the calendar change proposals from Computer Science.

The wording of the prerequisites for COMP 4770 and COMP 4300 has been modified to "...two Computer Science courses at the 3000 level or above."

Regards,
Sharene.

Sharene Bungay
Deputy Head, Undergraduate Studies
Department of Computer Science

On 2018-11-22 11:36 AM, CS General wrote:

----- Original Message -----

Subject: Re: Fwd: Calendar Changes for Computer Science Programs - Corrected attachment

Date: 2018-11-21 17:37

From: Engineering Consult <engrconsult@mun.ca>

To: compsci@mun.ca

Cc: Andrew Fisher <adfisher@mun.ca>, Jayde Edmunds <edmundsj@mun.ca>, Bruce Quinton <bruce.quinton@mun.ca>

Dear Dr. Gong,

Thank you for the opportunity to comment on the proposed set of Calendar changes to the Computer Science program.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program and we are happy to support these changes.

We do have one comment:

In the prerequisite list for COMP 4770 "Team Project" (page 8): replace "2 COMP 3xxx" by "two Computer Science courses at the third-year level"

(which is how the prerequisite list for COMP 4300 is phrased on page 9)

Both of these are different from the listing on pages 24 and 30.

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 2018-11-09 12:47, CS General wrote:

Hello,

Please disregard attachment to previous email. The correct one is now attached.

Regards,

Department of Computer Science
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009

On 2018-11-09 12:45, CS General wrote:

Hello,

The Department of Computer Science is proposing calendar changes. Enclosed are the proposals for these Calendar Changes. We would appreciate receiving any comments by December 4, 2018.

Regards,

Minglun Gong
Department Head

--

Department of Computer Science
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009

HKR

Subject Re: Calendar Changes for Computer Science Programs
From Rohr, Linda <lrohr@mun.ca>
To compsci@mun.ca <compsci@mun.ca>
Date 2018-11-27 12:41



Hello,

No concerns from HKR with the proposed calendar changes for Computer Science Programs.

Linda

Linda E. Rohr PhD

Dean, School of Human Kinetics & Recreation

Memorial University

t: 709.864.8129 f: 709.864.7531 e: lrohr@mun.ca

PE 2027

From: CS General <compsci@mun.ca>
Reply-To: "compsci@mun.ca" <compsci@mun.ca>
Date: Friday, November 9, 2018 at 12:50 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, Linda Rohr <lrohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "lsutherland@mun.ca" <lsutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>, "lrobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>
Cc: "Newhook, Rebecca" <rnewhook@mun.ca>, "sharene@mun.ca" <sharene@mun.ca>, "gong@mun.ca" <gong@mun.ca>
Subject: Fwd: Calendar Changes for Computer Science Programs

Hello,

Subject RE: Fwd: Calendar Changes for Computer Science Programs - Corrected attachment
From MIUG Consultations <MIUGconsultations@mi.mun.ca>
To compsci@mun.ca <compsci@mun.ca>
Date 2018-11-20 15:35



Thank you for the opportunity to review and comment on the proposal for calendar changes to the Computer Science programs. This will have no impact on Marine Institute programs and we support the proposal.

Regards,
Bev

Bev Fleet
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0369
FAX: 709-778-0535
Bev.Fleet@mi.mun.ca

-----Original Message-----

From: CS General {mailto:compsci@mun.ca}
Sent: Friday, November 09, 2018 12:47 PM
To: HSS@mun.ca; lbauer@mun.ca; mcollett@mun.ca; engrconsult@mun.ca; lerohr@mun.ca; MIUG Consultations <MIUGconsultations@mi.mun.ca>; deanofmedicine@med.mun.ca; lsutherland@mun.ca; deanNurse@mun.ca; pharminfo@mun.ca; deansci@mun.ca; adeanugradswk@mun.ca; univlib@mun.ca; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca
Cc: rnewhook@mun.ca; sharene@mun.ca; gong@mun.ca
Subject: Re: Fwd: Calendar Changes for Computer Science Programs - Corrected attachment

Hello,

Please disregard attachment to previous email. The correct one is now attached.

Regards.

Department of Computer Science
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009

On 2018-11-09 12:45, CS General wrote:

Hello,

The Department of Computer Science is proposing calendar changes. Enclosed are the proposals for these Calendar Changes. We would appreciate receiving any comments by December 4, 2018.

Regards,

Minglun Gong
Department Head

--
Department of Computer Science
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Phone: (709) 864-8652

Medicine

Subject FW: Fwd: Calendar Changes for Computer Science Programs - Corrected attachment
From <cvardy@mun.ca>
To <compsci@mun.ca>
Cc <Margaret.Steele@med.mun.ca>
Date 2018-11-16 10:21



- Comp-Sci-Cal-Changes-F2018.pdf (~1.7 MB)

Good MORNING

The attached proposed changes have been reviewed and the Faculty of Medicine is supportive.

CATHY VARDY, MD, FRCPC | VICE DEAN AND PROFESSOR OF PEDIATRICS

Faculty of Medicine
 Health Sciences Centre
 Room M2M319
 Memorial University of Newfoundland
 St. John's, Newfoundland | A1B 3V6

T 709 864 6417 | F 709 864 6336
www.med.mun.ca/

Vision: Through excellence, we will integrate education, research and social accountability to advance the health of the people and communities we serve.

Destination Excellence: Faculty of Medicine Strategic Plan 2018-2023

Follow us: Facebook www.facebook.com/MUNMedicine | Twitter www.twitter.com/MUNMed (optional)

-----Original Message-----

From: CS General [mailto:compsci@mun.ca]
 Sent: Friday, November 9, 2018 12:47 PM
 To: HSS@mun.ca; lbauer@mun.ca; mcollett@mun.ca; engrconsult@mun.ca; lerohr@mun.ca; miugconsultations@mi.mun.ca; Steele, Dr. Margaret: Dean of Medicine <DeanofMedicine@med.mun.ca>; lsutherland@mun.ca; deanNurse@mun.ca; pharminfo@mun.ca; deansci@mun.ca; adeanugradswk@mun.ca; univlib@mun.ca; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca
 Cc: rnewhook@mun.ca; sharene@mun.ca; gong@mun.ca
 Subject: Re: Fwd: Calendar Changes for Computer Science Programs - Corrected attachment

Hello,

Please disregard attachment to previous email. The correct one is now attached.

Regards.

 Department of Computer Science
 Memorial University of Newfoundland
 St. John's, NL A1B 3X5
 Phone: (709) 864-8652
 Fax: (709) 864-2009

Pharmacy

Subject FW: Calendar Changes for Computer Science Programs - Corrected attachment
From Davis, Erin <emdavis@mun.ca>
To compsci@mun.ca <compsci@mun.ca>
Cc Glew, Csop <cglew@mun.ca>
Date 2018-11-15 14:28



-
- Comp-Sci-Cal-Changes-F2018.pdf (~1.7 MB)
-

The proposed changes will not affect pharmacy.

Erin

--

Dr. Erin Davis
Associate Dean Undergraduate Studies
Chair of the Committee on Undergraduate Studies

Assistant Professor | School of Pharmacy

Clinical Assistant Professor | Discipline of Family Medicine
Memorial University of Newfoundland

T 709 864-8815

F 709 864-6941

E emdavis@mun.ca

On 2018-11-13, 4:58 PM, "Glew, Csop" <cglew@mun.ca> wrote:

compsci@mun.ca

Subject RE: Calendar Changes for Computer Science Programs
- Corrected attachment

From Math Consult <mathconsult@mun.ca>

To <compsci@mun.ca>

Date 2018-11-14 11:22



Hello Minglun,

Given the credit restriction with comp 1002 and math 2320, shouldn't the 1003 CO requirement be "COMP 1002 or MATH 2320"?

1003 has been added to the joint programs with math, but these students will do math 2320 instead of comp 1002.

Tara

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

-----Original Message-----

From: Dean of Science [mailto:deansci@mun.ca]

Sent: November-09-18 2:05 PM

To: Amina Ahmed Mahmood <aamahmood@mun.ca>; BiocDHundergrad
<biocdhundergrad@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science
consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan
Saika-Voivod <saika@mun.ca>; Math & Stats <mathconsult@mun.ca>; Ocean
Sciences <amercier@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>;
Newhook, Rebecca <rnewhook@mun.ca>; Sharene Bungay <sharene@mun.ca>; Suzanne
Dufour <sdufour@mun.ca>; Mackenzie, Theresa <tmackenz@mun.ca>; Associate
Dean of Science (Undergraduate) <adsu@mun.ca>

Subject: FW: Calendar Changes for Computer Science Programs - Corrected
attachment

-----Original Message-----

From: CS General [mailto:compsci@mun.ca]

Sent: November-09-18 12:47 PM

Subject: Re: Fwd: Calendar Changes for Computer Science Programs - Corrected
attachment

Hello,

The Department of Computer Science is proposing calendar changes.
Enclosed are the proposals for these Calendar Changes. We would
appreciate receiving any comments by December 4, 2018.

Regards,

Minglun Gong
Department Head

--

Department of Computer Science
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009

Math 2 of 2

Subject Re: Fwd: RE: Calendar Changes for Computer Science Programs - Corrected attachment
From Sharene Bungay <sharene@mun.ca>
To <mathconsult@mun.ca>
Cc <compsci@mun.ca>
Date 2018-11-27 22:17



Hi Tara,

Thank you for your feedback on the calendar change proposals from Computer Science.

With regard to the change to the prerequisites for COMP 3550, the course instructor would like for Biology students to have a course with some programming component and has therefore excluded a number of general interest courses (ie. previously 1400, 1600, and 2000). COMP 1401 is a relatively new course ("Computing at the Movies") that we would like to add to the exclusion list in the prerequisite.

With regard to the co-requisite for COMP 1003, I agree that an "or Mathematics 2320" should be added. I will propose this amendment at Faculty council.

Regards,
Sharene.

Sharene Bungay
Deputy Head, Undergraduate Studies
Department of Computer Science

On 2018-11-15 08:59 AM, CS General wrote:

----- Original Message -----

Subject: RE: Calendar Changes for Computer Science Programs - Corrected attachment
Date: 2018-11-14 11:17
From: "Math Consult" <mathconsult@mun.ca>
To: <compsci@mun.ca>

Hi Minglun,

Is there a typo on page 10 in the rationale? Should "excluded courses" be "prerequisite courses"?

--
Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

-----Original Message-----

From: Dean of Science [mailto:deansci@mun.ca]
Sent: November-09-18 2:05 PM
To: Amina Ahmed Mahmood <aamahmood@mun.ca>; BiocDHundergrad <biocdhundergrad@mun.ca>; Chemistry <chemconsult@mun.ca>; Computer Science

consultation <compsci@mun.ca>; Earth Sciences <eascugcon@mun.ca>; Ivan Saika-Voivod <saika@mun.ca>; Math & Stats <mathconsult@mun.ca>; Ocean Sciences <amercier@mun.ca>; Psychology consult <psychdeputyhead@mun.ca>; Newhook, Rebecca <rnewhook@mun.ca>; Sharene Bungay <sharene@mun.ca>; Suzanne Dufour <sdufour@mun.ca>; Mackenzie, Theresa <tmackenz@mun.ca>; Associate Dean of Science (Undergraduate) <adsu@mun.ca>
Subject: FW: Calendar Changes for Computer Science Programs - Corrected attachment

-----Original Message-----

From: CS General [<mailto:compsci@mun.ca>]
Sent: November-09-18 12:47 PM
Subject: Re: Fwd: Calendar Changes for Computer Science Programs - Corrected attachment

Hello,

The Department of Computer Science is proposing calendar changes. Enclosed are the proposals for these Calendar Changes. We would appreciate receiving any comments by December 4, 2018.

Regards,

Minglun Gong
Department Head

--

Department of Computer Science
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009

Library

Subject RE: Note for Librarian - Calendar Changes for
Computer Science Programs - Corrected attachment
From Ambi, Alison <aambi@mun.ca>
To compsci@mun.ca <compsci@mun.ca>
Date 2018-11-13 10:56



I have reviewed all proposed calendar changes, as well as the proposed new course COMP-1003, and I am satisfied that no additional burden will be placed on library resources as a result of these changes.

Sincerely,
Alison

Alison Ambi
Head, Collection Strategies
709 864 7125

QEII Library
Memorial University of Newfoundland
www.library.mun.ca

-----Original Message-----

From: CS General [mailto:compsci@mun.ca]
Sent: November 9, 2018 12:51 PM
To: Library Correspondence <univlib@mun.ca>
Cc: sharene@mun.ca
Subject: Note for Librarian - Calendar Changes for Computer Science Programs - Corrected attachment

Hello,

Please note we have just one new course offering in our package of calendar changes, COMP-1003. The content of COMP-1003 is similar to the existing COMP-1000.

Regards,
Regina Edwards
for
Minglun Gong,
Department Head

Department of Computer Science
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009

----- Original Message -----

Subject: Re: Fwd: Calendar Changes for Computer Science Programs - Corrected attachment
Date: 2018-11-09 12:47

From: CS General <compsci@mun.ca>
To: HSS@mun.ca, lbauer@mun.ca, mcollett@mun.ca, engrconsult@mun.ca, lerohr@mun.ca,
miugconsultations@mi.mun.ca, deanofmedicine@med.mun.ca, lsutherland@mun.ca,
deanNurse@mun.ca, pharminfo@mun.ca, deansci@mun.ca, adeanugradswk@mun.ca, univlib@mun.ca,
lrobinson@grenfell.mun.ca, ssedean@grenfell.mun.ca, thennessey@grenfell.mun.ca
Cc: rnewhook@mun.ca, sharene@mun.ca, gong@mun.ca
Reply-To: compsci@mun.ca

Hello,

Please disregard attachment to previous email. The correct one is now attached.

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)
- ☐ 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 (Number change from PSYC3250 to PSYC3810)

COURSE NUMBER AND TITLE

Psychology 3250 Neurobiology of Learning and Memory

REVISED COURSE NUMBER AND TITLE

Psychology 3810 Neurobiology of Learning and Memory

RATIONALE

Because this course has such a strong emphasis on behavioural neuroscience research and theories, we feel that it would be better labeled as a 38XX course as behavioural neuroscience courses typically have 8 as the second digit. All other aspects of the course will remain the same.

CALENDAR CHANGES

3250 3810 Neurobiology of Learning and Memory

examines how organisms adjust their behaviour to regularities in the environment as a result of experience. Experience changes behavior by modifying the nervous system. We will take a multidisciplinary approach, combining information from psychology and neuroscience to study learning and memory. Students will gain an understanding of sensitization, habituation, and classical and operant conditioning using animal models, with a particular emphasis on the synaptic and molecular changes that occur with learning and memory.

PR: PSYC 2520 or 2521, 2911, and 2930 or the former 2570, and admission to a Major in Psychology or Behavioural Neuroscience

CR: the former PSYC 3250

CALENDAR ENTRY AFTER CHANGES

3810 Neurobiology of Learning and Memory

examines how organisms adjust their behaviour to regularities in the environment as a result of experience. Experience changes behavior by modifying the nervous system. We will take a multidisciplinary approach, combining information from psychology and neuroscience to study learning and memory. Students will gain an understanding of sensitization, habituation, and classical and operant conditioning using animal models, with a particular emphasis on the synaptic and molecular changes that occur with learning and memory.

PR: PSYC 2520 or 2521, 2911, and 2930 or the former 2570, and admission to a Major in Psychology or Behavioural Neuroscience
CR: PSYC 3250

SECONDARY CALENDAR CHANGES

3250 will be referred to as the former 3250 in the calendar program descriptions. These changes are included in the proposal concerning program changes for Behavioural Neuroscience.

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Consultations Sought From	Comments Received
Humanities and Social Sciences	
Education	yes
Engineering and Applied Science	yes
Grenfell Campus (Arts & Social Sciences)	
Human Kinetics and Recreation	yes
Marine Institute	yes
Social Work	yes
Science	
• Biochemistry	
• Biology	yes
• Chemistry	
• Earth Sciences	
• Mathematics and Statistics	
• Ocean Sciences	
• Physics and Physical Oceanography	

E-mail from Psychology department requesting feedback on calendar changes sent October 11, 2018.

The Psychology department is proposing a set of calendar changes. Please find attached a set of proposals outlining the following changes

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses

H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Please send your comments on these proposals to psychdeputyhead@mun.ca.

If you have any questions, please feel free to contact me.

Christina

Replies from other units:

Marine Institute:

Dear Christina,

Thank you for the opportunity to review and comment on the calendar change proposals from Psychology. These changes will have no impact on Marine Institute programs and we support the proposal.

Regards,

Bev

Bev Fleet

Chair, Undergraduate Studies Committee

Marine Institute, Memorial University

TEL: 709-778-0369

FAX: 709-778-0535

Bev.Fleet@mi.mun.ca

Engineering:

Dear Dr. Thorpe,

Thank you for the opportunity to comment on the proposed Calendar changes to the Psychology Program.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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

Biology:

Hi Christina,

The Biology Undergraduate Committee has reviewed your proposed calendar changes. We have no concerns with those changes, and are pleased to see the introduction of interesting new courses in your department.

Best wishes,

Suzanne

--

Dr. Suzanne Dufour
Associate Professor
Department of Biology
Memorial University of Newfoundland
St. John's, NL
A1B 3X9
Canada

Tel: (709) 864-8025

Fax: (709) 864-3018

<http://www.mun.ca/biology/dufour/index.php>

Education:

Hello,

Thank you for the opportunity to provide feedback on this proposal. These changes will not impact the Faculty of Education's programs.

Thank you,

Meghan

Meghan Collett, B.Sc., M.Sc. | Coordinator of Academic Programs

Faculty of Education
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1B 3X8
G.A.Hickman Building | Room ED 2020
Tel: 709 864-7554 |
Fax: 709 864-2623

Social Work:

Hello Christina,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs

School of Social Work, Memorial University

St. John's, NL, Canada, A1C 5S7

T: 709-864-2562 or 709-864-7349

HKR:

Hello,

I have reviewed the calendar change proposals from Psychology and have no concerns.

Linda

Linda E. Rohr PhD

Dean, School of Human Kinetics & Recreation

Memorial University

t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca

PE 2027

LIBRARY REPORT

No library report required.

RESOURCE IMPLICATIONS

None.

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):
- ☐ 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 (New Course PSYC3251)

COURSE NUMBER AND TITLE

Psychology 3251 Learning

ABBREVIATED COURSE TITLE

Psychology 3251 Learning

RATIONALE

Within the last few years the Behavioural Neuroscience group in the Psychology department has welcomed 3 new faculty members. With the addition of these new faculty members we are looking to revamp our program. Part of this process involves the creation of new courses. A course focusing on learning theory and the practical applications of these theories is something that our department is currently lacking. A course such as this is often required for graduate programs and is of interest to students majoring in psychology.

CALENDAR CHANGES

PSYC 3251 Learning

introduces students to topics of learning phenomena and learning theories. Topics to be studied include the evolutionary context of learning, habituation and sensitization, Pavlovian conditioning, operant conditioning, and generalization and discrimination in learning. Applications of learning principles to topics such as child rearing, education, drug use and rehabilitation, as well as to other topics of contemporary interest, will also be discussed.

PR: PSYC 2520 or 2521, 2911, and 2930 or the former 2570, and admission to a Major in Psychology or Behavioural Neuroscience

CALENDAR ENTRY AFTER CHANGES

PSYC 3251 Learning

introduces students to topics of learning phenomena and learning theories. Topics to be studied include the evolutionary context of learning, habituation and sensitization, Pavlovian conditioning, operant conditioning, and generalization and discrimination in learning. Applications of learning principles to topics such as child rearing, education, drug use and rehabilitation, as well as to other topics of contemporary interest, will also be discussed.

PR: PSYC 2520 or 2521, 2911, and 2930 or the former 2570, and admission to a Major in Psychology or Behavioural Neuroscience

SECONDARY CALENDAR CHANGES

PSYC 4250 Selected Topics in Learning and Motivation I

an intensive examination of a specific topic in learning and motivation.

PR: PSYC 3251 or the former 3250, and admission to a Major in Psychology or Behavioural Neuroscience

PSYC 4251 Selected Topics in Learning and Motivation II

is an intensive examination of a specific topic in learning and motivation.

PR: PSYC 3251 or the former 3250, and admission to a Major in Psychology or Behavioural Neuroscience

PSYC 4270 Research Experience in Learning

allows students to gain research experience in selected areas of learning.

PR: PSYC 3251 or the former 3250, and admission to a Major in Psychology or Behavioural Neuroscience

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Consultations Sought From	Comments Received
Humanities and Social Sciences	
Education	Yes
Engineering and Applied Science	Yes
Grenfell Campus (Arts & Social Sciences)	
Human Kinetics and Recreation	Yes
Marine Institute	Yes
Social Work	Yes
Science	
• Biochemistry	
• Biology	Yes
• Chemistry	
• Earth Sciences	
• Mathematics and Statistics	
• Ocean Sciences	
• Physics and Physical Oceanography	

E-mail from Psychology department requesting feedback on calendar changes sent October 11, 2018.

The Psychology department is proposing a set of calendar changes. Please find attached a set of proposals outlining the following changes

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses

H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Please send your comments on these proposals to psychdeputyhead@mun.ca.

If you have any questions, please feel free to contact me.

Christina

Replies from other units:

Marine Institute:

Dear Christina,

Thank you for the opportunity to review and comment on the calendar change proposals from Psychology. These changes will have no impact on Marine Institute programs and we support the proposal.

Regards,

Bev

Bev Fleet

Chair, Undergraduate Studies Committee

Marine Institute, Memorial University

TEL: 709-778-0369

FAX: 709-778-0535

Bev.Fleet@mi.mun.ca

Engineering:

Dear Dr. Thorpe,

Thank you for the opportunity to comment on the proposed Calendar changes to the Psychology Program.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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

Biology:

Hi Christina,

The Biology Undergraduate Committee has reviewed your proposed calendar changes. We have no concerns with those changes, and are pleased to see the introduction of interesting new courses in your department.

Best wishes,

Suzanne

--

Dr. Suzanne Dufour
Associate Professor
Department of Biology
Memorial University of Newfoundland
St. John's, NL
A1B 3X9
Canada

Tel: (709) 864-8025

Fax: (709) 864-3018

<http://www.mun.ca/biology/dufour/index.php>

Education:

Hello,

Thank you for the opportunity to provide feedback on this proposal. These changes will not impact the Faculty of Education's programs.

Thank you,

Meghan

Meghan Collett, B.Sc., M.Sc. | Coordinator of Academic Programs

Faculty of Education
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1B 3X8
G.A.Hickman Building | Room ED 2020
Tel: 709 864-7554 |
Fax: 709 864-2623

Social Work:

Hello Christina,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs

School of Social Work, Memorial University

St. John's, NL, Canada, A1C 5S7

T: 709-864-2562 or 709-864-7349

HKR:

Hello,

I have reviewed the calendar change proposals from Psychology and have no concerns.

Linda

Linda E. Rohr PhD

Dean, School of Human Kinetics & Recreation

Memorial University

t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca

PE 2027

LIBRARY REPORT



Collections Strategies Division

Queen Elizabeth II Library

St. John's, NL, A1B 3Y1

31 October 2018

TO: Christina Thorpe, Deputy Head, Undergraduate Studies, Psychology Department

FROM: Alison Ambi, Head, Collections Strategies

SUBJECT: Behavioural neuroscience calendar changes and course proposals

With respect to the following set of changes being proposed by the Psychology department:

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses
- H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Course renaming, program requirement changes, and additions of laboratory components

Proposal components A and H, and E and F do not change the content of what is taught in the psychology department, and will consequently not place any additional demands on library resources.

New Courses (Proposal components B, C, and D)

A review of some of the topics to be covered in the new courses indicates that the Library has a sufficient range of supplementary resources to support term papers and research projects likely to be pursued by students. Besides the robust physical book collection in psychology and the thousands of ebooks available via our general academic ebook subscription packages, the Library subscribes to PsycBooks and the Springer psychology front-list ebook package, both of which provide online access to key current monograph literature on a range of psychology topics. The library also provides online access to two key book series ranked highly by Scimago (Table 2 in the appendices). The Library subscriptions to PsycInfo and various other indexes (for example, Scopus, Web of Science, and PubMed) are available to help guide students to relevant psychology literature.

New Selected Topics Courses (Proposal component G)

Students in these courses are likely to be reliant on recent journal literature. Of the top 50 Scimago ranked journals in Behavioural Neuroscience (see Table 1 in the appendices), the library provides current access to 32 journals, 14 are available with a 12 month embargo, and back issues up to 2015 are available online for a further 3. Students will therefore have immediate online access to over 90% of the

articles from these journals. There is only one journal within the top 50 list (ranked 37th) for which the Library does not provide immediate online access to at least some issues. Combined with the library's document delivery service, which would allow students to acquire articles from any journal within 24-48 hours, the students' needs should be adequately supported.

Appendices

Table 1 – Top-Ranked Behavioural Neuroscience Journals as Identified by Scimago

Ra nk	Title	Publisher	Categories	Curren t Access Availa ble?	Emba rgo Lengt h	Notes
1	Neuroscience and Biobehavioral Reviews	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
2	Brain, Behavior, and Immunity	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
3	Neurobiology of Learning and Memory	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
4	Current Opinion in Behavioral Sciences	Elsevier Limited	Behavioral Neuroscience (Q1)	y		
5	Genes, Brain and Behavior	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N	12 mont hs	
6	Cognitive, Affective and Behavioral Neuroscience	Springer New York LLC	Behavioral Neuroscience (Q1)	Y		
7	Frontiers in Behavioral Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access
8	Neuropsychologia	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
9	Hormones and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
10	Journal of Experimental Psychology: Human Perception and Performance	American Psychological Association	Behavioral Neuroscience (Q1)	Y		
11	Journal of Sleep Research	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N		Publisher platform access until 2015
12	Behavioral Neuroscience	American Psychological Association	Behavioral Neuroscience (Q1)	Y		

		cal Association				
13	Frontiers in Human Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access Publisher platform access until 2015
14	Chemical Senses	Oxford University Press	Behavioral Neuroscience (Q1)	N	12 mont hs	
15	Behavioural Brain Research	Elsevier BV	Behavioral Neuroscience (Q1)	y		
16	Developmental Psychobiology	John Wiley & Sons Inc.	Behavioral Neuroscience (Q1)	N	12 mont hs	
17	Social Neuroscience	Taylor & Francis	Behavioral Neuroscience (Q1)	N	12 mont hs	
18	Sleep Health	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
19	Human Factors	SAGE Publication s	Behavioral Neuroscience (Q2)	N		Publisher platform access until 2017
20	Brain Imaging and Behavior	Springer New York LLC	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2015
21	Journal of Neuropsychology	Wiley- Blackwell	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2016
22	Stress: the International Journal on Biology of Stress	Taylor & Francis	Behavioral Neuroscience (Q2)	N	18 mont hs	
23	Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology	Springer Verlag	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2015
24	Learning Disability Quarterly	SAGE Publication s Inc.	Behavioral Neuroscience (Q2)	Y		
25	Journal of Research on Adolescence	Blackwell Publishing Inc.	Behavioral Neuroscience (Q2)	N	12 mont hs	

26	Journal of the Experimental Analysis of Behavior	Wiley- Blackwell	Behavioral Neuroscience (Q2)	N	12 mont hs	
27	Translational Behavioral Medicine	Springer New York LLC	Behavioral Neuroscience (Q2)	Y	0 mont hs	
28	Alcohol	Elsevier BV	Behavioral Neuroscience (Q2)	y		
29	Pharmacology Biochemistry and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
30	Epilepsy and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
31	Evolutionary Psychology	Human Nature Review	Behavioral Neuroscience (Q2)	Y		Open Access
32	Physiology and Behavior	Elsevier BV	Behavioral Neuroscience (Q2)	y		
33	Brain and Behavior	John Wiley and Sons Inc.	Behavioral Neuroscience (Q2)	Y		Open Access
34	Brain, Behavior and Evolution	S. Karger AG	Behavioral Neuroscience (Q2)	N	12 mont hs	
35	Behavioral and Brain Functions	BioMed Central	Behavioral Neuroscience (Q2)	Y		
36	Nature and Science of Sleep	Dove Medical Press Ltd.	Behavioral Neuroscience (Q3)	Y		Open Access
37	Adaptive Human Behavior and Physiology	Springer Internation al Publishing AG	Behavioral Neuroscience (Q3)	N		
38	Trends in Neuroscience and Education	Elsevier GmbH	Behavioral Neuroscience (Q3)	y		
39	Behavioural Processes	Elsevier BV	Behavioral Neuroscience (Q3)	y		
40	Behaviour	Brill	Behavioral Neuroscience (Q3)	Y		
41	International Journal of Alzheimer's Disease	Hindawi Publishing Corporatio n	Behavioral Neuroscience (Q3)	Y		Open Access
42	Clinical Psychopharmacolog y and Neuroscience	Korean College of Neuropsyc	Behavioral Neuroscience (Q3)	Y		Open Access

		hopharmac ology				
43	Review Journal of Autism and Developmental Disorders	Springer New York	Behavioral Neuroscience (Q3)	N	12 mont hs	
44	Journal of Eating Disorders	BioMed Central	Behavioral Neuroscience (Q3)	Y		
45	Learning and Behavior	Springer New York LLC	Behavioral Neuroscience (Q3)	N	12 mont hs	
46	Behavioral and Brain Sciences	Cambridge University Press	Behavioral Neuroscience (Q3)	N	12 mont hs	
47	Sexual Medicine	Elsevier Inc.	Behavioral Neuroscience (Q3)	y		
48	Sleep Science	Federacao Latino-Americana de Sociedades do Sono	Behavioral Neuroscience (Q3)	Y		Open Access
49	Integrative Psychological and Behavioral Science	Springer Science + Business Media	Behavioral Neuroscience (Q3)	N	12 mont hs	
50	Journal of Contextual Behavioral Science	Elsevier BV	Behavioral Neuroscience (Q3)	y		

Table 2 – Top-Ranked Books series for behavioural neuroscience identified by Scimago

Title	Publisher	Categories	URL
Advances in the Study of Behavior	Elsevier	Behavioral Neuroscience (Q1)	https://www.sciencedirect.com/in-the-study-of-behavior/issues
Current Topics in Behavioral Neurosciences	Springer	Behavioral Neuroscience (Q1)	https://link.springer.com/books

RESOURCE IMPLICATIONS

There should be minimal costs arising from this new course. We currently have two faculty members who could teach this course. It will be offered on a rotating basis (likely once per year) as faculty are available.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

See attached draft syllabus.

Psychology 3251 – Learning Sample Syllabus

Instructor: Christina Thorpe or Darlene Skinner

Teaching Assistant: TBA

Course Summary

We will cover topics including: habituation and sensitization, classical conditioning, operant conditioning, schedules of reinforcement, extinction, generalization and discrimination in learning, biological constraints on learning, stimulus control and aversive control, spatial learning, observational learning, language learning. Throughout the course the practical implications of learning research and theory will be emphasized.

Course Requirements

Text: Powell, Honey, Symbaluk (2016). *Introduction to learning and behavior* (5th ed.). Nelson Education.

Course Objectives

- Students will learn about the basic principles and theories of learning as outlined above in the Course Summary.
 - Students will be able to apply their knowledge to real life situations.
 - Students will practice their writing skills so that they can communicate their ideas in a clear, concise manner consistent with APA format.
 - Students will practice their oral presentation skills so that they can express what they have learned in a professional manner.
 - Students will learn to work effectively in groups.
-

Evaluation

Course grades will be determined on the basis of performance on a written assignment, presentation, in-class quizzes, a mid-term test, and a final exam. The due dates and breakdown of grades is as follows:

Midterm (20%)

Final Exam (25%)

In-class quizzes (Value: 10%)

Paper (Value: 30%)

Group Presentation (Value: 15%)

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Senate Summary Page for Courses (New Course PSYC3840)

REVISED COURSE NUMBER AND TITLE

Psychology 3840 Neurobiology of Stress

ABBREVIATED COURSE TITLE

Psychology 3840 Neurobiology of Stress

RATIONALE

The importance of stress on brain and behavior cannot be underestimated. Indeed, we are living in a time when most of us deal with stress on a daily basis – from overscheduling and increased work demands to dealing with global terrorism and natural disasters. Moreover, research suggests that this rise in stress is resulting in increased rates of mental illness. Thus, understanding the effects of stress on normal and abnormal brain function is paramount. This course is a first in the department of psychology focused on understanding the role of stress on brain and behavior. We will explore topics such as stress effects on the immune system, hypothalamic-pituitary-adrenal (HPA) axis, neurogenesis and neuroplasticity, neurotransmitter release and neuropeptide release, cognition and emotional processing as well as in utero and early postnatal development – all in reference to normal and clinical populations. Even though this is a proposed neuroscience course, this course will be of interest to students in the areas of developmental psychology, cognition, clinical psychology, and social psychology – as stress plays a key role in each of these areas (and will be covered to some extent in the course). Given the vast interest in stress on brain and behavior (over 80k hits on PubMed with ‘brain and stress’ search), students interested in graduate school in neuroscience (or psychology) will want to take this course. Furthermore, there is expertise in this area within the department (Drs. Bambico and Blundell are excited to teach this course).

CALENDAR CHANGES

PSYC 3840 Neurobiology of Stress
will cover topics including the effects of stress on the immune system, hypothalamic-pituitary-adrenal axis, neurogenesis and neuroplasticity, neurotransmitter and

neuropeptide release, cognition and emotional processing, and in utero and early postnatal development. The relationship between stress and mental disorders such as depression, posttraumatic stress disorder, anxiety disorders, schizophrenia, bipolar disorder, substance abuse and addiction, dementia and age-related cognitive decline as well as resilience to stress will be discussed.

PR: PSYC 2520 or 2521, 2911, and 2930 or the former 2570, and admission to a Major in Psychology or Behavioural Neuroscience

CALENDAR ENTRY AFTER CHANGES

PSYC 3840 Neurobiology of Stress

will cover topics including the effects of stress on the immune system, hypothalamic-pituitary-adrenal axis, neurogenesis and neuroplasticity, neurotransmitter and neuropeptide release, cognition and emotional processing, and in utero and early postnatal development. The relationship between stress and mental disorders such as depression, posttraumatic stress disorder, anxiety disorders, schizophrenia, bipolar disorder, substance abuse and addiction, dementia and age-related cognitive decline as well as resilience to stress will be discussed.

PR: PSYC 2520 or 2521, 2911, and 2930 or the former 2570, and admission to a Major in Psychology or Behavioural Neuroscience

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Consultations Sought From	Comments Received
Humanities and Social Sciences	
Education	
Engineering and Applied Science	
Grenfell Campus (Arts & Social Sciences)	
Human Kinetics and Recreation	
Marine Institute	
Social Work	
Science	
• Biochemistry	
• Biology	
• Chemistry	
• Earth Sciences	
• Mathematics and Statistics	
• Ocean Sciences	
• Physics and Physical Oceanography	

E-mail from Psychology department requesting feedback on calendar changes sent October 11, 2018.

The Psychology department is proposing a set of calendar changes. Please find attached a set of proposals outlining the following changes

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses

H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Please send your comments on these proposals to psychdeputyhead@mun.ca.

If you have any questions, please feel free to contact me.

Christina

Replies from other units:

Marine Institute:

Dear Christina,

Thank you for the opportunity to review and comment on the calendar change proposals from Psychology. These changes will have no impact on Marine Institute programs and we support the proposal.

Regards,

Bev

Bev Fleet

Chair, Undergraduate Studies Committee

Marine Institute, Memorial University

TEL: 709-778-0369

FAX: 709-778-0535

Bev.Fleet@mi.mun.ca

Engineering:

Dear Dr. Thorpe,

Thank you for the opportunity to comment on the proposed Calendar changes to the Psychology Program.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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

Biology:

Hi Christina,

The Biology Undergraduate Committee has reviewed your proposed calendar changes. We have no concerns with those changes, and are pleased to see the introduction of interesting new courses in your department.

Best wishes,

Suzanne

--

Dr. Suzanne Dufour
Associate Professor
Department of Biology
Memorial University of Newfoundland
St. John's, NL
A1B 3X9
Canada

Tel: (709) 864-8025

Fax: (709) 864-3018

<http://www.mun.ca/biology/dufour/index.php>

Education:

Hello,

Thank you for the opportunity to provide feedback on this proposal. These changes will not impact the Faculty of Education's programs.

Thank you,

Meghan

Meghan Collett, B.Sc., M.Sc. | Coordinator of Academic Programs

Faculty of Education
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1B 3X8
G.A.Hickman Building | Room ED 2020
Tel: 709 864-7554 |
Fax: 709 864-2623

Social Work:

Hello Christina,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs

School of Social Work, Memorial University

St. John's, NL, Canada, A1C 5S7

T: 709-864-2562 or 709-864-7349

HKR:

Hello,

I have reviewed the calendar change proposals from Psychology and have no concerns.

Linda

Linda E. Rohr PhD

Dean, School of Human Kinetics & Recreation

Memorial University

t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca

PE 2027

LIBRARY REPORT



Collections Strategies Division

Queen Elizabeth II Library

St. John's, NL, A1B 3Y1

31 October 2018

TO: Christina Thorpe, Deputy Head, Undergraduate Studies, Psychology Department

FROM: Alison Ambi, Head, Collections Strategies

SUBJECT: Behavioural neuroscience calendar changes and course proposals

With respect to the following set of changes being proposed by the Psychology department:

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
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- G) Addition of three new Selected Topics courses
- H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Course renaming, program requirement changes, and additions of laboratory components

Proposal components A and H, and E and F do not change the content of what is taught in the psychology department, and will consequently not place any additional demands on library resources.

New Courses (Proposal components B, C, and D)

A review of some of the topics to be covered in the new courses indicates that the Library has a sufficient range of supplementary resources to support term papers and research projects likely to be pursued by students. Besides the robust physical book collection in psychology and the thousands of ebooks available via our general academic ebook subscription packages, the Library subscribes to PsycBooks and the Springer psychology front-list ebook package, both of which provide online access to key current monograph literature on a range of psychology topics. The library also provides online access to two key book series ranked highly by Scimago (Table 2 in the appendices). The Library subscriptions to PsycInfo and various other indexes (for example, Scopus, Web of Science, and PubMed) are available to help guide students to relevant psychology literature.

New Selected Topics Courses (Proposal component G)

Students in these courses are likely to be reliant on recent journal literature. Of the top 50 Scimago ranked journals in Behavioural Neuroscience (see Table 1 in the appendices), the library provides current access to 32 journals, 14 are available with a 12 month embargo, and back issues up to 2015 are available online for a further 3. Students will therefore have immediate online access to over 90% of the

articles from these journals. There is only one journal within the top 50 list (ranked 37th) for which the Library does not provide immediate online access to at least some issues. Combined with the library's document delivery service, which would allow students to acquire articles from any journal within 24-48 hours, the students' needs should be adequately supported.

Appendices

Table 1 – Top-Ranked Behavioural Neuroscience Journals as Identified by Scimago

Ra nk	Title	Publisher	Categories	Curren t Access Availa ble?	Emba rgo Lengt h	Notes
1	Neuroscience and Biobehavioral Reviews	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
2	Brain, Behavior, and Immunity	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
3	Neurobiology of Learning and Memory	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
4	Current Opinion in Behavioral Sciences	Elsevier Limited	Behavioral Neuroscience (Q1)	y		
5	Genes, Brain and Behavior	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N	12 mont hs	
6	Cognitive, Affective and Behavioral Neuroscience	Springer New York LLC	Behavioral Neuroscience (Q1)	Y		
7	Frontiers in Behavioral Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access
8	Neuropsychologia	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
9	Hormones and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
10	Journal of Experimental Psychology: Human Perception and Performance	American Psychological Association	Behavioral Neuroscience (Q1)	Y		
11	Journal of Sleep Research	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N		Publisher platform access until 2015
12	Behavioral Neuroscience	American Psychological Association	Behavioral Neuroscience (Q1)	Y		

		cal Association				
13	Frontiers in Human Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access Publisher platform access until 2015
14	Chemical Senses	Oxford University Press	Behavioral Neuroscience (Q1)	N	12 mont hs	
15	Behavioural Brain Research	Elsevier BV	Behavioral Neuroscience (Q1)	y		
16	Developmental Psychobiology	John Wiley & Sons Inc.	Behavioral Neuroscience (Q1)	N	12 mont hs	
17	Social Neuroscience	Taylor & Francis	Behavioral Neuroscience (Q1)	N	12 mont hs	
18	Sleep Health	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
19	Human Factors	SAGE Publication s	Behavioral Neuroscience (Q2)	N		Publisher platform access until 2017
20	Brain Imaging and Behavior	Springer New York LLC	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2015
21	Journal of Neuropsychology	Wiley- Blackwell	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2016
22	Stress: the International Journal on Biology of Stress	Taylor & Francis	Behavioral Neuroscience (Q2)	N	18 mont hs	
23	Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology	Springer Verlag	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2015
24	Learning Disability Quarterly	SAGE Publication s Inc.	Behavioral Neuroscience (Q2)	Y		
25	Journal of Research on Adolescence	Blackwell Publishing Inc.	Behavioral Neuroscience (Q2)	N	12 mont hs	

	Journal of the Experimental Analysis of Behavior	Wiley- Blackwell	Behavioral Neuroscience (Q2)	N	12 mont hs	
26		Springer			0	
	Translational Behavioral Medicine	New York LLC	Behavioral Neuroscience (Q2)	Y	mont hs	
27						
28	Alcohol	Elsevier BV	Behavioral Neuroscience (Q2)	y		
	Pharmacology Biochemistry and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
29						
30	Epilepsy and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
31	Evolutionary Psychology	Human Nature Review	Behavioral Neuroscience (Q2)	Y		Open Access
	Physiology and Behavior	Elsevier BV	Behavioral Neuroscience (Q2)	y		
32						
33	Brain and Behavior	John Wiley and Sons Inc.	Behavioral Neuroscience (Q2)	Y		Open Access
34	Brain, Behavior and Evolution	S. Karger AG	Behavioral Neuroscience (Q2)	N	12 mont hs	
35	Behavioral and Brain Functions	BioMed Central	Behavioral Neuroscience (Q2)	Y		
36	Nature and Science of Sleep	Dove Medical Press Ltd.	Behavioral Neuroscience (Q3)	Y		Open Access
37	Adaptive Human Behavior and Physiology	Springer Internation al Publishing AG	Behavioral Neuroscience (Q3)	N		
38	Trends in Neuroscience and Education	Elsevier GmbH	Behavioral Neuroscience (Q3)	y		
39	Behavioural Processes	Elsevier BV	Behavioral Neuroscience (Q3)	y		
40	Behaviour	Brill	Behavioral Neuroscience (Q3)	Y		
41	International Journal of Alzheimer's Disease	Hindawi Publishing Corporatio n	Behavioral Neuroscience (Q3)	Y		Open Access
42	Clinical Psychopharmacolog y and Neuroscience	Korean College of Neuropsyc	Behavioral Neuroscience (Q3)	Y		Open Access

		hopharmac ology				
43	Review Journal of Autism and Developmental Disorders	Springer New York	Behavioral Neuroscience (Q3)	N	12 mont hs	
44	Journal of Eating Disorders	BioMed Central	Behavioral Neuroscience (Q3)	Y		
45	Learning and Behavior	Springer New York LLC	Behavioral Neuroscience (Q3)	N	12 mont hs	
46	Behavioral and Brain Sciences	Cambridge University Press	Behavioral Neuroscience (Q3)	N	12 mont hs	
47	Sexual Medicine	Elsevier Inc.	Behavioral Neuroscience (Q3)	y		
48	Sleep Science	Federacao Latino-Americana de Sociedades do Sono	Behavioral Neuroscience (Q3)	Y		Open Access
49	Integrative Psychological and Behavioral Science	Springer Science + Business Media	Behavioral Neuroscience (Q3)	N	12 mont hs	
50	Journal of Contextual Behavioral Science	Elsevier BV	Behavioral Neuroscience (Q3)	y		

Table 2 – Top-Ranked Books series for behavioural neuroscience identified by Scimago

Title	Publisher	Categories	URL
Advances in the Study of Behavior	Elsevier	Behavioral Neuroscience (Q1)	https://www.sciencedirect.com/in-the-study-of-behavior/issues
Current Topics in Behavioral Neurosciences	Springer	Behavioral Neuroscience (Q1)	https://link.springer.com/books

RESOURCE IMPLICATIONS

There should be minimal costs arising from this new course. We currently have two faculty members who could teach this course. It will be offered on a rotating basis (likely once per year) as faculty are available.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

Course Outline:

The importance of understanding the role of stress on brain and behavior cannot be understated. For most of us, stress affects every aspect of our lives! The course will cover topics such as the effects of stress on the immune system, hypothalamic-pituitary-adrenal (HPA) axis, neurogenesis and neuroplasticity, neurotransmitter release and neuropeptide release, cognition and emotional processing as well as in utero and early postnatal development. Moreover, genetic and epigenetic effects of stress will be examined. The clinical chapters will cover the relationship of stress and mental disorders such as depression, posttraumatic stress disorder (PTSD), anxiety disorders, schizophrenia, bipolar disorder, substance abuse and addiction, dementia and age-related cognitive decline as well as resilience to stress. In all, this course will highlight the role stress plays in normal and abnormal brain function and behavior.

Textbook: The Handbook of Stress: Neuropsychological Effects on the Brain

Editor: Cheryl D. Conrad

First published: 17 October 2011

Print ISBN: 9781444330236 | Online ISBN: 9781118083222

| DOI: 10.1002/9781118083222

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Evaluation:

Midterm Exam 1 (20%)

Midterm Exam 2 (20%)

Research paper (20%)

Final Exam (40%)

Potential Instructors:

Jacqueline Blundell, PhD

Francis Bambico, PhD

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)
- ☐ 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 (New Course PSYC3860)

COURSE NUMBER AND TITLE

Psychology 3860 Neuropsychopharmacology

ABBREVIATED COURSE TITLE

Psychology 3860 Neuropsychopharmacology

RATIONALE

Neuropsychopharmacology is an interdisciplinary subject area that brings together expertise from a broad range of psychological, neuroscientific and biomedical fields. It will therefore serve as a rich training ground not only for behavioural neuroscience students but also for students from various areas of psychology and medicine. Prospective students will have the opportunity to consolidate and integrate fundamental knowledge gained from introductory courses in psychology and neuroscience. In particular, students will be able to apply different perspectives both at the cellular and systems level, to address scientific and clinical, as well as socio-ethical, questions about the pathophysiological bases of mental and neurological illnesses, as well as their treatment. The Psychology department has the expertise to deliver this course; potential instructors include Dr. Blundell, Dr. Walling & Dr. Bambico.

CALENDAR CHANGES

Psychology 3860 Neuropsychopharmacology introduces students to the neurochemical and molecular underpinnings of behavior, with special emphasis on the biological principles underlying the etiology, pathophysiology and treatment of mental disorders. As a broad subdiscipline of neuroscience, it is ideal for those seeking to integrate neuroanatomy, neurophysiology, pharmacology and the behavioural sciences. It will provide a thorough understanding and appreciation about how basic and clinical research can be synthesized and used for the development of various forms of therapies.

PR: PSYC 2520 or 2521, 2911 and 2930 or the former 2570, and admission to a Major in Psychology or Behavioural Neuroscience (minors may be admitted if space permits).

CALENDAR ENTRY AFTER CHANGES

Psychology 3860 Neuropsychopharmacology introduces students to the neurochemical and molecular underpinnings of behavior, with special emphasis on the biological principles underlying the etiology, pathophysiology and treatment of mental disorders. As a broad subdiscipline of neuroscience, it is ideal for those seeking to integrate neuroanatomy, neurophysiology, pharmacology and the behavioural sciences. It will provide a thorough understanding and appreciation about how basic and clinical research can be synthesized and used for the development of various forms of therapies.

PR: PSYC 2520 or 2521, 2911 and 2930 or the former 2570, and admission to a Major in Psychology or Behavioural Neuroscience (minors may be admitted if space permits).

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Consultations Sought From	Comments Received
Humanities and Social Sciences	
Education	Yes
Engineering and Applied Science	Yes
Grenfell Campus (Arts & Social Sciences)	
Human Kinetics and Recreation	Yes
Marine Institute	Yes
Social Work	Yes
Science	
• Biochemistry	
• Biology	Yes
• Chemistry	
• Earth Sciences	
• Mathematics and Statistics	
• Ocean Sciences	
• Physics and Physical Oceanography	

E-mail from Psychology department requesting feedback on calendar changes sent October 11, 2018.

The Psychology department is proposing a set of calendar changes. Please find attached a set of proposals outlining the following changes

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses

H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Please send your comments on these proposals to psychdeputyhead@mun.ca.

If you have any questions, please feel free to contact me.

Christina

Replies from other units:

Marine Institute:

Dear Christina,

Thank you for the opportunity to review and comment on the calendar change proposals from Psychology. These changes will have no impact on Marine Institute programs and we support the proposal.

Regards,

Bev

Bev Fleet

Chair, Undergraduate Studies Committee

Marine Institute, Memorial University

TEL: 709-778-0369

FAX: 709-778-0535

Bev.Fleet@mi.mun.ca

Engineering:

Dear Dr. Thorpe,

Thank you for the opportunity to comment on the proposed Calendar changes to the Psychology Program.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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

Biology:

Hi Christina,

The Biology Undergraduate Committee has reviewed your proposed calendar changes. We have no concerns with those changes, and are pleased to see the introduction of interesting new courses in your department.

Best wishes,

Suzanne

--

Dr. Suzanne Dufour
Associate Professor
Department of Biology
Memorial University of Newfoundland
St. John's, NL
A1B 3X9
Canada

Tel: (709) 864-8025

Fax: (709) 864-3018

<http://www.mun.ca/biology/dufour/index.php>

Education:

Hello,

Thank you for the opportunity to provide feedback on this proposal. These changes will not impact the Faculty of Education's programs.

Thank you,

Meghan

Meghan Collett, B.Sc., M.Sc. | Coordinator of Academic Programs

Faculty of Education
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1B 3X8
G.A.Hickman Building | Room ED 2020
Tel: 709 864-7554 |
Fax: 709 864-2623

Social Work:

Hello Christina,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs

School of Social Work, Memorial University

St. John's, NL, Canada, A1C 5S7

T: 709-864-2562 or 709-864-7349

HKR:

Hello,

I have reviewed the calendar change proposals from Psychology and have no concerns.

Linda

Linda E. Rohr PhD

Dean, School of Human Kinetics & Recreation

Memorial University

t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca

PE 2027

LIBRARY REPORT



Collections Strategies Division

Queen Elizabeth II Library

St. John's, NL, A1B 3Y1

31 October 2018

TO: Christina Thorpe, Deputy Head, Undergraduate Studies, Psychology Department

FROM: Alison Ambi, Head, Collections Strategies

SUBJECT: Behavioural neuroscience calendar changes and course proposals

With respect to the following set of changes being proposed by the Psychology department:

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses
- H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Course renaming, program requirement changes, and additions of laboratory components

Proposal components A and H, and E and F do not change the content of what is taught in the psychology department, and will consequently not place any additional demands on library resources.

New Courses (Proposal components B, C, and D)

A review of some of the topics to be covered in the new courses indicates that the Library has a sufficient range of supplementary resources to support term papers and research projects likely to be pursued by students. Besides the robust physical book collection in psychology and the thousands of ebooks available via our general academic ebook subscription packages, the Library subscribes to PsycBooks and the Springer psychology front-list ebook package, both of which provide online access to key current monograph literature on a range of psychology topics. The library also provides online access to two key book series ranked highly by Scimago (Table 2 in the appendices). The Library subscriptions to PsycInfo and various other indexes (for example, Scopus, Web of Science, and PubMed) are available to help guide students to relevant psychology literature.

New Selected Topics Courses (Proposal component G)

Students in these courses are likely to be reliant on recent journal literature. Of the top 50 Scimago ranked journals in Behavioural Neuroscience (see Table 1 in the appendices), the library provides current access to 32 journals, 14 are available with a 12 month embargo, and back issues up to 2015 are available online for a further 3. Students will therefore have immediate online access to over 90% of the

articles from these journals. There is only one journal within the top 50 list (ranked 37th) for which the Library does not provide immediate online access to at least some issues. Combined with the library's document delivery service, which would allow students to acquire articles from any journal within 24-48 hours, the students' needs should be adequately supported.

Appendices

Table 1 – Top-Ranked Behavioural Neuroscience Journals as Identified by Scimago

Ra nk	Title	Publisher	Categories	Curren t Access Availa ble?	Emba rgo Lengt h	Notes
1	Neuroscience and Biobehavioral Reviews	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
2	Brain, Behavior, and Immunity	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
3	Neurobiology of Learning and Memory	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
4	Current Opinion in Behavioral Sciences	Elsevier Limited	Behavioral Neuroscience (Q1)	y		
5	Genes, Brain and Behavior	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N	12 mont hs	
6	Cognitive, Affective and Behavioral Neuroscience	Springer New York LLC	Behavioral Neuroscience (Q1)	Y		
7	Frontiers in Behavioral Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access
8	Neuropsychologia	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
9	Hormones and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
10	Journal of Experimental Psychology: Human Perception and Performance	American Psychological Association	Behavioral Neuroscience (Q1)	Y		
11	Journal of Sleep Research	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N		Publisher platform access until 2015
12	Behavioral Neuroscience	American Psychological Association	Behavioral Neuroscience (Q1)	Y		

		cal Association				
13	Frontiers in Human Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access Publisher platform access until 2015
14	Chemical Senses	Oxford University Press	Behavioral Neuroscience (Q1)	N	12 mont hs	
15	Behavioural Brain Research	Elsevier BV	Behavioral Neuroscience (Q1)	y		
16	Developmental Psychobiology	John Wiley & Sons Inc.	Behavioral Neuroscience (Q1)	N	12 mont hs	
17	Social Neuroscience	Taylor & Francis	Behavioral Neuroscience (Q1)	N	12 mont hs	
18	Sleep Health	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
19	Human Factors	SAGE Publication s	Behavioral Neuroscience (Q2)	N		Publisher platform access until 2017
20	Brain Imaging and Behavior	Springer New York LLC	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2015
21	Journal of Neuropsychology	Wiley- Blackwell	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2016
22	Stress: the International Journal on Biology of Stress	Taylor & Francis	Behavioral Neuroscience (Q2)	N	18 mont hs	
23	Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology	Springer Verlag	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2015
24	Learning Disability Quarterly	SAGE Publication s Inc.	Behavioral Neuroscience (Q2)	Y		
25	Journal of Research on Adolescence	Blackwell Publishing Inc.	Behavioral Neuroscience (Q2)	N	12 mont hs	

26	Journal of the Experimental Analysis of Behavior	Wiley- Blackwell	Behavioral Neuroscience (Q2)	N	12 mont hs	
27	Translational Behavioral Medicine	Springer New York LLC	Behavioral Neuroscience (Q2)	Y	0 mont hs	
28	Alcohol	Elsevier BV	Behavioral Neuroscience (Q2)	y		
29	Pharmacology Biochemistry and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
30	Epilepsy and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
31	Evolutionary Psychology	Human Nature Review	Behavioral Neuroscience (Q2)	Y		Open Access
32	Physiology and Behavior	Elsevier BV	Behavioral Neuroscience (Q2)	y		
33	Brain and Behavior	John Wiley and Sons Inc.	Behavioral Neuroscience (Q2)	Y		Open Access
34	Brain, Behavior and Evolution	S. Karger AG	Behavioral Neuroscience (Q2)	N	12 mont hs	
35	Behavioral and Brain Functions	BioMed Central	Behavioral Neuroscience (Q2)	Y		
36	Nature and Science of Sleep	Dove Medical Press Ltd.	Behavioral Neuroscience (Q3)	Y		Open Access
37	Adaptive Human Behavior and Physiology	Springer Internation al Publishing AG	Behavioral Neuroscience (Q3)	N		
38	Trends in Neuroscience and Education	Elsevier GmbH	Behavioral Neuroscience (Q3)	y		
39	Behavioural Processes	Elsevier BV	Behavioral Neuroscience (Q3)	y		
40	Behaviour	Brill	Behavioral Neuroscience (Q3)	Y		
41	International Journal of Alzheimer's Disease	Hindawi Publishing Corporatio n	Behavioral Neuroscience (Q3)	Y		Open Access
42	Clinical Psychopharmacolog y and Neuroscience	Korean College of Neuropsyc	Behavioral Neuroscience (Q3)	Y		Open Access

		hopharmacology			
43	Review Journal of Autism and Developmental Disorders	Springer New York	Behavioral Neuroscience (Q3)	N	12 mont hs
44	Journal of Eating Disorders	BioMed Central	Behavioral Neuroscience (Q3)	Y	
45	Learning and Behavior	Springer New York LLC	Behavioral Neuroscience (Q3)	N	12 mont hs
46	Behavioral and Brain Sciences	Cambridge University Press	Behavioral Neuroscience (Q3)	N	12 mont hs
47	Sexual Medicine	Elsevier Inc.	Behavioral Neuroscience (Q3)	y	
48	Sleep Science	Federacao Latino-Americana de Sociedades do Sono	Behavioral Neuroscience (Q3)	Y	Open Access
49	Integrative Psychological and Behavioral Science	Springer Science + Business Media	Behavioral Neuroscience (Q3)	N	12 mont hs
50	Journal of Contextual Behavioral Science	Elsevier BV	Behavioral Neuroscience (Q3)	y	

Table 2 – Top-Ranked Books series for behavioural neuroscience identified by Scimago

Title	Publisher	Categories	URL
Advances in the Study of Behavior	Elsevier	Behavioral Neuroscience (Q1)	https://www.sciencedirect.com/in-the-study-of-behavior/issues
Current Topics in Behavioral Neurosciences	Springer	Behavioral Neuroscience (Q1)	https://link.springer.com/books

RESOURCE IMPLICATIONS

There should be minimal costs arising from this new course. We currently have three faculty members who could teach this course. It will be offered on a rotating basis (likely once per year) as faculty are available.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

Tentative Course Syllabus

Psychology 3860: Neuropsychopharmacology

1. Course Description:

This course introduces students to the neurochemical and molecular underpinnings of behavior and cognition, with a special focus on the biological principles underlying the etiology, pathogenesis, pathophysiology and treatment of mental disorders. As a broad subdiscipline of neuroscience, it is ideal for those seeking to integrate neuroanatomy, neurophysiology, animal models, molecular biology, pharmacology, neuromodulation and the behavioural sciences. It will provide students a thorough understanding and appreciation about how basic and clinical research can be synthesized and used for the discovery or development of various forms of therapies for psychiatric disorders.

PR: Psyc 2520 or 2521, 2911 and 2930 or the former 2570, and admission to a Major in Psychology or Behavioural Neuroscience (minors may be admitted if space permits).

2. Textbook:

Psychopharmacology: Drugs, the Brain and Behavior by J.S. Meyer & L.F. Quenzer, 3rd edition, 2018.

Introduction to Neuropsychopharmacology by L.L. Iverson, S.D. Iverson, F.E. Bloom & R.H. Roth, 2008

3. Lectures: Lecture powerpoint slides will be posted on D2L at least 1 day before the topic schedule.

4. Evaluation criteria:

Term paper	15%
1 st in-session exam	20%
2 nd in-session exam	25%
In-session final exam	40%
	=100%

5. Make-up for missed exams: In accordance to university policy, make-up or alternate exam may be administered after unforeseen and unavoidable circumstances, such as illness or a medical condition. The declaration should be made via telephone or via a MUN-approved email account as early as possible but no later than 48 hours after the test date. A proof of circumstance (such as a doctor's note) must be submitted to the instructor within seven calendar days of the test date.

6. Grading policies and procedures:

Grading will be carried out by the instructor and TAs. Any discrepancies in grading can be addressed by contacting me within one week of receiving the grade. Grading scheme is based on university policy.

A = 80-100%	B = 65-79%	C = 55-64%	D = 50-54%	F = below 50%	INC = incomplete
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7. Additional course policies:

Memorial University is committed to ensuring an environment of understanding and respect for the dignity and worth of each student and also to supporting inclusive education based on the principles of equity, accessibility and collaboration. If you have physical or learning disabilities known to MUN Accessibility Services or difficulty with English writing, please contact me within the first two weeks of class to arrange to have your needs met. Academic misconduct and plagiarism/academic dishonesty in any submitted work will not be tolerated. Please see section 6.12 of the Calendar (<http://www.mun.ca/regoff/calendar/sectionNo=REGS-0748>) and the department's website (<http://www.mun.ca/psychology/undergrad/Plagiarism.pdf>)

8. Content schedule:

*Note that lecture dates and topics may change depending on unforeseen events (e.g. class cancellations due to inclement weather) and on how quickly we get through the material in class.

Dates

Topic/Activity

Sept. 5(W)	Orientation, historical background
Sept. 7(F), 10(M)	Cellular & molecular principles in neuropsychopharmacology
Sept. 12(W)	Method in behavioural pharmacology
Sept. 14(F), 17(M)	Neurotransmitter systems: amino acids, acetylcholine & serotonin
Sept. 19(W), 21(F), 24(M)	Neurotransmitter systems: catecholamines, histamine, neuropeptides & purines
Sept. 26(W)	1 st EXAM
Sept. 28(F), Oct. 1(M)	Neurobiology of cognitive disorders & their treatment
Oct. 3(W), 5(F)	Neurobiology of affective disorders & their treatment
Oct. 10(M), 12(F)	Neurobiology of pain & neurodevelopmental disorders & their treatment
Oct. 15(M), 17(W)	Neurobiology of addiction and impulsive behaviour & their treatment
Oct. 19(F), 22(M)	Antidepressants & anxiolytics
Oct. 24(W), 26(F)	Antipsychotics & anti-pain

Oct. 29(M) 2nd EXAM

Oct. 31(W), Nov. 2(F)	Psychotherapy & behavioural modification
Nov. 5(M), 7(W), 9(F)	Genetic & epigenetic approaches to treatment
Nov. 14(W), 16(F), 19(M)	Neuromodulation, brain-machine interphase & neuroprosthetics
Nov. 21(W), 23(F), 26(M)	States of consciousness & drug-induced altered states
Nov. 28(W), 30(F)	Processes in drug discovery & development, preclinical testing & clinical trials

Dec. 5-14 FINAL EXAM (TBA)

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Senate Summary Page for Courses (New Course PSYC2521)

COURSE NUMBER AND TITLE (New course)

Psychology 2521 Introduction to Neuroscience for Behavioural Neuroscience Majors

ABBREVIATED COURSE TITLE

Psychology 2521 Intro Neurosci BHNR Majors

RATIONALE

Psychology 2520 is a current required course for all Psychology and Behavioural Neuroscience majors. While the content of the course is suitable for the range of students in this course (students doing either a BA in psychology, a BSc in psychology, or a BSc in Behavioural Neuroscience), those doing a BSc in Behavioural Neuroscience would benefit from a lab component. This would allow them to start developing lab skills that they could build on throughout their degree. Students taking both Psychology 2520 and the newly proposed 2521 would attend the same lectures, however those in 2521 would have an additional 3-hour lab slot each week.

CALENDAR CHANGES

Psychology 2521: Introduction to Neuroscience for Behavioural Neuroscience Majors is a comprehensive survey of the different domains of behavioural neuroscience, with an emphasis on systems level. It will cover a broad range of topics including the fundamentals of neuroanatomy, neurophysiology, and neurodevelopment, as well as higher level functions such as sleep, emotion, language, consciousness and mental illness. Students will be able to describe the basic mechanisms involved in neural system function and how these affect behaviour and several forms of neuroplasticity.
CR: PSYC 2520, 2810, 2825, the former PSYC 3801

UL: This is a required course for Behavioural Neuroscience majors. Students majoring in Psychology should register for PSYC 2520.

LH: one 3-hour laboratory period weekly

PR: Science 1807 and 1808; PSYC 1000 and 1001 and admission to a Major in Behavioural Neuroscience

CALENDAR ENTRY AFTER CHANGES

Psychology 2521: Introduction to Neuroscience for Behavioural Neuroscience Majors is a comprehensive survey of the different domains of behavioural neuroscience, with an emphasis on systems level. It will cover a broad range of topics including the

fundamentals of neuroanatomy, neurophysiology, and neurodevelopment, as well as higher level functions such as sleep, emotion, language, consciousness and mental illness. Students will be able to describe the basic mechanisms involved in neural system function and how these affect behaviour and several forms of neuroplasticity.

CR: PSYC 2520, 2810, 2825, the former PSYC 3801

UL: This is a required course for Behavioural Neuroscience majors. Students majoring in Psychology should register for PSYC 2520.

LH: one 3-hour laboratory period weekly

PR: Science 1807 and 1808; PSYC 1000 and 1001 and admission to a Major in Behavioural Neuroscience

SECONDARY CALENDAR CHANGES

2520 Introduction to Behavioural Neuroscience

is based on the idea that psychological and neuroscience research efforts are synergistic. Neuroscience research can reveal mechanisms that help explain the mind and behavior, while concepts developed by psychological research often define the topics that neuroscience investigates. The course will survey a broad range of topics that include the fundamentals of neuroanatomy, neurophysiology, and neurodevelopment, as well as higher level functions such as motivation, emotion, sleep, memory, language, and mental illness.

CR: PSYC 2521, 2810, 2825, the former PSYC 3801

UL: Students majoring in Behavioural Neuroscience should register for PSYC 2521.

PR: PSYC 1000 and 1001 and admission to a Major in Psychology or Behavioural Neuroscience; minors may be permitted to take this course if space permits

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Consultations Sought From	Comments Received
Humanities and Social Sciences	
Education	
Engineering and Applied Science	
Grenfell Campus (Arts & Social Sciences)	
Human Kinetics and Recreation	
Marine Institute	
Social Work	
Science	
• Biochemistry	
• Biology	
• Chemistry	
• Earth Sciences	
• Mathematics and Statistics	
• Ocean Sciences	
• Physics and Physical Oceanography	

E-mail from Psychology department requesting feedback on calendar changes sent October 11, 2018.

The Psychology department is proposing a set of calendar changes. Please find attached a set of proposals outlining the following changes

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses

H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Please send your comments on these proposals to psychdeputyhead@mun.ca.

If you have any questions, please feel free to contact me.

Christina

Replies from other units:

Marine Institute:

Dear Christina,

Thank you for the opportunity to review and comment on the calendar change proposals from Psychology. These changes will have no impact on Marine Institute programs and we support the proposal.

Regards,

Bev

Bev Fleet

Chair, Undergraduate Studies Committee

Marine Institute, Memorial University

TEL: 709-778-0369

FAX: 709-778-0535

Bev.Fleet@mi.mun.ca

Engineering:

Dear Dr. Thorpe,

Thank you for the opportunity to comment on the proposed Calendar changes to the Psychology Program.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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

Biology:

Hi Christina,

The Biology Undergraduate Committee has reviewed your proposed calendar changes. We have no concerns with those changes, and are pleased to see the introduction of interesting new courses in your department.

Best wishes,

Suzanne

--

Dr. Suzanne Dufour
Associate Professor
Department of Biology
Memorial University of Newfoundland
St. John's, NL
A1B 3X9
Canada

Tel: (709) 864-8025

Fax: (709) 864-3018

<http://www.mun.ca/biology/dufour/index.php>

Education:

Hello,

Thank you for the opportunity to provide feedback on this proposal. These changes will not impact the Faculty of Education's programs.

Thank you,

Meghan

Meghan Collett, B.Sc., M.Sc. | Coordinator of Academic Programs

Faculty of Education
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1B 3X8
G.A.Hickman Building | Room ED 2020
Tel: 709 864-7554 |
Fax: 709 864-2623

Social Work:

Hello Christina,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs

School of Social Work, Memorial University

St. John's, NL, Canada, A1C 5S7

T: 709-864-2562 or 709-864-7349

HKR:

Hello,

I have reviewed the calendar change proposals from Psychology and have no concerns.

Linda

Linda E. Rohr PhD

Dean, School of Human Kinetics & Recreation

Memorial University

t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca

PE 2027

LIBRARY REPORT



Collections Strategies Division

Queen Elizabeth II Library

St. John's, NL, A1B 3Y1

31 October 2018

TO: Christina Thorpe, Deputy Head, Undergraduate Studies, Psychology Department

FROM: Alison Ambi, Head, Collections Strategies

SUBJECT: Behavioural neuroscience calendar changes and course proposals

With respect to the following set of changes being proposed by the Psychology department:

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses
- H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Course renaming, program requirement changes, and additions of laboratory components

Proposal components A and H, and E and F do not change the content of what is taught in the psychology department, and will consequently not place any additional demands on library resources.

New Courses (Proposal components B, C, and D)

A review of some of the topics to be covered in the new courses indicates that the Library has a sufficient range of supplementary resources to support term papers and research projects likely to be pursued by students. Besides the robust physical book collection in psychology and the thousands of ebooks available via our general academic ebook subscription packages, the Library subscribes to PsycBooks and the Springer psychology front-list ebook package, both of which provide online access to key current monograph literature on a range of psychology topics. The library also provides online access to two key book series ranked highly by Scimago (Table 2 in the appendices). The Library subscriptions to PsycInfo and various other indexes (for example, Scopus, Web of Science, and PubMed) are available to help guide students to relevant psychology literature.

New Selected Topics Courses (Proposal component G)

Students in these courses are likely to be reliant on recent journal literature. Of the top 50 Scimago ranked journals in Behavioural Neuroscience (see Table 1 in the appendices), the library provides current access to 32 journals, 14 are available with a 12 month embargo, and back issues up to 2015 are available online for a further 3. Students will therefore have immediate online access to over 90% of the

articles from these journals. There is only one journal within the top 50 list (ranked 37th) for which the Library does not provide immediate online access to at least some issues. Combined with the library's document delivery service, which would allow students to acquire articles from any journal within 24-48 hours, the students' needs should be adequately supported.

Appendices

Table 1 – Top-Ranked Behavioural Neuroscience Journals as Identified by Scimago

Ra nk	Title	Publisher	Categories	Curren t Access Availa ble?	Emba rgo Lengt h	Notes
1	Neuroscience and Biobehavioral Reviews	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
2	Brain, Behavior, and Immunity	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
3	Neurobiology of Learning and Memory	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
4	Current Opinion in Behavioral Sciences	Elsevier Limited	Behavioral Neuroscience (Q1)	y		
5	Genes, Brain and Behavior	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N	12 mont hs	
6	Cognitive, Affective and Behavioral Neuroscience	Springer New York LLC	Behavioral Neuroscience (Q1)	Y		
7	Frontiers in Behavioral Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access
8	Neuropsychologia	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
9	Hormones and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
10	Journal of Experimental Psychology: Human Perception and Performance	American Psychological Association	Behavioral Neuroscience (Q1)	Y		
11	Journal of Sleep Research	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N		Publisher platform access until 2015
12	Behavioral Neuroscience	American Psychological Association	Behavioral Neuroscience (Q1)	Y		

		cal Association				
13	Frontiers in Human Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access Publisher platform access until 2015
14	Chemical Senses	Oxford University Press	Behavioral Neuroscience (Q1)	N	12 mont hs	
15	Behavioural Brain Research	Elsevier BV	Behavioral Neuroscience (Q1)	y		
16	Developmental Psychobiology	John Wiley & Sons Inc.	Behavioral Neuroscience (Q1)	N	12 mont hs	
17	Social Neuroscience	Taylor & Francis	Behavioral Neuroscience (Q1)	N	12 mont hs	
18	Sleep Health	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
19	Human Factors	SAGE Publication s	Behavioral Neuroscience (Q2)	N		Publisher platform access until 2017
20	Brain Imaging and Behavior	Springer New York LLC	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2015
21	Journal of Neuropsychology	Wiley- Blackwell	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2016
22	Stress: the International Journal on Biology of Stress	Taylor & Francis	Behavioral Neuroscience (Q2)	N	18 mont hs	
23	Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology	Springer Verlag	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2015
24	Learning Disability Quarterly	SAGE Publication s Inc.	Behavioral Neuroscience (Q2)	Y		
25	Journal of Research on Adolescence	Blackwell Publishing Inc.	Behavioral Neuroscience (Q2)	N	12 mont hs	

26	Journal of the Experimental Analysis of Behavior	Wiley- Blackwell	Behavioral Neuroscience (Q2)	N	12 mont hs	
27	Translational Behavioral Medicine	Springer New York LLC	Behavioral Neuroscience (Q2)	Y	0 mont hs	
28	Alcohol	Elsevier BV	Behavioral Neuroscience (Q2)	y		
29	Pharmacology Biochemistry and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
30	Epilepsy and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
31	Evolutionary Psychology	Human Nature Review	Behavioral Neuroscience (Q2)	Y		Open Access
32	Physiology and Behavior	Elsevier BV	Behavioral Neuroscience (Q2)	y		
33	Brain and Behavior	John Wiley and Sons Inc.	Behavioral Neuroscience (Q2)	Y		Open Access
34	Brain, Behavior and Evolution	S. Karger AG	Behavioral Neuroscience (Q2)	N	12 mont hs	
35	Behavioral and Brain Functions	BioMed Central	Behavioral Neuroscience (Q2)	Y		
36	Nature and Science of Sleep	Dove Medical Press Ltd.	Behavioral Neuroscience (Q3)	Y		Open Access
37	Adaptive Human Behavior and Physiology	Springer Internation al Publishing AG	Behavioral Neuroscience (Q3)	N		
38	Trends in Neuroscience and Education	Elsevier GmbH	Behavioral Neuroscience (Q3)	y		
39	Behavioural Processes	Elsevier BV	Behavioral Neuroscience (Q3)	y		
40	Behaviour	Brill	Behavioral Neuroscience (Q3)	Y		
41	International Journal of Alzheimer's Disease	Hindawi Publishing Corporatio n	Behavioral Neuroscience (Q3)	Y		Open Access
42	Clinical Psychopharmacolog y and Neuroscience	Korean College of Neuropsyc	Behavioral Neuroscience (Q3)	Y		Open Access

		hopharmacology			
43	Review Journal of Autism and Developmental Disorders	Springer New York	Behavioral Neuroscience (Q3)	N	12 mont hs
44	Journal of Eating Disorders	BioMed Central	Behavioral Neuroscience (Q3)	Y	
45	Learning and Behavior	Springer New York LLC	Behavioral Neuroscience (Q3)	N	12 mont hs
46	Behavioral and Brain Sciences	Cambridge University Press	Behavioral Neuroscience (Q3)	N	12 mont hs
47	Sexual Medicine	Elsevier Inc.	Behavioral Neuroscience (Q3)	y	
48	Sleep Science	Federacao Latino-Americana de Sociedades do Sono	Behavioral Neuroscience (Q3)	Y	Open Access
49	Integrative Psychological and Behavioral Science	Springer Science + Business Media	Behavioral Neuroscience (Q3)	N	12 mont hs
50	Journal of Contextual Behavioral Science	Elsevier BV	Behavioral Neuroscience (Q3)	y	

Table 2 – Top-Ranked Books series for behavioural neuroscience identified by Scimago

Title	Publisher	Categories	URL
Advances in the Study of Behavior	Elsevier	Behavioral Neuroscience (Q1)	https://www.sciencedirect.com/in-the-study-of-behavior/issues
Current Topics in Behavioral Neurosciences	Springer	Behavioral Neuroscience (Q1)	https://link.springer.com/books

RESOURCE IMPLICATIONS

There should be minimal resource implications. There will be no additional students or need of an extra instructor. The lecture component of the course will be the same as the current Psychology 2520. The lab section will be taught by our laboratory instructor. Most of the equipment needed for the labs is currently already available. Some consumables will be necessary. If funds allow, we will purchase bovine brains for dissections. However, if funds do not allow we will make use of rodent brains acquired from researchers in the department. Likewise, we would ideally like to purchase laminated human brain coronal and sagittal sections. However, if funds are not available for this immediately, we can modify the labs.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

Sample Syllabus

Note: This sample syllabus is modified from one currently being used for the lecture only component (i.e., 2520). Therefore, dates would change.

Psychology 2521: Introduction to Behavioural Neuroscience

This course will be broken down into two components.

- 1) Lectures held Mondays, Wednesdays, and Fridays from 10-11.
- 2) Weekly 3-hour lab/tutorial sessions.

Instructor: Francis R. Bambico, PhD

Office hours: SN-3093; Monday and Wednesday 2-3pm, or by appointment

Email: fbambico@mun.ca or d2l messaging system (for bulky & long messages, please use d2l or francisrbambico@gmail.com)

Ph: 864-7671 (office)

TA: TBA

We will do our best to respond to your emails within 48 hours of receipt.

1. Course Description:

This course is a comprehensive survey of the different domains of behavioural neuroscience, with an emphasis on systems level. It will cover a broad range of topics that include the fundamentals of neuroanatomy, neurophysiology, and neurodevelopment, as well as higher level functions such as motivation, emotion, sleep, memory, language, and mental illness. By the end of term, you are expected to be able to describe the basic mechanisms involved in neural system function and how these affect behaviour and several forms of neuroplasticity. You will also learn that psychological and neuroscience research efforts are synergistic. Neuroscience research can reveal mechanisms that help explain the mind and behaviour, while concepts developed by psychological research often define the topics that neuroscience investigates.

2. Textbook and readings:

The Mind's Machine: Foundations of Brain & Behaviour, 2nd Ed (2016). Watson & Breedlove. *Denoted as MM in *Content Schedule*. Available in paperback, loose leaf or & electronic version.

Additional reading materials: Details of additional reading materials are provided under *Content Schedule*. Copies of these required readings, as well as supplementary materials will be made available on D2L at least one week before the in-session topic schedule and in accordance with Fair Dealing Requirements. The list consists of select chapters from the specified references below, as well as from journal articles available via Pubmed.org through MUN library web access. Testable sections from the readings will be specified in a review slides compilation posted on D2L one week before the test.

D. Eagleman, J. Downar (2016). *Brain and Behavior: A Cognitive Neuroscience Perspective*. New York, New York: Oxford University Press. *Denoted as BB under *Content Schedule*.

Robinson-Riegler, B. & Robinson-Riegler, G.L. (2017). *Cognitive Psychology: Applying the Science of the Mind*. *Denoted by CP under *Content Schedule*.

3. Lectures: Lecture powerpoint slides will be posted on D2L at least 1 day before the topic schedule.

4. Evaluation criteria:

Quiz	6%
Take-home assignment	9%
In-session mid-term	21%
In-session final exam	24%
	=60%

Details:

- The **Quiz** will be composed of 15-20 multiple choice (MC) questions covering topics 1-4, 5 & 6. For topics 1-4, the questions will entirely be generated from the Lecture slides.
- The **take-home assignment** will consist of diagrams and long-answer questions.
- The **in-session mid-term & final exams** will consist of: 1. MC section, 2. fill-in-the-blanks or diagram completion, 3. short answers (will generally test for comprehension of concepts, one question will test critical thinking & analysis). Review slides and pointers will be provided before each exam. All questions for the in-session exams will be drawn from the review slide compilation and specified reading sections/chapters.
- **Optional credit: Class Exercises:** On occasion, you will have the opportunity to participate in 5-20-min class discussions or exercise activities about a question(s) of interest related to the assigned in-session topics. Participation in five of them will automatically give you 2% worth of extra credit added to your final mark.
- **Optional credit:** Participation in the Psychology Research Pool (PREP) for a maximum of 2 credits (2 hours) will earn you an equivalent extra percentage mark added to your final grade.

5. Make-up for missed exams: In accordance to university policy, make-up or alternate exam may be administered after unforeseen and unavoidable circumstances, such as illness or a medical condition. The declaration should be made via telephone or via a MUN-approved email account as early as possible but no later than 48 hours after the test date.

6. Grading policies and procedures:

Grading will be carried out by the instructor and TAs. Any discrepancies in grading can be addressed by contacting me within one week of receiving the grade. Grading scheme is based on university policy.

A = 80-100%	B = 65-79%	C = 55-64%	D = 50-54%	F = below 50%	INC = incomplete
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7. Additional course policies:

Memorial University is committed to ensuring an environment of understanding and respect for the dignity and worth of each student and also to supporting inclusive education based on the principles of equity, accessibility and collaboration. If you have physical or learning disabilities known to MUN Accessibility Services or difficulty with English writing, please contact me within the first two weeks of class to arrange to have your needs met. Academic misconduct and plagiarism/academic dishonesty in

any submitted work will not be tolerated. Please see section 6.12 of the Calendar (<http://www.mun.ca/regoff/calendar/sectionNo=REGS-0748>) and the department's website (<http://www.mun.ca/psychology/undergrad/Plagiarism.pdf>)

8. Content schedule and reading assignments:

*Note that lecture dates and topics may change depending on unforeseen events (e.g. class cancellations due to inclement weather) and on how quickly we get through the material in class.

Dates	Topic #/ Lecture #	Topic Title	Readings & Supplementary Materials	Notes
Sept. 5(W), 7(F),	Orientation	Overview	Copy of reading uploaded on D2L (Principles of Neuroscience Ch 1) + extra slides provided	*discuss syllabus, grading scheme & requirements
Course Section 1: Nervous system: our mind's machine				
Sept. 10(M), 12(W)	Topic 2 - Lect. 2	<i>The heart – or brain – of the matter</i> (neuroanatomy overview)	MM Ch.2; Optional: MM Ch.7	
Sept. 14(F), 17(M), 19(W)	Topic 3 - Lect. 3	<i>Measuring the unique language of the synapse</i> (neurophysiology)	MM Ch.3; Optional: MM Ch.1, Appendix pp. A1-A7	
Sept. 21(F)	Topic 4 - Lect. 4	<i>Nature vs. nurture & critical period of brain development</i>	BB Ch.4, Section 3 only (copy uploaded on D2L)	
Sept. 24(M), 26(W), 28(F)	Topic 5 - Activity 1	<i>Biological vs. psychological</i>	Review psychological perspectives (Topic 1). Movie critique (N.H.): <i>House of Cards</i> .	
Oct. 1(M)	Topic 6 - Activity 2	<i>Research in action: biology of sexual orientation - innate or learned</i>	Guest lecturer: <i>Dr. Ashlyn Swift-Gallant</i> (research in the neuroscience of sexual orientation);	

			Optional: Read MM Ch. 8	
Oct. 3(W) Quiz, In-Class (13 MC questions covering Topics 1-4 + 2 MC questions covering Topics 5 & 6)				
Course Section 2: Control of internal physiological states				
Oct. 5(F), 10(M)	Topic 7 - Lect. 5	<i>The plastic brain: what makes structural & functional changes possible</i>	BB Ch.4 (except Section 3, copy uploaded on D2L); Optional: MM Ch. 5	Oct. 8: Thanksgiving Day (fall semester break begins).
Oct. 12(F), 15(M)	Topic 8 - Lect. 6	<i>Recovery from brain injury</i> (central & peripheral glial & nervous system)	BB Ch.4 (except Section 3, copy uploaded on D2L) + extra slide/references	
Oct.15 (M) Take-Home Assignment (covers topic 1-8, posted on D2L, due on Oct. 17 midnight)				
Oct. 17(W), 19(F), 22(M)	Topic 9 - Lect. 7	<i>Sparks and soups: neurochemistry</i> (midbrain)	MM Ch.4	
24(W) 26(F), 29(M),	Topic 10 - Lect. 8	<i>Homeostatic processes: regulation of thirst, hunger & sleep</i> (diencephalon & brainstem)	MM Ch.9 (excerpts, to be indicated), MM Ch. 10***	
Course Section 3: Interaction with environment				
Oct. 31(W), Nov. 2(F), 5(M)	Topic 11 - Lect. 9	<i>Emotional learning & processing</i> (hypothalamus-pituitary-adrenal axis)	MM Ch.11	Oct. 31 is the last drop date without academic prejudice.
Nov. 7(W) In-Session 2nd Mid-term Exam , covers Topics 9-11 (SN-2109, 10-10:50am)				

Nov. 5(M) 9(F)	Topic 12 - Lect. 10	Hormones, emotions & reproductive behaviour (hypothalamus-pituitary-gonadal axis)	MM Ch.8	Nov. 12: Remembrance Day (no lectures).
Nov. 14(W), 16(F) 19(M),	Topic 13 - Lect. 11	Stress & psychopathology (neocortex & subcortical systems)	MM Ch.12	
Nov. 21(W), 23(F), 26(M)	Topic 14 - Lect. 12	Brain asymmetry, language, spatial cognition & related disorders (neocortex)	MM Ch.15	
Nov. 28(W), 30 (F), Review session	Topic 15 - Lect. 13	Concept formation, attention & consciousness (neocortex)	CP Ch. 5 (copy uploaded on D2L), MM Ch.14***	
Dec. 5-14 Final Examination Period , covers Topics 2,3, 12-15; date and venue TBA				

Lab/Tutorials

The content of the labs and tutorials is focused on functional neuroanatomy, which is the study of the structure & function of the nervous system. The course seeks to expose students to nervous system structure at the microscopic and gross levels, and explain the different techniques used to study the nervous system. It will also compare brain development across rodents, bovine, non-human primates & humans. Students will be engaged through demonstrations, exploration of online resources, microscopy, tutorials & brain dissections.

Textbook and readings:

Recommended:

Clinical Neuroanatomy Made Ridiculously Easy, by S. Goldberg (MedMaster, Inc., Miami)

High-Yield Neuroanatomy, by James D. Fix (Lippincott Williams & Wilkins)

Online resource: Digital Anatomist Project: <http://da.si.washington.edu/da.html>

4. Evaluation criteria:

1 st in-session exam	10%
2 nd in-session exam	10%
In-session final exam	13%
Written Assignment	7%
	40%

Content schedule and reading assignments:

*Note that lecture dates and topics may change depending on unforeseen events (e.g. class cancellations due to inclement weather) and on how quickly we get through the material in class.

<u>Dates</u>	<u>Topic/Activity (*, asterisks indicate brain dissection sessions or microscopic slide viewing)</u>
Sept. 5(W)	Orientation
Sept. 7(F), 10(M)	Neurophysiology tutorial, basic principles of brain imaging
Sept. 12(W)	Neuroanatomy overview, introduction to online resources Digital Anatomist Project: http://da.si.washington.edu/da.html General instruction for rodent & bovine brain dissection
Sept. 14(F), 17(M)	Comparative neuroanatomy, brain development (rodent, bovine, non-human primates, human)
Sept. 19(W), 21(F), 24(M)	Calvarium, meninges, cerebral vasculature, ventricular system & CSF*
Sept. 26(W)	1 st LAB EXAM (spot tests with 10-20 stations)
Sept. 28(F), Oct. 1(M)	Peripheral nervous system: autonomic system
Oct. 3(W), 5(F)	Peripheral nervous system (somatic system) & spinal cord*
Oct. 10(M), 12(F)	Medulla oblongata, pons, cranial nerve (CN) 5-12*
Oct. 15(M), 17(W)	Cerebellum*
Oct. 19(F), 22(M)	Midbrain, CN 3-4*
Oct. 24(W), 26(F)	Diencephalon, HPA & HPG axis*
Oct. 29(M)	2 nd LAB EXAM (spot tests with 10-20 stations)
Oct. 31(W), Nov. 2(F)	Basal ganglia*
Nov. 5(M), 7(W), 9(F)	Limbic system*
Nov. 14(W), 16(F), 19(M)	Neocortex: frontal & parietal lobes, CN 1-2*
Nov. 21(W), 23(F), 26(M)	Neocortex: temporal & occipital lobes*
Nov. 28(W), 30(F)	Review sessions
Dec. 5-14	FINAL LAB EXAM (TBA) (spot tests with 15-20 stations)

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Senate Summary Page for Courses (Course change add lab to PSYC3800)

COURSE NUMBER AND TITLE

3800 Cellular Neuroscience

REVISED COURSE NUMBER AND TITLE

3800 Cellular and Molecular Neuroscience

ABBREVIATED COURSE TITLE

3800 Cellular Molecular Neurosci

RATIONALE

Psyc 3800 Cellular and Molecular Neuroscience is a Behavioural Neuroscience majors course that teaches many of the foundational concepts in Behavioural Neuroscience. This includes close examination of foundation techniques to describe important concepts in the neurosciences. Cellular Neuroscience concentrates on knowledge gained using a number of essential techniques e.g. voltage clamp, current clamp, patch clamp, evoked potential, immunohistochemistry, intracellular cascades, microscopy and digital imaging, and behavioural analysis, in an effort understand the brain and behaviour at the cellular and molecular level.

At present, this course emphasizes knowledge based on lecture-only learning. Introducing the laboratory component of this course will greatly expand the understanding (deep learning) of relevant concepts in Behavioural Neuroscience. Additionally, it will also expose our students to real laboratory-based techniques that will better equip our students to be competitive with their counterparts graduating with similar degrees from other universities in Atlantic Canada.

CALENDAR CHANGES

3800 Cellular and Molecular Neuroscience addresses the structure and function of neurons and neural circuits and examines principles of electrochemical neural communication at the macroscopic, microscopic and molecular level. The relevance of this knowledge to understanding brain mechanisms of normal and diseased brain functions will be touched upon. The molecular basis of the formation of some types of memories will be explored.

PR: Science 1807 and 1808; PSYC 2520 or 2521, 2911, and 2930 or the former 2570, Biology 1001 and 1002, and admission to a Major in Psychology or Behavioural Neuroscience

LH: one laboratory period weekly

CALENDAR ENTRY AFTER CHANGES

3800 Cellular and Molecular Neuroscience

addresses the structure and function of neurons and neural circuits and examines principles of electrochemical neural communication at the macroscopic, microscopic and molecular level. The relevance of this knowledge to understanding brain mechanisms of normal and diseased brain functions will be touched upon. The molecular basis of the formation of some types of memories will be explored.

PR: Science 1807 and 1808; PSYC 2520 or 2521, 2911, and 2930 or the former 2570, Biology 1001 and 1002, and admission to a Major in Psychology or Behavioural Neuroscience

LH: one laboratory period weekly

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Consultations Sought From	Comments Received
Humanities and Social Sciences	
Education	
Engineering and Applied Science	
Grenfell Campus (Arts & Social Sciences)	
Human Kinetics and Recreation	
Marine Institute	
Social Work	
Science	
• Biochemistry	
• Biology	
• Chemistry	
• Earth Sciences	
• Mathematics and Statistics	
• Ocean Sciences	
• Physics and Physical Oceanography	

E-mail from Psychology department requesting feedback on calendar changes sent October 11, 2018.

The Psychology department is proposing a set of calendar changes. Please find attached a set of proposals outlining the following changes

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses
- H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Please send your comments on these proposals to psychdeputyhead@mun.ca.

If you have any questions, please feel free to contact me.

Christina

Replies from other units:

Marine Institute:

Dear Christina,

Thank you for the opportunity to review and comment on the calendar change proposals from Psychology. These changes will have no impact on Marine Institute programs and we support the proposal.

Regards,

Bev

Bev Fleet

Chair, Undergraduate Studies Committee

Marine Institute, Memorial University

TEL: 709-778-0369

FAX: 709-778-0535

Bev.Fleet@mi.mun.ca

Engineering:

Dear Dr. Thorpe,

Thank you for the opportunity to comment on the proposed Calendar changes to the Psychology Program.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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

Biology:

Hi Christina,

The Biology Undergraduate Committee has reviewed your proposed calendar changes. We have no concerns with those changes, and are pleased to see the introduction of interesting new courses in your department.

Best wishes,

Suzanne

--

Dr. Suzanne Dufour

Associate Professor

Department of Biology

Memorial University of Newfoundland

St. John's, NL

A1B 3X9

Canada

Tel: (709) 864-8025

Fax: (709) 864-3018

<http://www.mun.ca/biology/dufour/index.php>

Education:

Hello,

Thank you for the opportunity to provide feedback on this proposal. These changes will not impact the Faculty of Education's programs.

Thank you,

Meghan

Meghan Collett, B.Sc., M.Sc. | Coordinator of Academic Programs

Faculty of Education

Memorial University of Newfoundland

St. John's, Newfoundland, Canada A1B 3X8

G.A.Hickman Building | Room ED 2020

Tel: 709 864-7554 |

Fax: 709 864-2623

Social Work:

Hello Christina,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs

School of Social Work, Memorial University

St. John's, NL, Canada, A1C 5S7

T: 709-864-2562 or 709-864-7349

HKR:

Hello,

I have reviewed the calendar change proposals from Psychology and have no concerns.

Linda

Linda E. Rohr PhD

Dean, School of Human Kinetics & Recreation

Memorial University

t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca

PE 2027

LIBRARY REPORT



Collections Strategies Division
Queen Elizabeth II Library
St. John's, NL, A1B 3Y1

31 October 2018

TO: Christina Thorpe, Deputy Head, Undergraduate Studies, Psychology Department

FROM: Alison Ambi, Head, Collections Strategies

SUBJECT: Behavioural neuroscience calendar changes and course proposals

With respect to the following set of changes being proposed by the Psychology department:

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses
- H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Course renaming, program requirement changes, and additions of laboratory components

Proposal components A and H, and E and F do not change the content of what is taught in the psychology department, and will consequently not place any additional demands on library resources.

New Courses (Proposal components B, C, and D)

A review of some of the topics to be covered in the new courses indicates that the Library has a sufficient range of supplementary resources to support term papers and research projects likely to be pursued by students. Besides the robust physical book collection in psychology and the thousands of ebooks available via our general academic ebook subscription packages, the Library subscribes to PsycBooks and the Springer psychology front-list ebook package, both of which provide online access to key current monograph literature on a range of psychology topics. The library also provides online access to two key book series ranked highly by Scimago (Table 2 in the appendices). The Library subscriptions to PsycInfo and various other indexes (for example, Scopus, Web of Science, and PubMed) are available to help guide students to relevant psychology literature.

New Selected Topics Courses (Proposal component G)

Students in these courses are likely to be reliant on recent journal literature. Of the top 50 Scimago ranked journals in Behavioural Neuroscience (see Table 1 in the appendices), the library provides current access to 32 journals, 14 are available with a 12 month embargo, and back issues up to 2015 are available online for a further 3. Students will therefore have immediate online access to over 90% of the articles from these journals. There is only one journal within the top 50 list (ranked 37th) for which the Library does not provide immediate online access to at least some issues. Combined with the library's

document delivery service, which would allow students to acquire articles from any journal within 24-48 hours, the students' needs should be adequately supported.

Appendices

Table 1 – Top-Ranked Behavioural Neuroscience Journals as Identified by Scimago

Ra nk	Title	Publisher	Categories	Curren t Access Availa ble?	Emba rgo Lengt h	Notes
1	Neuroscience and Biobehavioral Reviews	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
2	Brain, Behavior, and Immunity	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
3	Neurobiology of Learning and Memory	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
4	Current Opinion in Behavioral Sciences	Elsevier Limited	Behavioral Neuroscience (Q1)	y		
5	Genes, Brain and Behavior	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N	12 months	
6	Cognitive, Affective and Behavioral Neuroscience	Springer New York LLC	Behavioral Neuroscience (Q1)	Y		
7	Frontiers in Behavioral Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access
8	Neuropsychologia	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
9	Hormones and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
10	Journal of Experimental Psychology: Human Perception and Performance	American Psychological Association	Behavioral Neuroscience (Q1)	Y		
11	Journal of Sleep Research	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N		Publisher platform access until 2015
12	Behavioral Neuroscience	American Psychological Association	Behavioral Neuroscience (Q1)	Y		

		Association				
13	Frontiers in Human Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access Publisher platform access until 2015
14	Chemical Senses	Oxford University Press	Behavioral Neuroscience (Q1)	N	12 mont hs	
15	Behavioural Brain Research	Elsevier BV	Behavioral Neuroscience (Q1)	y		
16	Developmental Psychobiology	John Wiley & Sons Inc.	Behavioral Neuroscience (Q1)	N	12 mont hs	
17	Social Neuroscience	Taylor & Francis	Behavioral Neuroscience (Q1)	N	12 mont hs	
18	Sleep Health	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
19	Human Factors	SAGE Publications	Behavioral Neuroscience (Q2)	N		Publisher platform access until 2017
20	Brain Imaging and Behavior	Springer New York LLC	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2015
21	Journal of Neuropsychology	Wiley-Blackwell	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2016
22	Stress: the International Journal on Biology of Stress	Taylor & Francis	Behavioral Neuroscience (Q2)	N	18 mont hs	
23	Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology	Springer Verlag	Behavioral Neuroscience (Q2)	N	12 mont hs	Publisher platform access until 2015
24	Learning Disability Quarterly	SAGE Publications Inc.	Behavioral Neuroscience (Q2)	Y		
25	Journal of Research on Adolescence	Blackwell Publishing Inc.	Behavioral Neuroscience (Q2)	N	12 mont hs	
26	Journal of the Experimental Analysis of Behavior	Wiley-Blackwell	Behavioral Neuroscience (Q2)	N	12 mont hs	

27	Translational Behavioral Medicine	Springer New York LLC	Behavioral Neuroscience (Q2)	Y	0 months	
28	Alcohol	Elsevier BV	Behavioral Neuroscience (Q2)	y		
29	Pharmacology Biochemistry and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
30	Epilepsy and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
31	Evolutionary Psychology	Human Nature Review	Behavioral Neuroscience (Q2)	Y		Open Access
32	Physiology and Behavior	Elsevier BV	Behavioral Neuroscience (Q2)	y		
33	Brain and Behavior	John Wiley and Sons Inc.	Behavioral Neuroscience (Q2)	Y		Open Access
34	Brain, Behavior and Evolution	S. Karger AG	Behavioral Neuroscience (Q2)	N	12 months	
35	Behavioral and Brain Functions	BioMed Central	Behavioral Neuroscience (Q2)	Y		
36	Nature and Science of Sleep	Dove Medical Press Ltd.	Behavioral Neuroscience (Q3)	Y		Open Access
37	Adaptive Human Behavior and Physiology	Springer International Publishing AG	Behavioral Neuroscience (Q3)	N		
38	Trends in Neuroscience and Education	Elsevier GmbH	Behavioral Neuroscience (Q3)	y		
39	Behavioural Processes	Elsevier BV	Behavioral Neuroscience (Q3)	y		
40	Behaviour	Brill	Behavioral Neuroscience (Q3)	Y		
41	International Journal of Alzheimer's Disease	Hindawi Publishing Corporation	Behavioral Neuroscience (Q3)	Y		Open Access
42	Clinical Psychopharmacology and Neuroscience	Korean College of Neuropsychopharmacology	Behavioral Neuroscience (Q3)	Y		Open Access
43	Review Journal of	Springer	Behavioral	N	12	

	Autism and Developmental Disorders	New York	Neuroscience (Q3)		mont hs
44	Journal of Eating Disorders	BioMed Central	Behavioral Neuroscience (Q3)	Y	
45	Learning and Behavior	Springer New York LLC	Behavioral Neuroscience (Q3)	N	12 mont hs
46	Behavioral and Brain Sciences	Cambridge University Press	Behavioral Neuroscience (Q3)	N	12 mont hs
47	Sexual Medicine	Elsevier Inc.	Behavioral Neuroscience (Q3)	y	
48	Sleep Science	Federacao Latino-Americana de Sociedades do Sono	Behavioral Neuroscience (Q3)	Y	Open Access
49	Integrative Psychological and Behavioral Science	Springer Science + Business Media	Behavioral Neuroscience (Q3)	N	12 mont hs
50	Journal of Contextual Behavioral Science	Elsevier BV	Behavioral Neuroscience (Q3)	y	

Table 2 – Top-Ranked Books series for behavioural neuroscience identified by Scimago

Title	Publisher	Categories	URL
Advances in the Study of Behavior	Elsevier	Behavioral Neuroscience (Q1)	https://www.sciencedirect.com/journal/in-the-study-of-behavior/issues
Current Topics in Behavioral Neurosciences	Springer	Behavioral Neuroscience (Q1)	https://link.springer.com/bookseries

RESOURCE IMPLICATIONS

There should be minimal resource implications. There will be no additional students or need of an extra instructor. The lab section will be taught by our laboratory instructor. The equipment needed for the labs is currently already available. Some consumables will be necessary.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

Psyc 3800 – Cellular Neuroscience Proposed Laboratory Assignments

It would be expected that the percentage of the total grade based on laboratory assessments would be approximately **25%**.

Examples of neuroscience techniques and exercises that may be used in the laboratory component of Cellular Neuroscience to provide practical learning opportunities to students:

- 1) Electrophysiology (students would learn techniques and provide written report of experimental data collected)
 - a. In vitro (e.g. hippocampal slice preparation or invertebrate recording)
e.g. Intracellular recording or evoked potential
 - b. In vivo electrophysiology
e.g. Extracellular single cell recording and evoked potential (LTP)
- 2) Histology and Immunohistochemistry: emphasizing intracellular cascades
- 3) Digital Microscopy and Analysis
 - a. Brightfield Microscopy
 - b. Fluorescence Microscopy
 - c. Densitometry (MCID)

Other examples of exercises: stereotaxic cannulation, drug infusion, and assessment of behavioural effects. Techniques that focus on invertebrate models (e.g. c.elegans, Aplysia or crayfish) could also be developed.

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)
- ☐ 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 Add for Selected Topics Courses)

COURSE NUMBER AND TITLE

These are new courses so they are not currently in the calendar.

REVISED COURSE NUMBER AND TITLE

PSYC 4852 Selected Topics in Behavioural Neuroscience (Neurobiology of Time and Space)

PSYC 4853 Selected Topics in Behavioural Neuroscience (Neurobiology of Sex)

PSYC 4854 Selected Topics in Behavioural Neuroscience (Neurobiological Diseases and Disorders)

ABBREVIATED COURSE TITLE

PSYC 4852 Sel Tpcs Neurobiol Time Space

PSYC 4853 Sel Tpcs Neurobiol Sex

PSYC 4854 Sel Tpcs Neurobiol Diseases

RATIONALE

Currently, we have only two selected topics in behavioural neuroscience (4850 and 4851). This means that students are restricted in the number of 4000 level Behavioural Neuroscience courses that they may take. It also appears to students considering the major in behavioural neuroscience that there are not very many behavioural neuroscience courses offered, especially at the senior level. This makes the recruitment of students challenging. By labeling our neuroscience courses with more descriptive titles, we better reflect the diversity of courses that students may take. These new courses also better reflect the topics that our current faculty are interested in teaching.

CALENDAR CHANGES

PSYC 4852 Selected Topics in Behavioural Neuroscience (Neurobiology of Time and Space)

will examine selected topics in timing, circadian rhythms, spatial learning and navigation.

PR: One of the former PSYC 3250, 3800, the former 3801, 3810, 3820, 3830, 3840, or 3860 and admission to a Major in Psychology or Behavioural Neuroscience

PSYC 4853 Selected Topics in Behavioural Neuroscience (Neurobiology of Sex)
will examine the development of sex differences in the brain and behaviour by
considering both animal models and human studies.

PR: One of the former PSYC 3250, 3800, the former 3801, 3810, 3820, 3830, 3840, or
3860 and admission to a Major in Psychology or Behavioural Neuroscience

PSYC 4854 Selected Topics in Behavioural Neuroscience (Neurobiological Diseases
and Disorders)

will examine the neurobiology of neurodegenerative diseases/psychological disorders,
and the potential of therapeutic interventions.

PR: One of the former PSYC 3250, 3800, the former 3801, 3810, 3820, 3830, 3840, or
3860 and admission to a Major in Psychology or Behavioural Neuroscience

CALENDAR ENTRY AFTER CHANGES

PSYC 4852 Selected Topics in Behavioural Neuroscience (Neurobiology of Time and Space)

will examine selected topics in timing, circadian rhythms, spatial learning and navigation.

PR: One of the former PSYC 3250, 3800, the former 3801, 3810, 3820, 3830, 3840, or 3860 and admission to a Major in Psychology or Behavioural Neuroscience

PSYC 4853 Selected Topics in Behavioural Neuroscience (Neurobiology of Sex)
will examine the development of sex differences in the brain and behaviour by considering both animal models and human studies.

PR: One of the former PSYC 3250, 3800, the former 3801, 3810, 3820, 3830, 3840, or 3860 and admission to a Major in Psychology or Behavioural Neuroscience

PSYC 4854 Selected Topics in Behavioural Neuroscience (Neurobiological Diseases and Disorders)

will examine the neurobiology of neurodegenerative diseases/psychological disorders, and the potential of therapeutic interventions.

PR: One of the former PSYC 3250, 3800, the former 3801, 3810, 3820, 3830, 3840, or 3860 and admission to a Major in Psychology or Behavioural Neuroscience

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Consultations Sought From	Comments Received
Humanities and Social Sciences	
Education	Yes
Engineering and Applied Science	Yes
Grenfell Campus (Arts & Social Sciences)	
Human Kinetics and Recreation	Yes
Marine Institute	Yes
Social Work	Yes
Science	
• Biochemistry	
• Biology	Yes
• Chemistry	
• Earth Sciences	
• Mathematics and Statistics	
• Ocean Sciences	
• Physics and Physical Oceanography	

E-mail from Psychology department requesting feedback on calendar changes sent October 11, 2018.

The Psychology department is proposing a set of calendar changes. Please find attached a set of proposals outlining the following changes

A) Renaming PSYC 3250 to 3810

B) Addition of a new course (PSYC 3251: Learning)

C) Addition of a new course (PSYC 3840: Neurobiology of Stress)

D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)

E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors

F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience

G) Addition of three new Selected Topics courses

H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Please send your comments on these proposals to psychdeputyhead@mun.ca.

If you have any questions, please feel free to contact me.

Christina

Replies from other units:

Marine Institute:

Dear Christina,

Thank you for the opportunity to review and comment on the calendar change proposals from Psychology. These changes will have no impact on Marine Institute programs and we support the proposal.

Regards,

Bev

Bev Fleet
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0369
FAX: 709-778-0535
Bev.Fleet@mi.mun.ca

Engineering:

Dear Dr. Thorpe,

Thank you for the opportunity to comment on the proposed Calendar changes to the Psychology Program.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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

Biology:

Hi Christina,

The Biology Undergraduate Committee has reviewed your proposed calendar changes. We have no concerns with those changes, and are pleased to see the introduction of interesting new courses in your department.

Best wishes,

Suzanne

--

Dr. Suzanne Dufour
Associate Professor
Department of Biology
Memorial University of Newfoundland
St. John's, NL
A1B 3X9
Canada

Tel: (709) 864-8025
Fax: (709) 864-3018
<http://www.mun.ca/biology/dufour/index.php>

Education:

Hello,

Thank you for the opportunity to provide feedback on this proposal. These changes will not impact the Faculty of Education's programs.

Thank you,

Meghan

Meghan Collett, B.Sc., M.Sc. | Coordinator of Academic Programs

Faculty of Education
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1B 3X8
G.A.Hickman Building | Room ED 2020
Tel: 709 864-7554 |
Fax: 709 864-2623

Social Work:

Hello Christina,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs
School of Social Work, Memorial University
St. John's, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

HKR:

Hello,

I have reviewed the calendar change proposals from Psychology and have no concerns.

Linda

Linda E. Rohr PhD

Dean, School of Human Kinetics & Recreation
Memorial University
t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca
PE 2027

LIBRARY REPORT



Collections Strategies
Division
Queen Elizabeth II Library
St. John's, NL, A1B 3Y1

31 October 2018

TO: Christina Thorpe, Deputy Head, Undergraduate Studies, Psychology Department

FROM: Alison Ambi, Head, Collections Strategies

SUBJECT: Behavioural neuroscience calendar changes and course proposals

With respect to the following set of changes being proposed by the Psychology department:

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
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- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses
- H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Course renaming, program requirement changes, and additions of laboratory components

Proposal components A and H, and E and F do not change the content of what is taught in the psychology department, and will consequently not place any additional demands on library resources.

New Courses (Proposal components B, C, and D)

A review of some of the topics to be covered in the new courses indicates that the Library has a sufficient range of supplementary resources to support term papers and research projects likely to be pursued by students. Besides the robust physical book collection in psychology and the

thousands of ebooks available via our general academic ebook subscription packages, the Library subscribes to PsycBooks and the Springer psychology front-list ebook package, both of which provide online access to key current monograph literature on a range of psychology topics. The library also provides online access to two key book series ranked highly by Scimago (Table 2 in the appendices). The Library subscriptions to PsycInfo and various other indexes (for example, Scopus, Web of Science, and PubMed) are available to help guide students to relevant psychology literature.

New Selected Topics Courses (Proposal component G)

Students in these courses are likely to be reliant on recent journal literature. Of the top 50 Scimago ranked journals in Behavioural Neuroscience (see Table 1 in the appendices), the library provides current access to 32 journals, 14 are available with a 12 month embargo, and back issues up to 2015 are available online for a further 3. Students will therefore have immediate online access to over 90% of the articles from these journals. There is only one journal within the top 50 list (ranked 37th) for which the Library does not provide immediate online access to at least some issues. Combined with the library's document delivery service, which would allow students to acquire articles from any journal within 24-48 hours, the students' needs should be adequately supported.

Appendices

Table 1 – Top-Ranked Behavioural Neuroscience Journals as Identified by Scimago

Ra nk	Title	Publisher	Categories	Curre nt Acces s Availa ble?	Emb argo Lengt h	Notes
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2	Brain, Behavior, and Immunity	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
3	Neurobiology of Learning and Memory	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
4	Current Opinion in Behavioral Sciences	Elsevier Limited	Behavioral Neuroscience (Q1)	y		
5	Genes, Brain and Behavior	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N	12 months	
6	Cognitive, Affective and Behavioral Neuroscience	Springer New York LLC	Behavioral Neuroscience (Q1)	Y		
7	Frontiers in Behavioral Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access
8	Neuropsychologia	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
9	Hormones and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
10	Journal of Experimental Psychology:	American Psychological	Behavioral Neuroscience (Q1)	Y		

	Human Perception and Performance	Association				
11	Journal of Sleep Research	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N		Publisher platform access until 2015
12	Behavioral Neuroscience	American Psychological Association	Behavioral Neuroscience (Q1)	Y		
13	Frontiers in Human Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access Publisher platform access until 2015
14	Chemical Senses	Oxford University Press	Behavioral Neuroscience (Q1)	N	12 months	
15	Behavioural Brain Research	Elsevier BV	Behavioral Neuroscience (Q1)	y		
16	Developmental Psychobiology	John Wiley & Sons Inc.	Behavioral Neuroscience (Q1)	N	12 months	
17	Social Neuroscience	Taylor & Francis	Behavioral Neuroscience (Q1)	N	12 months	
18	Sleep Health	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
19	Human Factors	SAGE Publications	Behavioral Neuroscience (Q2)	N		Publisher platform access until 2017
20	Brain Imaging and Behavior	Springer New York LLC	Behavioral Neuroscience (Q2)	N	12 months	Publisher platform access until 2015
21	Journal of Neuropsychology	Wiley-Blackwell	Behavioral Neuroscience (Q2)	N	12 months	Publisher platform access until 2016

22	Stress: the International Journal on Biology of Stress	Taylor & Francis	Behavioral Neuroscience (Q2)	N	18 months	
23	Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology	Springer Verlag	Behavioral Neuroscience (Q2)	N	12 months	Publisher platform access until 2015
24	Learning Disability Quarterly	SAGE Publications Inc.	Behavioral Neuroscience (Q2)	Y		
25	Journal of Research on Adolescence	Blackwell Publishing Inc.	Behavioral Neuroscience (Q2)	N	12 months	
26	Journal of the Experimental Analysis of Behavior	Wiley-Blackwell	Behavioral Neuroscience (Q2)	N	12 months	
27	Translational Behavioral Medicine	Springer New York LLC	Behavioral Neuroscience (Q2)	Y	0 months	
28	Alcohol	Elsevier BV	Behavioral Neuroscience (Q2)	y		
29	Pharmacology Biochemistry and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
30	Epilepsy and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
31	Evolutionary Psychology	Human Nature Review	Behavioral Neuroscience (Q2)	Y		Open Access
32	Physiology and Behavior	Elsevier BV	Behavioral Neuroscience (Q2)	y		
33	Brain and Behavior	John Wiley and Sons Inc.	Behavioral Neuroscience (Q2)	Y		Open Access

34	Brain, Behavior and Evolution	S. Karger AG	Behavioral Neuroscience (Q2)	N	12 months	
35	Behavioral and Brain Functions	BioMed Central	Behavioral Neuroscience (Q2)	Y		
36	Nature and Science of Sleep	Dove Medical Press Ltd.	Behavioral Neuroscience (Q3)	Y		Open Access
37	Adaptive Human Behavior and Physiology	Springer International Publishing AG	Behavioral Neuroscience (Q3)	N		
38	Trends in Neuroscience and Education	Elsevier GmbH	Behavioral Neuroscience (Q3)	y		
39	Behavioural Processes	Elsevier BV	Behavioral Neuroscience (Q3)	y		
40	Behaviour	Brill	Behavioral Neuroscience (Q3)	Y		
41	International Journal of Alzheimer's Disease	Hindawi Publishing Corporation	Behavioral Neuroscience (Q3)	Y		Open Access
42	Clinical Psychopharmacology and Neuroscience	Korean College of Neuropsychopharmacology	Behavioral Neuroscience (Q3)	Y		Open Access
43	Review Journal of Autism and Developmental Disorders	Springer New York	Behavioral Neuroscience (Q3)	N	12 months	
44	Journal of Eating Disorders	BioMed Central	Behavioral Neuroscience (Q3)	Y		
45	Learning and Behavior	Springer New York LLC	Behavioral Neuroscience (Q3)	N	12 months	

46	Behavioral and Brain Sciences	Cambridge University Press	Behavioral Neuroscience (Q3)	N	12 months
47	Sexual Medicine	Elsevier Inc.	Behavioral Neuroscience (Q3)	y	
48	Sleep Science	Federacao Latino-Americana de Sociedades do Sono	Behavioral Neuroscience (Q3)	Y	Open Access
49	Integrative Psychological and Behavioral Science	Springer Science + Business Media	Behavioral Neuroscience (Q3)	N	12 months
50	Journal of Contextual Behavioral Science	Elsevier BV	Behavioral Neuroscience (Q3)	y	

Table 2 – Top-Ranked Books series for behavioural neuroscience identified by Scimago

Title	Publisher	Categories	URL
Advances in the Study of Behavior	Elsevier	Behavioral Neuroscience (Q1)	https://www.sciencedirect.com/journal/advances-in-the-study-of-behavior/issue
Current Topics in Behavioral Neurosciences	Springer	Behavioral Neuroscience (Q1)	https://link.springer.com/book

RESOURCE IMPLICATIONS

There should be minimal costs arising from these new courses. We currently offer 1-2 Selected Topics courses in behavioural neuroscience per year. The same number of courses will be offered – the names will be changed to be more descriptive. The course number will change depending on who is teaching the course.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

Course structure: These courses are all seminar style courses that are generally capped at 20 students. The majority of the class will be spent discussing and analyzing research articles (usually 3-4 articles per week). Class participation is an important component of these courses so it is important that students have completed the assigned readings. For this reason, participation points are often given (or alternatively some instructors may have short quizzes on the assigned readings).

Method of evaluation: Will vary by the instructor but a common breakdown is

- Presentation of research articles (2 per semester worth 15% each)
- Written critiques of articles (3 per semester with 5% each)
- Participation (10%)
- Proposal or Research Paper (35%)
- Proposal Presentation (10%)

Textbooks: Typically instructors rely on articles published in scientific journals. Therefore, there are no textbooks required.

Potential Instructors:

Dr. Francis Bambico
Dr. Jacqueline Blundell
Dr. Darlene Skinner
Dr. Ashlyn Swift-Gallant
Dr. Christina Thorpe
Dr. Susan Walling

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PROGRAM TITLE

11.11.3 Requirements for a Major in Psychology
11.11.4 Requirements for Honours in Psychology
11.11.5 Requirements for a Major in Behavioural Neuroscience (B.Sc. Only)
11.11.6 Requirements for Honours in Behavioural Neuroscience (B.Sc. Only)
11.11.9 Suggested Course Sequences
10.2.6 Biochemistry and Psychology (Behavioural Neuroscience) Joint Honours
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10.2.10 Biology and Psychology (Behavioural Neuroscience) Joint Honours

RATIONALE

The Psychology department is revamping its Behavioural Neuroscience offerings as outlined in the included package. The main changes are:

- 1) Creating a new course PSYC 2521 that has the same lecture component as PSYC 2520 but also includes a lab component
- 2) Adding a lab component to PSYC 3800.
- 3) Adding a new learning course (PSYC3251)
- 4) Adding two new behavioural neuroscience courses (PSYC 3840 and 3850)
- 5) Adding 3 new Selected Topics courses (PSYC 4852, 4853, 4854)

Because of these additions, changes are required to our program descriptions. It is important to note that most of these courses will be offered on a rotating basis so they will not be offered each semester.

We also wanted to allow our students to take courses in Ocean Sciences and Medicine to complete degree requirements.

CALENDAR CHANGES

11.11.3 Requirements for a Major in Psychology

Students completing this program cannot receive credit for Psychology 2920. Students who intend to pursue graduate studies should take courses leading to the Honours degree.

1. Students may Major in Psychology as part of either a B.A. or a B.Sc. program, and should consult the Degree Regulations for the General Degree of Bachelor of Science or the Degree Regulations for the General Degree of Bachelor of Arts, as appropriate. All Majors are required to complete a minimum of 42 credit hours of Psychology as listed below:

- a. Psychology 1000, 1001, 2520 ([or 2521](#)), 2910, 2911, 2930.
 - b. Twelve credit hours in Psychology chosen from the following: 3050, 3100, [the former 3250](#), [3251](#), 3350, 3450, 3620, 3650, 3750, or one of 3800, [3810](#), [3820](#), ~~or 3830~~, [3840](#), or [3860](#).
 - c. Twelve credit hours of 4000-level courses in Psychology, of which at least one must be a research experience course and one must be a selected topics course.
2. Psychology Majors following the B.Sc. program are also required to complete the following:
- a. Mathematics 1000 (or equivalent).
 - b. Biology 1001 and 1002.
 - c. Either Chemistry 1010 and 1011 (or 1050 and 1051); OR Physics 1020 (or 1050) and 1021 (or 1051).

Note:

First year students should think carefully about whether Chemistry or Physics best suits their future program needs. Students should examine the prerequisites for upper-level science courses and attempt to take them in their first year.

- d. Six credit hours of laboratory courses at the 2000 level or above in one of Biology, Chemistry, or Physics.

Note:

Biology/Psychology [3750 and 4701](#) and Biology 3053 cannot be used to satisfy the requirement of 6 laboratory credit hours at the 2000 level or above in either Biology, Chemistry, or Physics.

3. Psychology Majors following the B.A. program are also required to complete Mathematics 1000 or two of 1090, 1050, 1051 (or equivalent), and are encouraged to complete at least 6 credit hours in Biology.

11.11.4 Requirements for Honours in Psychology

Students completing this program cannot receive credit for Psychology 2920.

1. Honours students in Psychology should consult Degree Regulations for the Honours Degree of Bachelor of Science or Bachelor of Arts (Honours) Degree Regulations as appropriate. All Honours students are required to complete the 60 credit hours of Psychology as listed below:
 - a. Psychology 1000, 1001, 2520 ([or 2521](#)), 2910, 2911, 2930, 3900, 4910, 499A/B
 - b. Eighteen credit hours chosen from the alternatives listed in Clause 1. b. of the requirements for a Major in Psychology
 - c. Twelve credit hours of 4000-level courses in Psychology, of which at least one must be a research experience course and one must be a selected topics course.
2. Honours students must also complete the requirements listed in either Clause 2. or Clause 3., as applicable, of the requirements for a Major in Psychology.
3. Honours students will be required to submit in their graduating year, an undergraduate thesis (Psychology 499A/B) which demonstrates their competence in Experimental Psychology.

11.11.5 Requirements for a Major in Behavioural Neuroscience (B.Sc. Only)

Students completing this program cannot receive credit for Psychology 2920.

A program is offered in the Psychology Department to provide an education in Behavioural Neuroscience. Students planning to enroll in the program are advised to consult with the Head of the Department at the earliest opportunity because certain course choices may restrict later options. Students who intend to pursue graduate studies should take courses leading to the Honours degree.

As a component of the Degree Regulations for the General Degree of Bachelor of Science, the program for a Major in Behavioural Neuroscience shall include:

1.
 - a. Psychology 1000, 1001, ~~2520, 2521~~, 2910, 2911, 2930, ~~3250~~, 3800, 3820 and one of 3810, 3830, 3840, or 3860.
 - b. Three credit hours in Psychology chosen from the following: 3050, 3100, the former 3250, 3251, 3350, 3450, 3620, 3650, 3750.
 - c. Any research experience course and one of Psychology 4250, 4251, 4850 or 4851; or, any selected topics course and one of Psychology 4270 or 4870.
2.
 - a. Mathematics 1000 (or equivalent) and 1001.
 - b. Chemistry 1050 and 1051 (or 1200 and 1001).
 - c. Physics 1020 (or 1050) and 1021 (or 1051).
 - d. Biology 1001 and 1002.
 - e. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
3. Eighteen credit hours from the following courses chosen from at least two different sciences:
 - a. Biochemistry: Any 2000-, 3000-, or 4000-level course except the former 2000, 2005, the former 2010, the former 2011, 3202, 3402, or 4502.
 - b. Biology: ~~2060, 2122, 2210, 2250, 2900, 3050, 3160, 3202, 3295, 3401, 3500, 3530, 3540, 3750, 4200, 4241, 4245, 4250, 4402, the former 4450, 4601, 4605, 4701, the former 4900 (see note below)~~. Any 2000-, 3000-, or 4000-level course except 2040, 2041, 2120, 3053, or 3820.
 - c. Chemistry: 2100, 2210, 2301 (or the former Chemistry 2300), 2400, 2401, or any 3000 or 4000 level course.
 - d. Computer Science: Any 2000, 3000, or 4000 level course except the former 2650 and the former 2801.
 - e. Ocean Sciences: any 2000-, 3000-, or 4000-level course
 - f. Mathematics: 2000, 2050, 2051, 3000, 3001 or any 3000 or 4000 level pure or applied mathematics course.
 - e.g. Medicine 310 A/B
 - f.h. Physics: Any 2000, 3000, or 4000 level course except 2151, 3150, 3151.

Notes:

~~7-9.~~ Credit may not be obtained for both Biology 3750 and Psychology 3750 or for both Biology 4701 and Psychology 4701.

~~8-10.~~ The courses listed under Clause 3 may have prerequisites. It is the student's responsibility to ensure that all prerequisites have been met, or that waivers have been obtained, before registering for these courses.

11.11.6 Requirements for Honours in Behavioural Neuroscience (B.Sc. Only)

Students in Behavioural Neuroscience should consult Degree Regulations for the Honours Degree of Bachelor of Science. Students completing this program cannot receive credit for Psychology 2920.

1. Honours students in Behavioural Neuroscience are required to complete the following Psychology courses:

a. ~~Psychology~~ 1000, 1001, ~~2520, 2521,~~ 2910, 2911, 2930, ~~3250,~~ 3800, 3820, ~~one of the former 3250, 3810, 3830, 3840, or 3860,~~ 3900, 499A/B,

b. ~~One~~ One further course in Psychology chosen from the following: 3050, 3100, ~~3251,~~ 3350, 3450, 3620, 3650, 3750;

~~c. a~~ Any research experience course and one of Psychology ~~4250, 4251,~~ 4850, ~~or 4851, 4852, 4853, or 4854;~~ or, any selected topics course and ~~one of~~ Psychology ~~4270 or~~ 4870.

2. Honours students in Behavioural Neuroscience must also complete the requirements listed in Clauses 2. and 3. of the requirements for a Major in Behavioural Neuroscience.
3. In accordance with Academic Standing under the Degree Regulations for the Honours Degree of Bachelor of Science, Honours candidates must obtain a grade of "B" or better, or an average of 75% or higher in all the required courses listed in Clauses 1. and 3. of the requirements for a major in Behavioural Neuroscience and Clause 1 of the requirements for honours in Behavioural Neuroscience, except those at the 1000 level.

11.11.9 Suggested Course Sequences

Table 5 Suggested Course Sequence for B.Sc. in Behavioural Neuroscience (Co-operative)

Term	Suggested Courses
<ul style="list-style-type: none"> • Fall • Semester 1 	<ul style="list-style-type: none"> • Biology 1001 or Physics 1020 (1050)* • Chemistry 1050 or (1200) • Critical Reading and Writing requirement • Mathematics 1090 or Mathematics 1000 • Psychology 1000
<ul style="list-style-type: none"> • Winter • Semester 2 	<ul style="list-style-type: none"> • Biology 1002 or Physics 1021 (1051) • Chemistry 1051 or (1001) • Critical Reading and Writing requirement • Mathematics 1000 or Mathematics 1001 • Psychology 1001
<ul style="list-style-type: none"> • Fall • Semester 3 	<ul style="list-style-type: none"> • BHNR Requirement 1** • Elective or Science requirement

	<ul style="list-style-type: none"> • Physics 1020 (1050)* or Biology 1001 • Psychology 25202521 or 2930 • Psychology 2910
<ul style="list-style-type: none"> • Winter • Semester 4 	<ul style="list-style-type: none"> • BHNR Requirement 2 • Physics 1021 (1051) or Biology 1002 • Mathematics 1001 or Elective or Science requirement • Psychology 2911 • Psychology 2930 or 25202521
<ul style="list-style-type: none"> • Spring • Work Term 1 	Psychology 199W
<ul style="list-style-type: none"> • Fall • Semester 5 	<ul style="list-style-type: none"> • BHNR Requirement 3 • Elective or Science requirement • Elective or Science requirement • Psychology 32503810, 3830, 3840, or 3860 • Psychology 3800
<ul style="list-style-type: none"> • Winter • Semester 6 	<ul style="list-style-type: none"> • BHNR Requirement 4 • Elective or Science requirement • Elective or Science requirement • Psychology 3000-Level Core • Psychology 3820
<ul style="list-style-type: none"> • Spring • Work Term 2 	Psychology 299W
<ul style="list-style-type: none"> • Fall • Semester 7 	<ul style="list-style-type: none"> • BHNR Requirement 5 • Elective or Science requirement • Elective or Science requirement • Elective or Science requirement • Psychology Research Experience course
<ul style="list-style-type: none"> • Winter • Work Term 3 	Psychology 399W
<ul style="list-style-type: none"> • Fall • Semester 8 	<ul style="list-style-type: none"> • BHNR Requirement 6 • Elective or Science requirement • Elective or Science requirement • Elective or Science requirement • Psychology Selected Topics course
<ul style="list-style-type: none"> • *Students registered in Physics 1050 must also be registered in Mathematics 1000 (not 1090). • **BHNR Requirement 1-6 specified in clause 3, Requirements for a Major in Behavioural Neuroscience (B.Sc. Only). 	

Table 6 Suggested Course Sequence for B.Sc. (Honours) in Behavioural Neuroscience (Co-operative)

Term	Suggested Courses
• Fall	• Biology 1001 or Physics 1020 (1050)*

<ul style="list-style-type: none"> • Semester 1 	<ul style="list-style-type: none"> • Chemistry 1050 or (1200) • Critical Reading and Writing requirement • Mathematics 1090 or 1000 • Psychology 1000
<ul style="list-style-type: none"> • Winter • Semester 2 	<ul style="list-style-type: none"> • Biology 1002 or Physics 1021 (1051) • Chemistry 1051 or (1001) • Critical Reading and Writing requirement • Mathematics 1000 or 1001 • Psychology 1001
<ul style="list-style-type: none"> • Fall • Semester 3 	<ul style="list-style-type: none"> • BHNR Requirement 1** • Elective or Science requirement • Physics 1020 (1050)* or Biology 1001 • Psychology 25202521 or 2930 • Psychology 2910
<ul style="list-style-type: none"> • Winter • Semester 4 	<ul style="list-style-type: none"> • BHNR Requirement 2 • Mathematics 1001 or Elective or Science requirement • Physics 1021 (1051) or Biology 1002 • Psychology 2911 • Psychology 2930 or 25202521
<ul style="list-style-type: none"> • Spring • Work Term 1 	Psychology 199W
<ul style="list-style-type: none"> • Fall • Semester 5 	<ul style="list-style-type: none"> • BHNR Requirement 3 • Elective or Science requirement • Psychology 3810, 3830, 3840, or 38603250 • Psychology 3800 • Psychology 3900
<ul style="list-style-type: none"> • Winter • Semester 6 	<ul style="list-style-type: none"> • BHNR Requirement 4 • Elective or Science requirement • Elective or Science requirement • Psychology 3000-level core • Psychology 3820
<ul style="list-style-type: none"> • Spring • Work Term 2 	Psychology 299W
<ul style="list-style-type: none"> • Fall • Semester 7 	<ul style="list-style-type: none"> • BHNR Requirement 5 • Elective or Science requirement • Elective or Science requirement • Psychology Research Experience course • Psychology 499A
<ul style="list-style-type: none"> • Winter • Work Term 3 	Psychology 399W
Spring (Optional)	Psychology 499A
<ul style="list-style-type: none"> • Fall • Semester 8 	<ul style="list-style-type: none"> • BHNR Requirement 6 • Elective or Science requirement

	<ul style="list-style-type: none"> • Elective or Science requirement • Psychology Selected Topics course • Psychology 499B
<ul style="list-style-type: none"> • *Students registered in Physics 1050 must also be registered in Mathematics 1000 (not 1090). • **BHNR Requirement 1-6 specified in clause 3, Requirements for a Major in Behavioural Neuroscience (B.Sc. Only). 	

10.2.6 Biochemistry and Psychology (Behavioural Neuroscience) Joint Honours

Note:

Students completing this program cannot receive credit for Psychology 2920.

The following courses (or equivalent) are required to complete the 120 credit hours in courses required for the degree:

1. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses;
2. Chemistry 1050 and 1051 (or 1200 and 1001), Biology 1001 and 1002, Mathematics 1000 and 1001, Physics 1050, (or 1020), 1051 (or 1021);
3. Biochemistry 2200 (or 2100), 2201, 2901, 3105, 3206;
4. Either Biochemistry 3108 and 3207, or Medicine 310A/B;
5. 9 credit hours to be selected from Biochemistry 3906 or 3907, 4002, 4101, 4102, 4103, 4104, 4105, 4200, 4201, 4210 or 4211, 4230, 4231-4239;
6. Psychology 1000, 1001, ~~2520~~[2521](#), 2910, 2911, 2930, ~~one of the former~~ [3250](#), [3810](#), [3830](#), [3840](#), or [3860](#), 3800, 3820, 3900, one further course in Psychology chosen from the following: 3050, 3100, [3251](#), 3350, 3450, 3620, 3650, 3750; any research experience course and one of Psychology ~~4250~~, ~~4251~~, 4850, ~~or~~ 4851, [4852](#), [4853](#), or [4854](#); or, any selected topics course and ~~one of~~ Psychology ~~4270~~ or 4870;
7. Either Biochemistry 499A/B or Psychology 499A/B; and
8. Chemistry 2301, 2400, 2401.

Notes:

1. *As provided for under the Graduation Requirements for the Honours Degree of Bachelor of Science, Honours candidates must obtain a grade of "B" or better, or an average of 75% or higher in all the required courses listed in Clauses 3., 4., 5., 6. and 7. above, except those at the 1000 level.*
2. *Students in first year intending to follow this program should note the regulations for admission to Major programs in Psychology and that the deadline for submission of a completed application form to the Department of Psychology is June 1 for the Fall semester.*

10.2.7 Biochemistry (Nutrition) and Psychology (Behavioural Neuroscience) Joint Honours

Note:

Students completing this program cannot receive credit for Psychology 2920.

The following courses (or equivalent) are required:

1. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
2. Chemistry 1050 and 1051 (or 1200 and 1001), Biology 1001 and 1002, Mathematics 1000, Physics 1020 or 1050, and 1021 (or 1051).

3. Biochemistry 2200 (or 2100), 2201, 2600, 2901, 3203, 3206, 3906, Medicine 310A/B, 4300, 4301, 4502, one course chosen from: Biochemistry 3052, 3108, 3402, 3600, 4002, 4105, 4200, 4230, 4240, 4241-4249, Biology 3050.
4. Psychology 1000, 1001, ~~2520~~[2521](#), 2910, 2911, 2930, ~~one of the former~~ 3250, [3810](#), [3830](#), [3840](#), ~~or~~ [3860](#), 3800, 3820, 3900, one further course in Psychology chosen from the following: 3050, 3100, [3251](#), 3350, 3450, 3620, 3650, 3750; any research experience course and one of Psychology ~~4250, 4251~~, 4850, ~~or~~ 4851, [4852](#), [4853](#), ~~or~~ [4854](#); or, any selected topics course and ~~one of~~ Psychology ~~4270 or~~ 4870.
5. Either Biochemistry 499A/B or Psychology 499A/B.
6. Chemistry 2400.
7. Other courses to complete at least the prescribed minimum of 120 credit hours in courses for the Joint Honours Degree.

Notes:

1. *As provided for under the Graduation Requirements for the Honours Degree of Bachelor of Science, Honours candidates must obtain a grade of "B" or better, or an average of 75% or higher in all the required courses listed in Clauses 3., 4. and 5. above, except those at the 1000 level.*
2. *Students in first year intending to follow this program should note the regulations as outlined for admission to Major programs in Psychology and that the deadline for submission of a completed application form to the Department of Psychology is June 1 for the Fall semester.*

10.2.9 Biology and Psychology Joint Honours

Note:

Students completing this program cannot receive credit for Psychology 2920.

The following courses (or equivalent) are required:

1. Biology 1001, 1002, 2060, 2250, 2600, 2900; one of 3401, 3402, 4245, 4404; four Biology electives at the 2000, 3000 or 4000 level not including Biology 499A or 499B.
2. Psychology 1000, 1001, 2520 (~~or~~ [2521](#)), 2910, 2911, 2930, ~~one of the former~~ 3250, [3810](#), [3830](#), [3840](#), ~~or~~ [3860](#), 3800; 3900, 4910; one of the following: 3050, 3100, [3251](#), 3350, 3450, 3620, 3650; one further 4000 level Psychology research experience course.
3. Biology or Psychology 3750, 4701, 499A/B.
4. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
5. Mathematics 1000; Chemistry 1050 (or 1200), 1051 (or 1001), 2400, and 2401; Physics 1020 (or 1050) and 1021 (or 1051); Biochemistry 2201 or the former 2101 and 3106.
6. Other courses, if necessary, to complete at least 120 credit hours of courses.

10.2.10 Biology and Psychology (Behavioural Neuroscience) Joint Honours

Note:

Students completing this program cannot receive credit for Psychology 2920.

The following courses (or equivalent) are required:

1. Biology 1001, 1002, 2060, 2250, 2600, 2900; one of 3401, 3402, 4245, 4404; five Biology electives at the 2000, 3000 or 4000 level not including Biology 499A or 499B.
2. Psychology 1000, 1001, [2520/2521](#), 2910, 2911, 2930, [one of the former 3250, 3810, 3830, 3840, or 3860](#), 3800, 3820, 3900; one further course in Psychology chosen from the following: 3050, 3100, [3251](#), 3350, 3450, 3620, 3650, 3750; any research experience course and one of Psychology [4250, 4251](#), 4850, ~~or 4851~~, [4852, 4853, or 4854](#); or, any selected topics course and ~~one of Psychology 4270 or 4870~~.
3. Biology or Psychology 499A/B.
4. Biochemistry 2201 or the former 2101, 3106.
5. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
6. Mathematics 1000 and 1001; Physics 1020 (or 1050) and 1021 (or 1051); Chemistry 1050, 1051, 2400, and 2401.
7. Other courses, if necessary, to complete at least 120 credit hours of courses.

Note:

As provided for under the Graduation Requirements for the Honours Degree of Bachelor of Science, Honours candidates must obtain a grade of "B" or better, OR average of 75% or higher in all the required courses listed in Clauses 1, 2, 3, and 4 above, except those at the 1000 level.

CALENDAR ENTRY AFTER CHANGES

11.11.3 Requirements for a Major in Psychology

Students completing this program cannot receive credit for Psychology 2920. Students who intend to pursue graduate studies should take courses leading to the Honours degree.

4. Students may Major in Psychology as part of either a B.A. or a B.Sc. program, and should consult the Degree Regulations for the General Degree of Bachelor of Science or the Degree Regulations for the General Degree of Bachelor of Arts, as appropriate. All Majors are required to complete a minimum of 42 credit hours of Psychology as listed below:
 - a. Psychology 1000, 1001, 2520 (or 2521), 2910, 2911, 2930.
 - b. Twelve credit hours in Psychology chosen from the following: 3050, 3100, the former 3250, 3251, 3350, 3450, 3620, 3650, 3750, or one of 3800, 3810, 3820, 3830, 3840, or 3860.
 - c. Twelve credit hours of 4000-level courses in Psychology, of which at least one must be a research experience course and one must be a selected topics course.
5. Psychology Majors following the B.Sc. program are also required to complete the following:
 - a. Mathematics 1000 (or equivalent).
 - b. Biology 1001 and 1002.

- c. Either Chemistry 1010 and 1011 (or 1050 and 1051); OR Physics 1020 (or 1050) and 1021 (or 1051).

Note:

First year students should think carefully about whether Chemistry or Physics best suits their future program needs. Students should examine the prerequisites for upper-level science courses and attempt to take them in their first year.

- d. Six credit hours of laboratory courses at the 2000 level or above in one of Biology, Chemistry, or Physics.

Note:

Biology/Psychology 3750 and 4701 and Biology 3053 cannot be used to satisfy the requirement of 6 laboratory credit hours at the 2000 level or above in either Biology, Chemistry, or Physics.

- 6. Psychology Majors following the B.A. program are also required to complete Mathematics 1000 or two of 1090, 1050, 1051 (or equivalent), and are encouraged to complete at least 6 credit hours in Biology.

11.11.4 Requirements for Honours in Psychology

Students completing this program cannot receive credit for Psychology 2920.

- 4. Honours students in Psychology should consult Degree Regulations for the Honours Degree of Bachelor of Science or Bachelor of Arts (Honours) Degree Regulations as appropriate. All Honours students are required to complete the 60 credit hours of Psychology as listed below:
 - a. Psychology 1000, 1001, 2520 (or 2521), 2910, 2911, 2930, 3900, 4910, 499A/B
 - b. Eighteen credit hours chosen from the alternatives listed in Clause 1. b. of the requirements for a Major in Psychology
 - c. Twelve credit hours of 4000-level courses in Psychology, of which at least one must be a research experience course and one must be a selected topics course.
- 5. Honours students must also complete the requirements listed in either Clause 2. or Clause 3., as applicable, of the requirements for a Major in Psychology.
- 6. Honours students will be required to submit in their graduating year, an undergraduate thesis (Psychology 499A/B) which demonstrates their competence in Experimental Psychology.

11.11.5 Requirements for a Major in Behavioural Neuroscience (B.Sc. Only)

Students completing this program cannot receive credit for Psychology 2920.

A program is offered in the Psychology Department to provide an education in Behavioural Neuroscience. Students planning to enroll in the program are advised to consult with the Head of the Department at the earliest opportunity because certain course choices may restrict later options. Students who intend to pursue graduate studies should take courses leading to the Honours degree.

As a component of the Degree Regulations for the General Degree of Bachelor of Science, the program for a Major in Behavioural Neuroscience shall include:

4.
 - a. Psychology 1000, 1001, 2521, 2910, 2911, 2930, 3800, 3820 and one of 3810, 3830, 3840, or 3860.
 - b. Three credit hours in Psychology chosen from the following: 3050, 3100, the former 3250, 3251, 3350, 3450, 3620, 3650, 3750.
 - c. Any research experience course and one of Psychology 4250, 4251, 4850 or 4851; or, any selected topics course and one of Psychology 4270 or 4870.
5.
 - a. Mathematics 1000 (or equivalent) and 1001.
 - b. Chemistry 1050 and 1051 (or 1200 and 1001).
 - c. Physics 1020 (or 1050) and 1021 (or 1051).
 - d. Biology 1001 and 1002.
 - e. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
6. Eighteen credit hours from the following courses chosen from at least two different sciences:
 - a. Biochemistry: Any 2000-, 3000-, or 4000-level course except the former 2000, 2005, the former 2010, the former 2011, 3202, 3402, or 4502.
 - b. Biology: Any 2000-, 3000-, or 4000-level course except 2040, 2041, 2120, 3053, or 3820.
 - c. Chemistry: 2100, 2210, 2301 (or the former Chemistry 2300), 2400, 2401, or any 3000 or 4000 level course.
 - d. Computer Science: Any 2000, 3000, or 4000 level course except the former 2650 and the former 2801.
 - e. Ocean Sciences: any 2000-, 3000-, or 4000-level course
 - f. Mathematics: 2000, 2050, 2051, 3000, 3001 or any 3000 or 4000 level pure or applied mathematics course.
 - g. Medicine 310 A/B
 - h. Physics: Any 2000, 3000, or 4000 level course except 2151, 3150, 3151.

Notes:

9. *Credit may not be obtained for both Biology 3750 and Psychology 3750 or for both Biology 4701 and Psychology 4701.*
10. *The courses listed under Clause 3 may have prerequisites. It is the student's responsibility to ensure that all prerequisites have been met, or that waivers have been obtained, before registering for these courses.*

11.11.6 Requirements for Honours in Behavioural Neuroscience (B.Sc. Only)

Students in Behavioural Neuroscience should consult Degree Regulations for the Honours Degree of Bachelor of Science. Students completing this program cannot receive credit for Psychology 2920.

4. Honours students in Behavioural Neuroscience are required to complete the following Psychology courses:

- a. Psychology 1000, 1001, 2521, 2910, 2911, 2930, 3800, 3820, one of the former 3250, 3810, 3830, 3840, or 3860, 3900, 499A/B,
 - b. One further course in Psychology chosen from the following: 3050, 3100, 3251, 3350, 3450, 3620, 3650, 3750;
 - c. Any research experience course and one of Psychology 4850, 4851, 4852, 4853, or 4854; or, any selected topics course and Psychology 4870.
5. Honours students in Behavioural Neuroscience must also complete the requirements listed in Clauses 2. and 3. of the requirements for a Major in Behavioural Neuroscience.
 6. In accordance with Academic Standing under the Degree Regulations for the Honours Degree of Bachelor of Science, Honours candidates must obtain a grade of "B" or better, or an average of 75% or higher in all the required courses listed in Clauses 1. and 3. of the requirements for a major in Behavioural Neuroscience and Clause 1 of the requirements for honours in Behavioural Neuroscience, except those at the 1000 level.

11.11.9 Suggested Course Sequences

Table 5 Suggested Course Sequence for B.Sc. in Behavioural Neuroscience (Co-operative)

Term	Suggested Courses
<ul style="list-style-type: none"> • Fall • Semester 1 	<ul style="list-style-type: none"> • Biology 1001 or Physics 1020 (1050)* • Chemistry 1050 or (1200) • Critical Reading and Writing requirement • Mathematics 1090 or Mathematics 1000 • Psychology 1000
<ul style="list-style-type: none"> • Winter • Semester 2 	<ul style="list-style-type: none"> • Biology 1002 or Physics 1021 (1051) • Chemistry 1051 or (1001) • Critical Reading and Writing requirement • Mathematics 1000 or Mathematics 1001 • Psychology 1001
<ul style="list-style-type: none"> • Fall • Semester 3 	<ul style="list-style-type: none"> • BHNR Requirement 1** • Elective or Science requirement • Physics 1020 (1050)* or Biology 1001 • Psychology 2521 or 2930 • Psychology 2910
<ul style="list-style-type: none"> • Winter • Semester 4 	<ul style="list-style-type: none"> • BHNR Requirement 2 • Physics 1021 (1051) or Biology 1002 • Mathematics 1001 or Elective or Science requirement • Psychology 2911 • Psychology 2930 or 2521
<ul style="list-style-type: none"> • Spring • Work Term 1 	Psychology 199W
<ul style="list-style-type: none"> • Fall • Semester 5 	<ul style="list-style-type: none"> • BHNR Requirement 3 • Elective or Science requirement • Elective or Science requirement • Psychology 3810, 3830, 3840, or 3860

	<ul style="list-style-type: none"> Psychology 3800
<ul style="list-style-type: none"> Winter Semester 6 	<ul style="list-style-type: none"> BHNR Requirement 4 Elective or Science requirement Elective or Science requirement Psychology 3000-Level Core Psychology 3820
<ul style="list-style-type: none"> Spring Work Term 2 	Psychology 299W
<ul style="list-style-type: none"> Fall Semester 7 	<ul style="list-style-type: none"> BHNR Requirement 5 Elective or Science requirement Elective or Science requirement Elective or Science requirement Psychology Research Experience course
<ul style="list-style-type: none"> Winter Work Term 3 	Psychology 399W
<ul style="list-style-type: none"> Fall Semester 8 	<ul style="list-style-type: none"> BHNR Requirement 6 Elective or Science requirement Elective or Science requirement Elective or Science requirement Psychology Selected Topics course
<ul style="list-style-type: none"> *Students registered in Physics 1050 must also be registered in Mathematics 1000 (not 1090). **BHNR Requirement 1-6 specified in clause 3, Requirements for a Major in Behavioural Neuroscience (B.Sc. Only). 	

Table 6 Suggested Course Sequence for B.Sc. (Honours) in Behavioural Neuroscience (Co-operative)

Term	Suggested Courses
<ul style="list-style-type: none"> Fall Semester 1 	<ul style="list-style-type: none"> Biology 1001 or Physics 1020 (1050)* Chemistry 1050 or (1200) Critical Reading and Writing requirement Mathematics 1090 or 1000 Psychology 1000
<ul style="list-style-type: none"> Winter Semester 2 	<ul style="list-style-type: none"> Biology 1002 or Physics 1021 (1051) Chemistry 1051 or (1001) Critical Reading and Writing requirement Mathematics 1000 or 1001 Psychology 1001
<ul style="list-style-type: none"> Fall Semester 3 	<ul style="list-style-type: none"> BHNR Requirement 1** Elective or Science requirement Physics 1020 (1050)* or Biology 1001 Psychology 2521 or 2930 Psychology 2910

<ul style="list-style-type: none"> • Winter • Semester 4 	<ul style="list-style-type: none"> • BHNR Requirement 2 • Mathematics 1001 or Elective or Science requirement • Physics 1021 (1051) or Biology 1002 • Psychology 2911 • Psychology 2930 or 2521
<ul style="list-style-type: none"> • Spring • Work Term 1 	Psychology 199W
<ul style="list-style-type: none"> • Fall • Semester 5 	<ul style="list-style-type: none"> • BHNR Requirement 3 • Elective or Science requirement • Psychology 3810, 3830, 3840, or 3860 • Psychology 3800 • Psychology 3900
<ul style="list-style-type: none"> • Winter • Semester 6 	<ul style="list-style-type: none"> • BHNR Requirement 4 • Elective or Science requirement • Elective or Science requirement • Psychology 3000-level core • Psychology 3820
<ul style="list-style-type: none"> • Spring • Work Term 2 	Psychology 299W
<ul style="list-style-type: none"> • Fall • Semester 7 	<ul style="list-style-type: none"> • BHNR Requirement 5 • Elective or Science requirement • Elective or Science requirement • Psychology Research Experience course • Psychology 499A
<ul style="list-style-type: none"> • Winter • Work Term 3 	Psychology 399W
Spring (Optional)	Psychology 499A
<ul style="list-style-type: none"> • Fall • Semester 8 	<ul style="list-style-type: none"> • BHNR Requirement 6 • Elective or Science requirement • Elective or Science requirement • Psychology Selected Topics course • Psychology 499B
<ul style="list-style-type: none"> • *Students registered in Physics 1050 must also be registered in Mathematics 1000 (not 1090). • **BHNR Requirement 1-6 specified in clause 3, Requirements for a Major in Behavioural Neuroscience (B.Sc. Only). 	

10.2.6 Biochemistry and Psychology (Behavioural Neuroscience) Joint Honours

Note:

Students completing this program cannot receive credit for Psychology 2920.

The following courses (or equivalent) are required to complete the 120 credit hours in courses required for the degree:

9. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses;
10. Chemistry 1050 and 1051 (or 1200 and 1001), Biology 1001 and 1002, Mathematics 1000 and 1001, Physics 1050, (or 1020), 1051 (or 1021);
11. Biochemistry 2200 (or 2100), 2201, 2901, 3105, 3206;
12. Either Biochemistry 3108 and 3207, or Medicine 310A/B;
13. 9 credit hours to be selected from Biochemistry 3906 or 3907, 4002, 4101, 4102, 4103, 4104, 4105, 4200, 4201, 4210 or 4211, 4230, 4231-4239;
14. Psychology 1000, 1001, 2521, 2910, 2911, 2930, one of the former 3250, 3810, 3830, 3840, or 3860, 3800, 3820, 3900, one further course in Psychology chosen from the following: 3050, 3100, 3251, 3350, 3450, 3620, 3650, 3750; any research experience course and one of Psychology 4850, 4851, 4852, 4853, or 4854; or, any selected topics course and Psychology 4870;
15. Either Biochemistry 499A/B or Psychology 499A/B; and
16. Chemistry 2301, 2400, 2401.

Notes:

3. *As provided for under the Graduation Requirements for the Honours Degree of Bachelor of Science, Honours candidates must obtain a grade of "B" or better, or an average of 75% or higher in all the required courses listed in Clauses 3., 4., 5., 6. and 7. above, except those at the 1000 level.*
4. *Students in first year intending to follow this program should note the regulations for admission to Major programs in Psychology and that the deadline for submission of a completed application form to the Department of Psychology is June 1 for the Fall semester.*

10.2.7 Biochemistry (Nutrition) and Psychology (Behavioural Neuroscience) Joint Honours

Note:

Students completing this program cannot receive credit for Psychology 2920.

The following courses (or equivalent) are required:

8. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
9. Chemistry 1050 and 1051 (or 1200 and 1001), Biology 1001 and 1002, Mathematics 1000, Physics 1020 or 1050, and 1021 (or 1051).

10. Biochemistry 2200 (or 2100), 2201, 2600, 2901, 3203, 3206, 3906, Medicine 310A/B, 4300, 4301, 4502, one course chosen from: Biochemistry 3052, 3108, 3402, 3600, 4002, 4105, 4200, 4230, 4240, 4241-4249, Biology 3050.
11. Psychology 1000, 1001, 2521, 2910, 2911, 2930, one of the former 3250, 3810, 3830, 3840, or 3860, 3800, 3820, 3900, one further course in Psychology chosen from the following: 3050, 3100, 3251, 3350, 3450, 3620, 3650, 3750; any research experience course and one of Psychology 4850, 4851, 4852, 4853, or 4854; or, any selected topics course and Psychology 4870.
12. Either Biochemistry 499A/B or Psychology 499A/B.
13. Chemistry 2400.
14. Other courses to complete at least the prescribed minimum of 120 credit hours in courses for the Joint Honours Degree.

Notes:

3. *As provided for under the Graduation Requirements for the Honours Degree of Bachelor of Science, Honours candidates must obtain a grade of "B" or better, or an average of 75% or higher in all the required courses listed in Clauses 3., 4. and 5. above, except those at the 1000 level.*
4. *Students in first year intending to follow this program should note the regulations as outlined for admission to Major programs in Psychology and that the deadline for submission of a completed application form to the Department of Psychology is June 1 for the Fall semester.*

10.2.9 Biology and Psychology Joint Honours

Note:

Students completing this program cannot receive credit for Psychology 2920.

The following courses (or equivalent) are required:

7. Biology 1001, 1002, 2060, 2250, 2600, 2900; one of 3401, 3402, 4245, 4404; four Biology electives at the 2000, 3000 or 4000 level not including Biology 499A or 499B.
8. Psychology 1000, 1001, 2520 (or 2521), 2910, 2911, 2930, one of the former 3250, 3810, 3830, 3840, or 3860, 3800; 3900, 4910; one of the following: 3050, 3100, 3251, 3350, 3450, 3620, 3650; one further 4000 level Psychology research experience course.
9. Biology or Psychology 3750, 4701, 499A/B.
10. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
11. Mathematics 1000; Chemistry 1050 (or 1200), 1051 (or 1001), 2400, and 2401; Physics 1020 (or 1050) and 1021 (or 1051); Biochemistry 2201 or the former 2101 and 3106.
12. Other courses, if necessary, to complete at least 120 credit hours of courses.

10.2.10 Biology and Psychology (Behavioural Neuroscience) Joint Honours

Note:

Students completing this program cannot receive credit for Psychology 2920.

The following courses (or equivalent) are required:

8. Biology 1001, 1002, 2060, 2250, 2600, 2900; one of 3401, 3402, 4245, 4404; five Biology electives at the 2000, 3000 or 4000 level not including Biology 499A or 499B.
9. Psychology 1000, 1001, 2521, 2910, 2911, 2930, one of the former 3250, 3810, 3830, 3840, or 3860, 3800, 3820, 3900; one further course in Psychology chosen from the following: 3050, 3100, 3251, 3350, 3450, 3620, 3650, 3750; any research experience course and one of Psychology 4850, 4851, 4852, 4853, or 4854; or, any selected topics course and Psychology 4870.
10. Biology or Psychology 499A/B.
11. Biochemistry 2201 or the former 2101, 3106.
12. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
13. Mathematics 1000 and 1001; Physics 1020 (or 1050) and 1021 (or 1051); Chemistry 1050, 1051, 2400, and 2401.
14. Other courses, if necessary, to complete at least 120 credit hours of courses.

Note:

As provided for under the Graduation Requirements for the Honours Degree of Bachelor of Science, Honours candidates must obtain a grade of "B" or better, OR average of 75% or higher in all the required courses listed in Clauses 1, 2, 3, and 4 above, except those at the 1000 level.

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Consultations Sought From	Comments Received
Humanities and Social Sciences	
Education	
Engineering and Applied Science	
Grenfell Campus (Arts & Social Sciences)	
Human Kinetics and Recreation	
Marine Institute	
Social Work	
Science	
• Biochemistry	
• Biology	
• Chemistry	
• Earth Sciences	
• Mathematics and Statistics	
• Ocean Sciences	
• Physics and Physical Oceanography	

E-mail from Psychology department requesting feedback on calendar changes sent October 11, 2018.

The Psychology department is proposing a set of calendar changes. Please find attached a set of proposals outlining the following changes

A) Renaming PSYC 3250 to 3810

B) Addition of a new course (PSYC 3251: Learning)

C) Addition of a new course (PSYC 3840: Neurobiology of Stress)

D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)

E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors

F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience

G) Addition of three new Selected Topics courses

H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Please send your comments on these proposals to psychdeputyhead@mun.ca.

If you have any questions, please feel free to contact me.

Christina

Replies from other units:

Marine Institute:

Dear Christina,

Thank you for the opportunity to review and comment on the calendar change proposals from Psychology. These changes will have no impact on Marine Institute programs and we support the proposal.

Regards,

Bev

Bev Fleet
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0369
FAX: 709-778-0535
Bev.Fleet@mi.mun.ca

Engineering:

Dear Dr. Thorpe,

Thank you for the opportunity to comment on the proposed Calendar changes to the Psychology Program.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program.

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

Biology:

Hi Christina,

The Biology Undergraduate Committee has reviewed your proposed calendar changes. We have no concerns with those changes, and are pleased to see the introduction of interesting new courses in your department.

Best wishes,

Suzanne

--

Dr. Suzanne Dufour
Associate Professor
Department of Biology
Memorial University of Newfoundland
St. John's, NL
A1B 3X9
Canada

Tel: (709) 864-8025
Fax: (709) 864-3018
<http://www.mun.ca/biology/dufour/index.php>

Education:

Hello,

Thank you for the opportunity to provide feedback on this proposal. These changes will not impact the Faculty of Education's programs.

Thank you,

Meghan

Meghan Collett, B.Sc., M.Sc. | Coordinator of Academic Programs

Faculty of Education
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1B 3X8
G.A.Hickman Building | Room ED 2020
Tel: 709 864-7554 |
Fax: 709 864-2623

Social Work:

Hello Christina,

I have reviewed your calendar changes and have no suggestions or comments. Your proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW

Associate Dean Undergraduate Programs
School of Social Work, Memorial University
St. John's, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

HKR:

Hello,

I have reviewed the calendar change proposals from Psychology and have no concerns.

Linda

Linda E. Rohr PhD

Dean, School of Human Kinetics & Recreation
Memorial University
t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca
PE 2027

LIBRARY REPORT



Collections Strategies
Division
Queen Elizabeth II Library
St. John's, NL, A1B 3Y1

31 October 2018

TO: Christina Thorpe, Deputy Head, Undergraduate Studies, Psychology Department

FROM: Alison Ambi, Head, Collections Strategies

SUBJECT: Behavioural neuroscience calendar changes and course proposals

With respect to the following set of changes being proposed by the Psychology department:

- A) Renaming PSYC 3250 to 3810
- B) Addition of a new course (PSYC 3251: Learning)
- C) Addition of a new course (PSYC 3840: Neurobiology of Stress)
- D) Addition of a new course (PSYC 3860: Neuropsychopharmacology)
- E) Addition of a new course (PSYC 2521: Introduction to Behavioural Neuroscience) - This course will have the same lecture component as PSYC 2520 but will also include a laboratory component for Behavioural Neuroscience majors
- F) Adding a laboratory component to PSYC 3800: Cellular and Molecular Neuroscience
- G) Addition of three new Selected Topics courses
- H) Program changes to reflect these new courses and to allow Behavioural Neuroscience majors more flexibility in terms of additional science requirements.

Course renaming, program requirement changes, and additions of laboratory components

Proposal components A and H, and E and F do not change the content of what is taught in the psychology department, and will consequently not place any additional demands on library resources.

New Courses (Proposal components B, C, and D)

A review of some of the topics to be covered in the new courses indicates that the Library has a sufficient range of supplementary resources to support term papers and research projects likely to be pursued by students. Besides the robust physical book collection in psychology and the thousands of ebooks available via our general academic ebook subscription packages, the Library subscribes to PsycBooks and the Springer psychology front-list ebook package, both of which provide online access to key current monograph literature on a range of psychology topics. The library also provides online access to two key book series ranked highly by Scimago (Table 2 in the appendices). The Library subscriptions to PsycInfo and various other indexes (for example, Scopus, Web of Science, and PubMed) are available to help guide students to relevant psychology literature.

New Selected Topics Courses (Proposal component G)

Students in these courses are likely to be reliant on recent journal literature. Of the top 50 Scimago ranked journals in Behavioural Neuroscience (see Table 1 in the appendices), the library provides current access to 32 journals, 14 are available with a 12 month embargo, and back issues up to 2015 are available online for a further 3. Students will therefore have immediate online access to over 90% of the articles from these journals. There is only one journal within the top 50 list (ranked 37th) for which the Library does not provide immediate online access to at least some issues. Combined with the library's document delivery service, which would allow students to acquire articles from any journal within 24-48 hours, the students' needs should be adequately supported.

Appendices

Table 1 – Top-Ranked Behavioural Neuroscience Journals as Identified by Scimago

Ra nk	Title	Publisher	Categories	Curre nt Acces s Availa ble?	Emb argo Lengt h	Notes
1	Neuroscience and Biobehavioral Reviews	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
2	Brain, Behavior, and Immunity	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
3	Neurobiology of Learning and Memory	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		
4	Current Opinion in Behavioral Sciences	Elsevier Limited	Behavioral Neuroscience (Q1)	y		
5	Genes, Brain and Behavior	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N	12 months	
6	Cognitive, Affective and Behavioral Neuroscience	Springer New York LLC	Behavioral Neuroscience (Q1)	Y		
7	Frontiers in Behavioral Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access
8	Neuropsychologia	Elsevier Ltd.	Behavioral Neuroscience (Q1)	y		
9	Hormones and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q1)	y		

10	Journal of Experimental Psychology: Human Perception and Performance	American Psychological Association	Behavioral Neuroscience (Q1)	Y		
11	Journal of Sleep Research	Blackwell Publishing Inc.	Behavioral Neuroscience (Q1)	N		Publisher platform access until 2015
12	Behavioral Neuroscience	American Psychological Association	Behavioral Neuroscience (Q1)	Y		
13	Frontiers in Human Neuroscience	Frontiers Media S.A.	Behavioral Neuroscience (Q1)	Y		Open Access Publisher platform access until 2015
14	Chemical Senses	Oxford University Press	Behavioral Neuroscience (Q1)	N	12 months	
15	Behavioural Brain Research	Elsevier BV	Behavioral Neuroscience (Q1)	y		
16	Developmental Psychobiology	John Wiley & Sons Inc.	Behavioral Neuroscience (Q1)	N	12 months	
17	Social Neuroscience	Taylor & Francis	Behavioral Neuroscience (Q1)	N	12 months	
18	Sleep Health	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
19	Human Factors	SAGE Publications	Behavioral Neuroscience (Q2)	N		Publisher platform access until 2017
20	Brain Imaging and Behavior	Springer New York LLC	Behavioral Neuroscience (Q2)	N	12 months	Publisher platform access until 2015
21	Journal of Neuropsychology	Wiley-Blackwell	Behavioral Neuroscience (Q2)	N	12 months	Publisher platform

						access until 2016
22	Stress: the International Journal on Biology of Stress	Taylor & Francis	Behavioral Neuroscience (Q2)	N	18 months	
23	Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology	Springer Verlag	Behavioral Neuroscience (Q2)	N	12 months	Publisher platform access until 2015
24	Learning Disability Quarterly	SAGE Publications Inc.	Behavioral Neuroscience (Q2)	Y		
25	Journal of Research on Adolescence	Blackwell Publishing Inc.	Behavioral Neuroscience (Q2)	N	12 months	
26	Journal of the Experimental Analysis of Behavior	Wiley-Blackwell	Behavioral Neuroscience (Q2)	N	12 months	
27	Translational Behavioral Medicine	Springer New York LLC	Behavioral Neuroscience (Q2)	Y	0 months	
28	Alcohol	Elsevier BV	Behavioral Neuroscience (Q2)	y		
29	Pharmacology Biochemistry and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
30	Epilepsy and Behavior	Elsevier Inc.	Behavioral Neuroscience (Q2)	y		
31	Evolutionary Psychology	Human Nature Review	Behavioral Neuroscience (Q2)	Y		Open Access
32	Physiology and Behavior	Elsevier BV	Behavioral Neuroscience (Q2)	y		
33	Brain and Behavior	John Wiley and Sons Inc.	Behavioral Neuroscience (Q2)	Y		Open Access

34	Brain, Behavior and Evolution	S. Karger AG	Behavioral Neuroscience (Q2)	N	12 months
35	Behavioral and Brain Functions	BioMed Central	Behavioral Neuroscience (Q2)	Y	
36	Nature and Science of Sleep	Dove Medical Press Ltd.	Behavioral Neuroscience (Q3)	Y	Open Access
37	Adaptive Human Behavior and Physiology	Springer International Publishing AG	Behavioral Neuroscience (Q3)	N	
38	Trends in Neuroscience and Education	Elsevier GmbH	Behavioral Neuroscience (Q3)	y	
39	Behavioural Processes	Elsevier BV	Behavioral Neuroscience (Q3)	y	
40	Behaviour	Brill	Behavioral Neuroscience (Q3)	Y	
41	International Journal of Alzheimer's Disease	Hindawi Publishing Corporation	Behavioral Neuroscience (Q3)	Y	Open Access
42	Clinical Psychopharmacology and Neuroscience	Korean College of Neuropsychopharmacology	Behavioral Neuroscience (Q3)	Y	Open Access
43	Review Journal of Autism and Developmental Disorders	Springer New York	Behavioral Neuroscience (Q3)	N	12 months
44	Journal of Eating Disorders	BioMed Central	Behavioral Neuroscience (Q3)	Y	
45	Learning and Behavior	Springer New York LLC	Behavioral Neuroscience (Q3)	N	12 months

46	Behavioral and Brain Sciences	Cambridge University Press	Behavioral Neuroscience (Q3)	N	12 months	
47	Sexual Medicine	Elsevier Inc.	Behavioral Neuroscience (Q3)	y		
48	Sleep Science	Federacao Latino-Americana de Sociedades do Sono	Behavioral Neuroscience (Q3)	Y		Open Access
49	Integrative Psychological and Behavioral Science	Springer Science + Business Media	Behavioral Neuroscience (Q3)	N	12 months	
50	Journal of Contextual Behavioral Science	Elsevier BV	Behavioral Neuroscience (Q3)	y		

Table 2 – Top-Ranked Books series for behavioural neuroscience identified by Scimago

Title	Publisher	Categories	URL
Advances in the Study of Behavior	Elsevier	Behavioral Neuroscience (Q1)	https://www.sciencedirect.com/journal/advances-in-the-study-of-behavior/issue
Current Topics in Behavioral Neurosciences	Springer	Behavioral Neuroscience (Q1)	https://link.springer.com/book

RESOURCE IMPLICATIONS

N/A

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

N/A

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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):
 - ☐ Mathematics 2320 – description update
- ☐ 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

2320 Discrete Mathematics

RATIONALE

We propose to update the calendar description of Mathematics 2320.

The departmental undergraduate studies committee has carried out a thorough survey of math 2320 instructors and instructors of courses which list math 2320 as a prerequisite, and have determined that the course description in the calendar should be updated to reflect the true nature of the course.

CALENDAR CHANGES

Updated course description for math 2320, in section 12.8 of the 2018-19 Faculty of Science Regulations:

2320 Discrete Mathematics covers basic concepts of mathematical reasoning; logic and quantifiers, methods of proof, sets and set operations, functions, and relations including, equivalence relations and partial orders, countable and uncountable sets. ~~as~~ These concepts will be illustrated through the notions of congruence and divisibility of integers, mathematical induction and recursion, principles of counting, permutations, and combinations, and the Binomial Theorem, and elementary probability.

CR: the former Computer Science 2740 or the former Engineering 3422 or Engineering 4424

PR: MATH 1001 or 2050

CALENDAR ENTRY AFTER CHANGES

2320 Discrete Mathematics covers basic concepts of mathematical reasoning: logic and quantifiers, methods of proof, sets and set operations, functions and relations, equivalence relations and partial orders, countable and uncountable sets. These concepts will be illustrated through the congruence and divisibility of integers, induction and recursion, principles of counting, permutations and combinations, the Binomial Theorem, and elementary probability.

CR: the former Computer Science 2740 or the former Engineering 3422 or Engineering 4424

PR: MATH 1001 or 2050

SECONDARY CALENDAR CHANGES

In the Grenfell calendar the math 2320 course description should be updated as well. There appears to be an error in the course description on p. 218 in the Grenfell Campus course description. We propose as a secondary change to replace this entry with the same description as proposed for the St. John's Campus.

~~2320 Discrete Mathematics are basic concepts of mathematical reasoning, sets and set operations, functions, relations including equivalence relations and partial orders as illustrated through the notions of congruence and divisibility of integers, mathematical induction, principles of counting, permutations, combinations and the Binomial Theorem.~~ covers basic concepts of mathematical reasoning: logic and quantifiers, methods of proof, sets and set operations, functions and relations, equivalence relations and partial orders, countable and uncountable sets. These concepts will be illustrated through the congruence and divisibility of integers, induction and recursion, principles of counting, permutations and combinations, the Binomial Theorem, and elementary probability.

CR: the former Computer Science 2740

PR: MATH 1001 or MATH 2050

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Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Unit	Feedback received?
Humanities and Social Sciences	
Business Administration	Yes - no concerns
Education	
Engineering and Applied Science	
Human Kinetics and Recreation	Yes - no concerns
Marine Institute	
Medicine	Yes - no concerns
Music	
Nursing	
Pharmacy	Yes - no concerns
Science	
Social Work	Yes - no concerns
Library	Yes – no resource implications
Arts and Social Science	
Science and the Environment	
Fine Arts	

RESOURCE IMPLICATIONS

None, other than time required to attend to adjusting course schedules to ensure students can take the new prerequisite.

Math Consult

From: Davis, Erin <emdavis@mun.ca>
Sent: November-20-18 8:39 AM
To: mathconsult@mun.ca
Cc: Glew, Csop
Subject: FW: Calendar change: Math 2320 - consultation requested
Attachments: math 2320 course description update.pdf

Hi Tara,

Pharmacy has no concerns with this proposed change either.

Erin

--

Dr. Erin Davis
Associate Dean Undergraduate Studies
Chair of the Committee on Undergraduate Studies

Assistant Professor | School of Pharmacy

Clinical Assistant Professor | Discipline of Family Medicine Memorial University of Newfoundland

T 709 864-8815

F 709 864-6941

E emdavis@mun.ca

-----Original Message-----

From: Math Consult [mailto:mathconsult@mun.ca]

Sent: November-14-18 3:11 PM

To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca

Subject: Calendar change: Math 2320 - consultation requested

Dear Colleagues,

Math & Stats proposes to update the course description for math 2320 to more accurately reflect the true nature of the course as it is taught at the St.

John's campus. Attn: especially to Grenfell Science.

Feedback, if any, is appreciated at your earliest convenience, and by Dec.

3, 2018.

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

Math Consult

From: Rohr, Linda <lrohr@mun.ca>
Sent: November-15-18 7:18 PM
To: Math Consult
Subject: Re: Calendar change: Math 2320 - consultation requested

Hi Tara,

I have reviewed the proposed changes to Math 2320 and have no concerns.

Linda

Linda E. Rohr PhD
Dean, School of Human Kinetics & Recreation
Memorial University
t: 709.864.8129 f: 709.864.7531 e: lrohr@mun.ca
PE 2027

From: Math Consult <mathconsult@mun.ca>
Date: Wednesday, November 14, 2018 at 3:15 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, Linda Rohr <lrohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "Sutherland, Ian D" <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>, "lrobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>
Subject: Calendar change: Math 2320 - consultation requested

Dear Colleagues,

Math & Stats proposes to update the course description for math 2320 to more accurately reflect the true nature of the course as it is taught at the St. John's campus. Attn: especially to Grenfell Science.

Feedback, if any, is appreciated at your earliest convenience, and by Dec. 3, 2018.

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

Math Consult

From: cvardy@mun.ca
Sent: November-15-18 2:37 PM
To: mathconsult@mun.ca
Cc: Margaret.Steele@med.mun.ca
Subject: FW: Calendar change: Math 2320 - consultation requested
Attachments: math 2320 course description update.pdf

Good Afternoon

The Faculty of Medicine has reviewed the proposed description update for Math 2320 and is supportive.

CATHY VARDY, MD, FRCPC | VICE DEAN AND PROFESSOR OF PEDIATRICS

Faculty of Medicine
Health Sciences Centre
Room M2M319
Memorial University of Newfoundland
St. John's, Newfoundland | A1B 3V6

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Vision: Through excellence, we will integrate education, research and social accountability to advance the health of the people and communities we serve.

Destination Excellence: Faculty of Medicine Strategic Plan 2018-2023

Follow us: Facebook www.facebook.com/MUNMedicine | Twitter www.twitter.com/MUNMed (optional)

-----Original Message-----

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: Wednesday, November 14, 2018 3:11 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; 'Lawrence Bauer' <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; Steele, Dr. Margaret: Dean of Medicine <DeanofMedicine@med.mun.ca>; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca
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John's campus. Attn: especially to Grenfell Science.

Feedback, if any, is appreciated at your earliest convenience, and by Dec. 3, 2018.

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

Math Consult

From: adeanugradswk <adeanugradswk@mun.ca>
Sent: November-15-18 11:32 AM
To: 'Math Consult'
Subject: RE: Calendar change: Math 2320 - consultation requested

Hello Tara,

I have reviewed your calendar changes and have no suggestions or comments. These proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW
Associate Dean Undergraduate Programs
School of Social Work, Memorial University St. John's, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

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To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca
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Feedback, if any, is appreciated at your earliest convenience, and by Dec. 3, 2018.

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

Math Consult

From: Ambi, Alison <aambi@mun.ca>
Sent: November-15-18 10:03 AM
To: Math Consult
Subject: RE: Calendar change: Math 2320 - consultation requested

Hello Tara,
I have reviewed the proposed changes to Math 2320 and the changes will not place any additional demands on library resources.
Alison

Alison Ambi
Head, Collection Strategies
709 864 7125

QEL Library
Memorial University of Newfoundland
www.library.mun.ca

-----Original Message-----

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: November 14, 2018 3:11 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca
Subject: Calendar change: Math 2320 - consultation requested

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Feedback, if any, is appreciated at your earliest convenience, and by Dec. 3, 2018.

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

Math Consult

From: Lawrence Bauer <lbauer@mun.ca>
Sent: November-14-18 4:22 PM
To: Math Consult
Subject: Re: Calendar change: Math 2320 - consultation requested

Hello:

Thank you for the opportunity to comment on this proposal. The Faculty of Business Administration has no concerns with the proposed changes.

--larry

On Nov 14, 2018, at 3:10 PM, Math Consult <mathconsult@mun.ca> wrote:

Dear Colleagues,

Math & Stats proposes to update the course description for math 2320 to more accurately reflect the true nature of the course as it is taught at the St. John's campus. Attn: especially to Grenfell Science.

Feedback, if any, is appreciated at your earliest convenience, and by Dec. 3, 2018.

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

<math 2320 course description update.pdf>

Larry Bauer, Ph.D.
Associate Professor of Finance
Associate Dean (Undergraduate Programs)
Faculty of Business Administration
Memorial University of Newfoundland
St. John's Nfld, A1B 3X5

www: <http://www.business.mun.ca>
e-mail: lbauer@mun.ca
Tel: (709) 864-8512
Fax: (709) 864-8954

SSRN: <http://ssrn.com/author=327175>

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):
 - ☐ Update course description and add additional prerequisite to math 3000
- ☐ 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: added prerequisite necessitates several program updates

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

MATH 3000 Real Analysis I

RATIONALE

The proposal is to update the course description to more accurately reflect what is taught in the course, and to add Math 2320 to the prerequisite requirements for Math 3000. We believe that this addition would result in a more consistent and productive Math 3000, enhancing the students' learning experience and increasing their chance of success in Math 3000 as well as other courses in their program.

Math 2320 is an introduction to fundamental concepts in mathematics such as sets, functions, proof and logic. Students learn to read and write mathematical statements and proofs, skills that are valuable in any branch of mathematics or statistics. In addition, they are introduced to important ideas such as injectivity and surjectivity of functions, congruence and divisibility of integers, and counting techniques involving combinations and permutations, which are useful in many further courses such as real analysis, combinatorics, probability, algebra, and number theory. Given the importance of these skills and ideas, we believe that Math 2320 should be taken by all students of mathematics and statistics.

Math 3000 is a first course in real analysis. To understand this material, it is important that students are familiar with different methods of proof and basic logical concepts, like the difference between converse and contrapositive, and multiply quantified statements ("for every epsilon there exists a delta ..."). Given the importance of these topics, it is customary to spend the first few weeks of Math 3000 giving an overview. This tends to bore the students who have already seen these topics in Math 2320 and to give them the impression that the course is easy and something they have already seen, so they are disinterested before even reaching the subject of analysis. On the other hand, students who have not taken Math 2320 are often intimidated or overwhelmed by the pace, as the instructor is attempting to review much of the fundamental material from Math 2320 in just a few weeks.

Requiring Math 2320 as a prerequisite to Math 3000 would improve this situation in several ways. First, it would level the playing field for all incoming students, regardless of program. Second, it would allow the course to make a stronger first impression on students, as they would be learning about analysis from the outset, and not three weeks into the semester. Finally, it will free up valuable time in the semester, giving the instructor more time to develop the material, and the students more time to absorb it. More generally, it would ensure that all mathematics students have a course in formal mathematical proof techniques, and repair a gap in the program of applied mathematics students.

CALENDAR CHANGES

3000 Real Analysis I covers ~~proof techniques, the~~ structure of the real numbers, sequences, and limits, compactness, continuity, uniform continuity, differentiation, and the Mean Value Theorem.

CR: the former MATH 2001

LH: 1.5

PR: MATH 2000 and 2320

CALENDAR ENTRY AFTER CHANGES

3000 Real Analysis I covers the structure of the real numbers, sequences and limits, compactness, continuity, uniform continuity, differentiation, and the Mean Value Theorem.

CR: the former MATH 2001

LH: 1.5

PR: MATH 2000 and 2320

SECONDARY CALENDAR CHANGES

Any programs requiring math 3000 will have to now also include math 2320. In particular, this will increase the number of MATH courses required for the applied math program to 16, one more than the recommended limit of 15. This change is warranted because: 1) the total number of required courses beyond the core B.Sc. requirements (two CRW, two math, and two of two other science courses) is still lower than the average for science department major programs (14 compared to an average just over 17). Even with the addition of this course the applied math major will have fewer requirements than most. Secondly, the benefit to the students justifies this exception: students who do math 2320 prior to 3000 perform significantly better in the latter.

10.1.2 Applied Mathematics and Economics Joint Major

(The committee notes that this program needs to be re-examined as 4131 and 4132 are inactive.)

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

1. Mathematics 1000, 1001, 2000, 2050, 2051, 2130, 2260, 2320, 3000, 3100, 3202, 4432, Statistics 2550.
2. Either Mathematics 3132 and 4131 or 3161 and 4160.
3. A computing course early in the program is required. Computer Science 1510 is highly recommended.

4. Economics: 1010 (or the former 2010), 1020 (or the former 2020), 2550, 3000, 3001, 3010, 4550, 4551.
5. Eighteen further credit hours chosen from among the various Economics courses in consultation with the Head of the Department or delegate, including at least 9 credit hours at the 4000 level.

10.1.3 Applied Mathematics and Physics Joint Major

Required course for this degree are:

1. Six credit hours in Critical Reading and Writing (CRW) courses including at least 3 credit hours in English courses.
2. A computing course. Computer Science 1510 is recommended.
3. Six credit hours in science other than Mathematics or Physics (if Computer Science is chosen then Computer Science 1510 may be counted as 3 of these hours).
4. Mathematics 1000, 1001, 2000, 2050, 2051, 2260, 2320, 3000, 3001, 3132, 3202.
- ~~5. At least one of Mathematics 2130 or Mathematics 2320.~~
6. Physics 1050 (or 1020), 1051, 2053, 2055, 2750 (or 2056), 2820, 3220, 3400, 3500, 3750.
7. Mathematics 3161 or Physics 3820.
8. At least 15 additional credit hours chosen from Applied Mathematics and Physics courses numbered 3000 or above. At least 3 hours are required from Applied Mathematics and 6 hours are required from Physics.
9. A writing course. Any one of Mathematics 2130, Physics 3900, Mathematics 419A/B, or Physics 490A/B is acceptable.

10.2.1 Applied Mathematics and Chemistry Joint Honours

The following courses are required:

1. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
2. A computing course. Computer Science 1510 is recommended.
3. Biochemistry 2201 or the former 2101, or 2901. 4. Physics 1050 (or 1020) and 1051 (or 1021).
4. Mathematics 1000, 1001, 2000, 2050, 2051, ~~2130~~, 2260, 2320, 3000, 3001, 3132, 3161, 3202, 3210, 4160.
5. Chemistry 1050 and 1051 (or 1200 and 1001), 2100, 2210, 2301, 2302, 2400, 2401, 3110, 3210 or 3211, 3303.
6. Six additional credit hours chosen from courses numbered 3000 or higher that are offered by the Department of Chemistry.

7. An Honours Dissertation (Mathematics 419A/B or Chemistry 490A/B). The topic of the Honours Dissertation must have the prior approval of the Heads of the two Departments. A faculty member of either Department may act as supervisor.
8. A sufficient number of elective courses to bring the degree up to a total of 120 credit hours.
9. Mathematics 2130 is recommended.

10.2.2 Applied Mathematics and Physics Joint Honours

The following courses are required:

1. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
2. A computing course. Computer Science 1510 or 1001 is recommended.
3. Six credit hours in a science other than Mathematics or Physics (if Computer Science is chosen then Computer Science 1510 may be counted as three of these hours).
4. Mathematics 1000, 1001, 2000, 2050, 2051, 2260, 2320, 3000, 3001, 3132, 3202, 3210.
5. ~~At least one of Mathematics 2130 or Mathematics 2320.~~
6. Physics 1050 (or 1020), 1051, 2053, 2055, 2750 (or 2056), 2820, 3220, 3230, 3400, 3500, 3750, and one of 3800 or 3900.
7. One of Mathematics 3161 or Physics 3820 and one of Mathematics 4160 or Physics 4820.
8. Physics 490A/B or Mathematics 419A/B.
9. Twelve additional credit hours chosen from courses numbered 4000 or higher that are offered by the Department of Mathematics and Statistics or the Department of Physics and Physical Oceanography. At least 3 credit hours must be selected in each of Applied Mathematics and Physics.
10. Twelve credit hours in applicable elective courses. Mathematics 2130 is recommended.

The topic for the Honours project or thesis, Mathematics 419A/B or Physics 490A/B, must be chosen with the prior approval of both departments.

11.8.4 Major in Applied Mathematics (B.Sc. Only)

As a component of the Degree Regulations for the General Degree of Bachelor of Science, a student shall complete the following requirements:

1. Mathematics 1000, 1001, 2000, 2050, 2051, 2260, 2320, 3000, 3001, 3100, 3132, 3161, 3202, 4160, 4190.

2. Three credit hours in courses numbered 3000 or higher that are offered by the Department of Mathematics and Statistics, excluding the former Mathematics 3330.
3. A computing course, early in your program. Computer Science 1510 is highly recommended.
4. A designated technical writing course offered by a Science department. Mathematics 2130 is recommended. The technical writing course is prerequisite to some 3000-level courses.
5. Physics 1050 (or 1020) and 1051.
6. A statistics course. Statistics 2410 or 3410 is recommended.

11.8.7 Honours in Applied Mathematics (B.Sc. Only)

See Degree Regulations for the Honours Degree of Bachelor of Science. A student shall complete the following requirements:

1. Mathematics 1000, 1001, 2000, 2050, 2051, 2130, 2260, 2320, 3000, 3001, 3100, ~~3444~~, 3132, 3161, 3202, 3210, 4160, 4180, 4190, 419A/ B.
2. At least one of Mathematics 4162 or 4170.
3. Statistics 2410 or 3410.
4. Nine further credit hours in courses numbered 3000 or higher that are offered by the Department of Mathematics and Statistics, excluding the former Mathematics 3330, at least 3 of which must be in courses numbered 4000 or higher.
5. A computing course early in the program is required. Computer Science 1510 is recommended.
6. Physics 1050 (or 1020), 1051, 2820, 3220.

11.8.9 Honours in Statistics

See Degree Regulations for the Honours Degree of Bachelor of Science or Bachelor of Arts (Honours) Degree Regulations (as appropriate). A student shall complete the following requirements:

1. Mathematics 1000, 1001, 2000, 2050, 2051, 2320, 3000, 3001, 3132, 3202, 3210, Statistics 2410 or 3410, 2560, 3411, 3520, 3521, 4410, 4530, 4590, 459A/B.
2. Statistics 2500 or 2550. Statistics 2550 is recommended.
3. Eighteen further credit hours in Statistics courses including at least 12 credit hours in courses numbered 4000 or higher excluding Statistics 4581.
4. A computing course. Computer Science 1510 is recommended.
5. Mathematics 4000 is recommended.

11.8.6 Major in Statistics

As a component of the Degree Regulations for the General Degree of Bachelor of Science or the Degree Regulations for the General Degree of Bachelor of Arts, as appropriate, a student shall complete the following requirements:

1. Mathematics 1000, 1001, 2000, 2050, 2051, Statistics 2410 or 3410, 2560, 3411, 3520, 3521, 4530.
2. Statistics 2500 or 2550. Statistics 2550 is recommended.
3. Nine further credit hours in Statistics courses numbered 3000 or higher, at least 6 credit hours of which must be in courses numbered 4000 or higher excluding Statistics 4581.
4. A computing course. Computer Science 1510 is recommended.
5. Mathematics 2320, 3000 and 3001 are recommended.

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Appendix Page

CONSULTATIONS SOUGHT

Unit	Feedback received?
Humanities and Social Sciences	
Business Administration	Yes - no concerns
Education	
Engineering and Applied Science	
Human Kinetics and Recreation	Yes - no concerns
Marine Institute	
Medicine	Yes - no concerns
Music	Yes - no concerns
Nursing	
Pharmacy	Yes - no concerns
Science	
Chemistry	
Physics	
Economics	
Social Work	Yes - no concerns
Library	Yes – no resource implications
Arts and Social Science	
Science and the Environment	
Fine Arts	

RESOURCE IMPLICATIONS

None, other than time required to attend to adjusting course schedules to ensure students can take the new prerequisite.

Math Consult

From: Sutherland, Ian D <isutherland@mun.ca>
Sent: November-21-18 9:39 AM
To: Math Consult
Subject: Re: Calendar change: Math 3000 - consultation requested

The School of Music has no issue with the proposed changes.

Ian Sutherland, PhD (Exon)
DEAN
School of Music
Memorial University
www.mun.ca/music
1 (709) 864 7486

> On Nov 14, 2018, at 2:45 PM, Math Consult <mathconsult@mun.ca> wrote:
>
> Dear Colleagues,
>
> Math & Stats is proposing to update the course description for math
> 3000, and also include math 2320 in the prerequisite requirements for math 3000.
> This necessitates changes to several joint programs.
>
> Attn: especially to: CHEMISTRY, PHYSICS, AND ECONOMICS
>
> Other programs requiring math 3000 are not affected as math 2320 is
> already a requirement. Feedback is appreciated at your earliest
> convenience, and by Dec. 3, 2018.
>
> --
> Tara Stuckless
> HH 3004, ext. 8914
> Chair, Undergraduate Studies Committee Dept. of Mathematics and
> Statistics
>
>
> <math 3000 addition of prerequisite.pdf>

Math Consult

From: Davis, Erin <emdavis@mun.ca>
Sent: November-20-18 8:38 AM
To: mathconsult@mun.ca
Cc: Glew, Csop
Subject: FW: Calendar change: Math 3000 - consultation requested
Attachments: math 3000 addition of prerequisite.pdf

Hi Tara,

Pharmacy has no concerns with the proposed changes.

Erin

--

Dr. Erin Davis
Associate Dean Undergraduate Studies
Chair of the Committee on Undergraduate Studies

Assistant Professor | School of Pharmacy

Clinical Assistant Professor | Discipline of Family Medicine Memorial University of Newfoundland

T 709 864-8815

F 709 864-6941

E emdavis@mun.ca

-----Original Message-----

From: Math Consult [mailto:mathconsult@mun.ca]

Sent: November-14-18 2:41 PM

To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>; Irobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca

Subject: Calendar change: Math 3000 - consultation requested

Dear Colleagues,

Math Consult

From: Rohr, Linda <lerohr@mun.ca>
Sent: November-15-18 7:16 PM
To: Math Consult
Subject: Re: Calendar change: Math 3000 - consultation requested

Hi Tara,

No concerns from HKR with the proposed changes to Math 3000.

Linda

Linda E. Rohr PhD
Dean, School of Human Kinetics & Recreation
Memorial University
t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca
PE 2027

From: Math Consult <mathconsult@mun.ca>
Date: Wednesday, November 14, 2018 at 2:45 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Bauer, Larry" <lbauer@mun.ca>, "Collett, Meghan" <mcollett@mun.ca>, "engrconsult@mun.ca" <engrconsult@mun.ca>, Linda Rohr <lerohr@mun.ca>, "miugconsultations@mi.mun.ca" <miugconsultations@mi.mun.ca>, "deanofmedicine@med.mun.ca" <deanofmedicine@med.mun.ca>, "Sutherland, Ian D" <isutherland@mun.ca>, DeanNurse <DeanNurse@mun.ca>, "pharminfo@mun.ca" <pharminfo@mun.ca>, Dean of Science <deansci@mun.ca>, adeanugradswk <adeanugradswk@mun.ca>, Library Correspondence <univlib@mun.ca>, "lrobinson@grenfell.mun.ca" <lrobinson@grenfell.mun.ca>, "ssedean@grenfell.mun.ca" <ssedean@grenfell.mun.ca>, "thennessey@grenfell.mun.ca" <thennessey@grenfell.mun.ca>
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--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

Math Consult

From: cvardy@mun.ca
Sent: November-15-18 2:33 PM
To: mathconsult@mun.ca
Cc: Margaret.Steele@med.mun.ca
Subject: FW: Calendar change: Math 3000 - consultation requested
Attachments: math 3000 addition of prerequisite.pdf

Good Afternoon

The calendar change for Math 3000 has been reviewed and the Faculty of Medicine is supportive.

CATHY VARDY, MD, FRCPC | VICE DEAN AND PROFESSOR OF PEDIATRICS

Faculty of Medicine
Health Sciences Centre
Room M2M319
Memorial University of Newfoundland
St. John's, Newfoundland | A1B 3V6

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www.med.mun.ca/

Vision: Through excellence, we will integrate education, research and social accountability to advance the health of the people and communities we serve.

Destination Excellence: Faculty of Medicine Strategic Plan 2018-2023

Follow us: Facebook www.facebook.com/MUNMedicine | Twitter www.twitter.com/MUNMed (optional)

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Sent: Wednesday, November 14, 2018 2:41 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; 'Lawrence Bauer' <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; Steele, Dr. Margaret: Dean of Medicine <DeanofMedicine@med.mun.ca>; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca
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Math Consult

From: adeanugradswk <adeanugradswk@mun.ca>
Sent: November-15-18 11:32 AM
To: 'Math Consult'
Subject: RE: Calendar change: Math 3000 - consultation requested

Hello Tara,

I have reviewed your calendar changes and have no suggestions or comments. These proposed changes do not impact the School of Social Work.

Regards,

Heather

Heather J. Hair, PhD, RSW
Associate Dean Undergraduate Programs
School of Social Work, Memorial University St. John's, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

-----Original Message-----

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: Wednesday, November 14, 2018 2:41 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca
Subject: Calendar change: Math 3000 - consultation requested

Dear Colleagues,

Math & Stats is proposing to update the course description for math 3000, and also include math 2320 in the prerequisite requirements for math 3000.

This necessitates changes to several joint programs.

Attn: especially to: CHEMISTRY, PHYSICS, AND ECONOMICS

Other programs requiring math 3000 are not affected as math 2320 is already a requirement. Feedback is appreciated at your earliest convenience, and by Dec. 3, 2018.

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

Math Consult

From: Ambi, Alison <aambi@mun.ca>
Sent: November-15-18 10:04 AM
To: Math Consult
Subject: RE: Calendar change: Math 3000 - consultation requested

Hello Tara,
I have reviewed the proposed changes to Math 3000 and the changes will not place any additional demands on library resources.
Alison

Alison Ambi
Head, Collection Strategies
709 864 7125

QEll Library
Memorial University of Newfoundland
www.library.mun.ca

Hello Tara,
I have reviewed the proposed changes to Math 2320 and the changes will not place any additional demands on library resources.
Alison

-----Original Message-----

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: November 14, 2018 2:41 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; engrconsult@mun.ca; Rohr, Linda <lerohr@mun.ca>; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca
Subject: Calendar change: Math 3000 - consultation requested

Dear Colleagues,

Math & Stats is proposing to update the course description for math 3000, and also include math 2320 in the prerequisite requirements for math 3000.
This necessitates changes to several joint programs.

Attn: especially to: CHEMISTRY, PHYSICS, AND ECONOMICS

Other programs requiring math 3000 are not affected as math 2320 is already a requirement. Feedback is appreciated at your earliest convenience, and by Dec. 3, 2018.

--

Tara Stuckless
HH 3004, ext. 8914

Math Consult

From: Lawrence Bauer <lbauer@mun.ca>
Sent: November-14-18 3:09 PM
To: Math Consult
Subject: Re: Calendar change: Math 3000 - consultation requested

Hello:

Thank you for the opportunity to comment on this proposal. The Faculty of Business Administration has no concerns with the proposed changes.

--larry

On Nov 14, 2018, at 2:40 PM, Math Consult <mathconsult@mun.ca> wrote:

Dear Colleagues,

Math & Stats is proposing to update the course description for math 3000, and also include math 2320 in the prerequisite requirements for math 3000. This necessitates changes to several joint programs.

Attn: especially to: CHEMISTRY, PHYSICS, AND ECONOMICS

Other programs requiring math 3000 are not affected as math 2320 is already a requirement. Feedback is appreciated at your earliest convenience, and by Dec. 3, 2018.

--

Tara Stuckless
HH 3004, ext. 8914
Chair, Undergraduate Studies Committee
Dept. of Mathematics and Statistics

<math 3000 addition of prerequisite.pdf>

Larry Bauer, Ph.D.
Associate Professor of Finance
Associate Dean (Undergraduate Programs)
Faculty of Business Administration
Memorial University of Newfoundland
St. John's Nfld, A1B 3X5

www: <http://www.business.mun.ca>
e-mail: lbauer@mun.ca

Tel: (709) 864-8512
Fax: (709) 864-8954

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):
 - Bioc 2901 Bioc 3402 Bioc 3906 Bioc 3907
 - Bioc 4200 Bioc 4210 Bioc 4230 Bioc 4240
 - Bioc 499A/B
- ☐ New program(s):
- X Amended or deleted program(s):
 - Major in Biochemistry
 - Major in Nutrition
 - Honours Degrees in Nutrition
- ☐ 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

Bioc 2901 Biochemistry Laboratory
Bioc 3402 Food Chemistry
Bioc 3906 Nutritional Biochemistry and Metabolism Laboratory
Bioc 3907 Molecular Biology Laboratory
Bioc 4200 Bioenergetics and Biological Oxidation
Bioc 4210 Biochemistry Research Techniques 1
Bioc 4230 Lipid and Lipoprotein Metabolism
Bioc 4240 Nutrigenetics and Nutrigenomics
Bioc 499A and 499B Dissertation

RATIONALE

Minor fixes and updates to courses:

We propose to remove “LC: 1 hour” from the Bioc 2901, 3906, and Bioc 3907 descriptions and let these default to the standard LC of 3 hours per week. We also propose to remove the “OR: 1 hour tutorial per week”. These 3 courses remain dedicated lab courses, and we intend to use one of the “LC” hours per week for a pre-lab talk, one hour per week as an optional tutorial, and one hour per week for quizzing.

In Bioc 3402, we proposed to change “LH: one period per week” to “LH: 3 hours per week” since this has been the practice.

In Bioc 3906, we propose to remove “BIOC 3106 or 3206” from the pre-requisite list. These are already in the co-requisite list and should not be in both places.

In Bioc 4200, 4230, and 4240, we propose to add “or 3206” to the pre-requisite lists as we are transitioning from 3106 (the old lecture + lab course) to 3206 (the new lecture only course).

In Bioc 499A/B We are updating the description and adding in a note “OR:” To communicate to students that we do expect them to come to class meetings a few times a semester.

Prerequisites for courses with labs were updated to include Science 1808 in addition Science 1807

CALENDAR CHANGES

2901 Biochemistry Laboratory

develops robust basic biochemistry lab skills in the context of a biotechnology project; students purify and characterize a recombinantly expressed enzyme. Students learn skills including safety, pipetting, buffer calculations, making solutions, protein bioinformatics, techniques for protein enrichment, enzyme kinetics measurements and calculations, graphing data, keeping a lab book, teamwork, critical analysis and presentation of their work in several formats. Students may co-author a scientific publication based on their results.

AR: attendance is required in the laboratory component of this course

CO: Chemistry 2400

~~LC: 1 hour~~

LH: 3

~~OR: 1 hour tutorial per week~~

PR: Chemistry 1051, Science 1807 and 1808

3402 Food Chemistry

examines the following topics: water structure and the role of water in chemical reactions and mechanical properties of foods; chemistry and physical properties of carbohydrates, proteins and lipids; food dispersions; pigments and natural colorants; food flavour; enzyme properties and applications; vitamins and minerals; chemistry of enzymic and non-enzymic browning; characteristics of: muscle tissue, milk, eggs, bread and edible plant tissue; food additives; and, chemical changes in foods during processing.

LH: ~~one period~~ 3 hours per week

PR: BIOC 2005; BIOC 2201 or the former 2101; Chemistry 2400, and Science 1807 and 1808

3906 Nutritional Biochemistry and Metabolism Laboratory

teaches advanced biochemical lab and critical thinking skills with a focus on metabolism and nutrition-related biochemistry. Topics may include animal diet formulation, tissue culture, immunoblots, metabolic flux assays, metabolic regulation, nutrient metabolism, metabolomics and metabolic energetics. Students develop their quantitative reasoning, teamwork, and written and oral communication skills. Students may have opportunities to tour lab facilities and to co-author a scientific publication based on their results.

AR: attendance is required in the laboratory component of this course

CO: BIOC 3106 or 3206

~~LC: 1 hour~~

LH: 3

~~OR: 1 hour tutorial per week~~

PR: BIOC 2901, Science 1807 and 1808; ~~BIOC 3106 or 3206~~

3907 Molecular Biology Laboratory

develops biochemical lab and critical thinking skills through a molecular biology focused project. Topics may include restriction digestion, PCR amplification-based techniques,

recombinant DNA and plasmid construction, gene expression systems, nucleic acid bioinformatics, and application of high through-put methods in molecular biology. Students develop their quantitative reasoning, teamwork and communication skills (written and oral). Students may have the opportunity to coauthor a peer-reviewed scientific publication based on their results.

AR: attendance is required in the laboratory component of this course

~~LC: 1 hour~~

LH: 3

~~OR: 1-hour tutorial per week~~

PR: BIOC 2901, Science 1807 and 1808, and one of BIOC 2100, 2200, Biology 2250

4200 Bioenergetics and Biological Oxidation

examines topics such as: respiration and electron transport; the functional organization of energy transducing membranes; the structure and function of flavoenzymes, cytochromes, iron-sulfur proteins and quinones; enzyme reduction of oxygen; and, free radicals in biological systems.

LC: two to three hours per week and assigned reading

PR: BIOC 3106 or 3206

4210 Biochemical Research Techniques I examines the proteome and the genome.

This course is designed to familiarize students with current methodology employed in the analyses of the complements of proteins and genes resident in eukaryotic cells. Emphasis will be placed on techniques that facilitate the simultaneous functional analyses of large numbers of proteins or genes. A variety of techniques, used in the study of expression and functional proteomics, will be described, including 2D PAGE, tagged proteins, fluorophores, mass spectrometry and protein microarrays. Techniques used in the study of gene expression and functional genomics will also be described, including the use of reporter gene constructs, analysis of protein-DNA interactions, expressions of cloned genes and several experimental approaches used to define the eukaryotic transcriptome.

AR: attendance is required

PR: BIOC 3105 or 3206 (or 3106)

4230 Lipid and Lipoprotein Metabolism

is designed to provide current knowledge about advances and controversies in lipid and lipoprotein metabolism in the context of health and disease. Topics to be covered include advanced knowledge about lipid and lipoprotein synthesis and regulation, reverse cholesterol transport, plus lipid and lipoprotein utilization to regulate cellular and physiological functions. The covered topics will be related to areas such as reproductive biology, atherosclerosis, AIDS, Alzheimer's, and cancer.

CR: BIOC 6000

PR: ~~One of~~ BIOC 3106, 3206 or, Pharmacy 3111

4240 Nutrigenetics and Nutrigenomics

is designed to familiarize students with emerging discoveries in the area of diet-gene interaction and to further their understanding of the relationships between the genome

and diet as well as the potential to design personalized diets for better health. Students will develop an appreciation for the role of nutrients in the prevention and/or development of disease.

PR: BIOC 2100 or Biology 2250; BIOC 3106 or 3206; and one of BIOC 3203 or the former BIOC 3200

499A and 499B Dissertation

~~is a two-semester linked course based on independent study of a problem in Biochemistry. The subject of study will be decided in consultation with Faculty advisors and must be approved in advance by the Department. This dissertation is obligatory for Honours students in Biochemistry. The dissertation will be submitted as a formal written report accompanied by appropriate illustration before the end of the tenth week of the second semester. Before the end of the student's final semester the student will give an oral presentation of research.~~

is the independent study of a problem in Biochemistry and is obligatory for Honours students in Biochemistry and Biochemistry(Nutrition). Faculty advisors will guide the subject of study which must be approved by the Department Head or delegate. The written dissertation shall be submitted by the end of the tenth week of the second semester. At the end of that semester the student will give an oral presentation and answer questions on their study.

CH: 6

PR: Honours students in their final year or permission of the Head; Science 1807 and 1808

OR: Occasional classes will be held to guide and advise students in the preparation of their written reports. Students are expected to attend these classes.

CALENDAR ENTRY AFTER CHANGES

2901 Biochemistry Laboratory

develops robust basic biochemistry lab skills in the context of a biotechnology project; students purify and characterize a recombinantly expressed enzyme. Students learn skills including safety, pipetting, buffer calculations, making solutions, protein bioinformatics, techniques for protein enrichment, enzyme kinetics measurements and calculations, graphing data, keeping a lab book, teamwork, critical analysis and presentation of their work in several formats. Students may co-author a scientific publication based on their results.

AR: attendance is required in the laboratory component of this course

CO: Chemistry 2400

LH: 3

PR: Chemistry 1051, Science 1807 and 1808

3402 Food Chemistry

examines the following topics: water structure and the role of water in chemical reactions and mechanical properties of foods; chemistry and physical properties of carbohydrates, proteins and lipids; food dispersions; pigments and natural colorants; food flavour; enzyme properties and applications; vitamins and minerals; chemistry of enzymic and non-enzymic browning; characteristics of: muscle tissue, milk, eggs, bread and edible plant tissue; food additives; and, chemical changes in foods during processing.

LH: 3 hours per week

PR: BIOC 2005; BIOC 2201 or the former 2101; Chemistry 2400, and Science 1807 and 1808

3906 Nutritional Biochemistry and Metabolism Laboratory

teaches advanced biochemical lab and critical thinking skills with a focus on metabolism and nutrition-related biochemistry. Topics may include animal diet formulation, tissue culture, immunoblots, metabolic flux assays, metabolic regulation, nutrient metabolism, metabolomics and metabolic energetics. Students develop their quantitative reasoning, teamwork, and written and oral communication skills. Students may have opportunities to tour lab facilities and to co-author a scientific publication based on their results.

AR: attendance is required in the laboratory component of this course

CO: BIOC 3106 or 3206

LH: 3

PR: BIOC 2901, Science 1807 and 1808

3907 Molecular Biology Laboratory

develops biochemical lab and critical thinking skills through a molecular biology focused project. Topics may include restriction digestion, PCR amplification-based techniques, recombinant DNA and plasmid construction, gene expression systems, nucleic acid bioinformatics, and application of high through-put methods in molecular biology. Students develop their quantitative reasoning, teamwork and communication skills (written and oral). Students may have the opportunity to coauthor a peer-reviewed scientific publication based on their results.

AR: attendance is required in the laboratory component of this course

LH: 3

PR: BIOC 2901, Science 1807 and 1808, and one of BIOC 2100, 2200, Biology 2250

4200 Bioenergetics and Biological Oxidation

examines topics such as: respiration and electron transport; the functional organization of energy transducing membranes; the structure and function of flavoenzymes, cytochromes, iron-sulfur proteins and quinones; enzyme reduction of oxygen; and, free radicals in biological systems.

LC: two to three hours per week and assigned reading

PR: BIOC 3106 or 3206

4210 Biochemical Research Techniques I examines the proteome and the genome. This course is designed to familiarize students with current methodology employed in

the analyses of the complements of proteins and genes resident in eukaryotic cells. Emphasis will be placed on techniques that facilitate the simultaneous functional analyses of large numbers of proteins or genes. A variety of techniques, used in the study of expression and functional proteomics, will be described, including 2D PAGE, tagged proteins, fluorophores, mass spectrometry and protein microarrays. Techniques used in the study of gene expression and functional genomics will also be described, including the use of reporter gene constructs, analysis of protein-DNA interactions, expressions of cloned genes and several experimental approaches used to define the eukaryotic transcriptome.

AR: attendance is required

PR: BIOC 3105 or 3206 (or 3106)

4230 Lipid and Lipoprotein Metabolism

is designed to provide current knowledge about advances and controversies in lipid and lipoprotein metabolism in the context of health and disease. Topics to be covered include advanced knowledge about lipid and lipoprotein synthesis and regulation, reverse cholesterol transport, plus lipid and lipoprotein utilization to regulate cellular and physiological functions. The covered topics will be related to areas such as reproductive biology, atherosclerosis, AIDS, Alzheimer's, and cancer.

CR: BIOC 6000

PR: One of BIOC 3106, 3206, Pharmacy 3111

4240 Nutrigenetics and Nutrigenomics

is designed to familiarize students with emerging discoveries in the area of diet-gene interaction and to further their understanding of the relationships between the genome and diet as well as the potential to design personalized diets for better health. Students will develop an appreciation for the role of nutrients in the prevention and/or development of disease.

PR: BIOC 2100 or Biology 2250; BIOC 3106 or 3206; and one of BIOC 3203 or the former BIOC 3200

499A and 499B Dissertation

is the independent study of a problem in Biochemistry and is obligatory for Honours students in Biochemistry and Biochemistry(Nutrition). Faculty advisors will guide the subject of study which must be approved by the Department Head or delegate. The written dissertation shall be submitted by the end of the tenth week of the second semester. At the end of that semester the student will give an oral presentation and answer questions on their study.

CH: 6

PR: Honours students in their final year or permission of the Head; Science 1807 and 1808

OR: Occasional classes will be held to guide and advise students in the preparation of their written reports. Students are expected to attend these classes.

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Senate Summary Page for Programs

PROGRAM TITLE

11.1 Biochemistry

RATIONALE

Minor tune-ups and fixes.

Remove redundant Note 1. in the 11.1.1.1 Admission to the Major in Biochemistry section, “Students are required to complete at least 78 credit hours in Science courses for the General Degree”, as this information is also given in the program regulations below (11.1.2.1). Similarly, the “Students are encouraged to choose a minor.” will be removed from the end of 11.1.1.1 as it is already given above in 11.1.

Under 11.1.1.2 Admission to the Honours Degree in Biochemistry, update the text to include the new course, Bioc 2200, brought in the previous year.

Added a missing bracket to the regulations for the Major in Biochemistry.

Added Bioc 3207 to the list of optional courses for 11.2.4 Major in Nutrition. Added a missing “1” to the beginning of the same section.

Corrected a mistake in last year’s calendar entry for 11.1.2.5 Honours Degree in Nutrition where 3906 appeared on both list c and d. Bioc 3906 on list 1d was supposed to be 3907.

CALENDAR CHANGES

11.1.1.1 Admission to the Major in Biochemistry

Entry to the Biochemistry Majors program is based on academic standing.

1. To be considered for admission to the program students must have at least 30 credit hours in courses and have successfully completed the following courses (or their equivalents) with a minimum overall average of 60%. In addition, students must be eligible for entry to Chemistry 2400.
 - a. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
 - b. Chemistry 1050 and 1051 (or 1200 and 1001)
 - c. Mathematics 1000, 1001 (or Mathematics 1090, 1000, or Mathematics 109A/B, 1000)
 - d. Physics 1050 (or 1020), 1051 (or 1021), or Biology 1001, 1002

Notes:

- ~~1. Students are required to complete at least 78 credit hours in Science courses for the General Degree.~~
- ~~2.~~ 1. Students taking Mathematics 1000 should take Physics 1050 as their first Physics course.
- ~~3.~~ 2. It is recommended that students who wish to pursue future studies in biophysics or related fields or who are considering postgraduate health professional programs take Physics 1050 as their first Physics course.

~~Students are encouraged to choose a minor.~~

11.1.1.2 Admission to the Honours Degree in Biochemistry

Students normally should apply for an Honours program at the completion of their third year of studies. To be eligible for admission, students must be in Honours standing as per **Academic Standing** in the **Degree Regulations** for the Honours Degree of Bachelor of Science. To be considered for early admission to an Honours program in Biochemistry at the end of second year, students must have achieved at least 70% in each of Biochemistry 2200 (or the former 2100) and Biochemistry 2201 or the former 2101 and Chemistry 2400, 2401.

11.1.2.1 Major in Biochemistry

Entry to the Nutrition majors program is based on academic standing.

1. Required courses to complete the major:

- a. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
- b. Biology 1001 and 1002; Mathematics 1000, 1001; Physics 1050 (or 1020), 1051 (or 1021); Chemistry 1050, 1051 (or Chemistry 1200 and 1001).
- c. Biochemistry 2200 (or 2100), 2201, 2901, 3105, 3108, 3206, 3207, and 3906 or 3907.
- d. At least 9 credit hours in courses from Biochemistry 4002, 4101, 4103, 4104, 4105, 4200, 4201, 4230, 4231-4239.
- e. Six additional credit hours chosen from: Medicine 310A/B, Biochemistry 2600, Biology 2060, 3050, Chemistry 4201, 4701 or Biochemistry courses at the 3000 or 4000 level.
- f. Chemistry 2301 or Physics 2053; Chemistry 2400, 2401.
- g. One of Chemistry 2100, Environmental Sciences 3210.
- h. A sufficient number of elective courses to bring the total Science courses up to at least 78 credit hours and the degree total up to 120 credit hours.

11.1.2.4 Major in Nutrition

1. Required courses to complete the major:

- a. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
- b. Biology 1001 and 1002; Mathematics 1000, Physics 1020 and 1021 (or Physics 1050 and 1051; Chemistry 1050, 1051 (or Chemistry 1200 and 1001).
- c. Biochemistry 2005, 2200 (or 2100), 2201, 2600, 2901, 3203, 3206, 3906, 4300, 4301, Medicine 310A/B.

- d. Six credit hours in courses from Biochemistry 3052, 3108, 3207, 3402, 3600, 3907, 4002, 4105, 4200, 4230, 4240, 4241-4249, Biology 3050.
- e. Chemistry 2400.
- f. Statistics 2550 or equivalent.
- g. A sufficient number of elective courses to bring the total Science courses up to at least 78 credit hours and the total for the degree up 120 credit hours.

11.1.2.5 Honours Degree in Nutrition

1. Required courses:

- a. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
- b. Biology 1001 and 1002; Mathematics 1000, Physics 1020 (or 1050) and 1021 (or 1051); Chemistry 1050, 1051 (or Chemistry 1200 and 1001).
- c. Biochemistry 2005, 2200 (or 2100), 2201, 2600, 2901, 3203, 3206, 3207, 3906, 4300, 4301, 4502, 499A, 499B, Medicine 310A/B
- d. Nine additional credit hours chosen from Biochemistry 3052, 3108, 3402, 3600, ~~3906~~, 3907, 4002, 4105, 4200, 4201, 4230, 4240, 4241-4249, Biology 3050.
- e. Chemistry 2400
- f. Statistics 2550
- g. A sufficient number of elective courses to bring the total Science courses up to at least 78 credit hours and the total for the degree up 120 credit hours.

CALENDAR ENTRY AFTER CHANGES

11.1.1.1 Admission to the Major in Biochemistry

Entry to the Biochemistry Majors program is based on academic standing.

1. To be considered for admission to the program students must have at least 30 credit hours in courses and have successfully completed the following courses (or their equivalents) with a minimum overall average of 60%. In addition, students must be eligible for entry to Chemistry 2400.
 - a. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
 - b. Chemistry 1050 and 1051 (or 1200 and 1001)
 - c. Mathematics 1000, 1001 (or Mathematics 1090, 1000, or Mathematics 109A/B, 1000)
 - d. Physics 1050 (or 1020), 1051 (or 1021), or Biology 1001, 1002

Notes:

1. Students taking Mathematics 1000 should take Physics 1050 as their first Physics course.
2. It is recommended that students who wish to pursue future studies in biophysics or related fields or who are considering postgraduate health professional programs take Physics 1050 as their first Physics course.

11.1.1.2 Admission to the Honours Degree in Biochemistry

Students normally should apply for an Honours program at the completion of their third year of studies. To be eligible for admission, students must be in Honours standing as per **Academic Standing** in the **Degree Regulations** for the Honours Degree of Bachelor of Science. To be considered for early admission to an Honours program in Biochemistry at the end of second year, students must have achieved at least 70% in each of Biochemistry 2200 (or the former 2100) and Biochemistry 2201 or the former 2101 and Chemistry 2400, 2401.

11.1.2.1 Major in Biochemistry

Entry to the Nutrition majors program is based on academic standing.

1. Required courses to complete the major:

- a. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
- b. Biology 1001 and 1002; Mathematics 1000, 1001; Physics 1050 (or 1020), 1051 (or 1021); Chemistry 1050, 1051 (or Chemistry 1200 and 1001).
- c. Biochemistry 2200 (or 2100), 2201, 2901, 3105, 3108, 3206, 3207, and 3906 or 3907.
- d. At least 9 credit hours in courses from Biochemistry 4002, 4101, 4103, 4104, 4105, 4200, 4201, 4230, 4231-4239.
- e. Six additional credit hours chosen from: Medicine 310A/B, Biochemistry 2600, Biology 2060, 3050, Chemistry 4201, 4701 or Biochemistry courses at the 3000 or 4000 level.
- f. Chemistry 2301 or Physics 2053; Chemistry 2400, 2401.
- g. One of Chemistry 2100, Environmental Sciences 3210.
- h. A sufficient number of elective courses to bring the total Science courses up to at least 78 credit hours and the degree total up to 120 credit hours.

11.1.2.4 Major in Nutrition

1. Required courses to complete the major:

- a. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.
- b. Biology 1001 and 1002; Mathematics 1000, Physics 1020 and 1021 (or Physics 1050 and 1051; Chemistry 1050, 1051 (or Chemistry 1200 and 1001).
- c. Biochemistry 2005, 2200 (or 2100), 2201, 2600, 2901, 3203, 3206, 3906, 4300, 4301, Medicine 310A/B.
- d. Six credit hours in courses from Biochemistry 3052, 3108, 3207, 3402, 3600, 3907, 4002, 4105, 4200, 4230, 4240, 4241-4249, Biology 3050.
- e. Chemistry 2400.
- f. Statistics 2550 or equivalent.
- g. A sufficient number of elective courses to bring the total Science courses up to at least 78 credit hours and the total for the degree up 120 credit hours.

11.1.2.5 Honours Degree in Nutrition

1. Required courses:

- a. Six credit hours in **Critical Reading and Writing (CRW)** courses, including at least 3 credit hours in English courses.

- b. Biology 1001 and 1002; Mathematics 1000, Physics 1020 (or 1050) and 1021 (or 1051); Chemistry 1050, 1051 (or Chemistry 1200 and 1001).
- c. Biochemistry 2005, 2200 (or 2100), 2201, 2600, 2901, 3203, 3206, 3207, 3906, 4300, 4301, 4502, 499A, 499B, Medicine 310A/B
- d. Nine additional credit hours chosen from Biochemistry 3052, 3108, 3402, 3600, 3907, 4002, 4105, 4200, 4201, 4230, 4240, 4241-4249, Biology 3050.
- e. Chemistry 2400
- f. Statistics 2550
- g. A sufficient number of elective courses to bring the total Science courses up to at least 78 credit hours and the total for the degree up 120 credit hours.

Consultation

From: vbooth [<mailto:vbooth@MUN.CA>] Sent: October-24-18 11:10 AM To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; Engineering consultation <engrconsult@MUN.CA>; Rohr, Linda <lerohr@mun.ca>; Marine Institute consultations <miugconsultations@mi.mun.ca>; Medicine consultation <DeanofMedicine@med.mun.ca>; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; Pharmacy consulting <pharminfo@MUN.CA>; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>; lrobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca Cc: Biochemistry Head <biochead@mun.ca> Subject: Biochemistry undergraduate calendar changes

Please find attached a proposal for calendar changes to regulations and course descriptions in Biochemistry (undergraduate). These are minor fixes and updates.

Feedback can be sent to me at vbooth@mun.ca .

Thank you.

From: Engineering Consult <engrconsult@mun.ca>
Subject: Re: Biochemistry undergraduate calendar changes
Date: November 21, 2018 at 5:39:20 PM NST
To: vbooth <vbooth@mun.ca>
Cc: Andrew Fisher <adfisher@mun.ca>, Jayde Edmunds <edmundsj@mun.ca>, Bruce Quinton <bruce.quinton@mun.ca>

Dear Dr. Booth,

Thank you for the opportunity to comment on the proposed Calendar changes to several biochemistry courses.

Today's meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on the Engineering program and we are happy to support these changes.

However, we do have the following comment:

BIOC 3402 Food Chemistry:

"LH: 3 hours per week" can be abbreviated to just "LH: 3"

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 2018-10-24 11:08, vbooth wrote:

Please find attached a proposal for calendar changes to regulations and course descriptions in Biochemistry (undergraduate). These are minor fixes and updates.

Feedback can be sent to me at vbooth@mun.ca.

Thank you.

From: Annie Mercier <amercier@mun.ca>

Subject: Re: FW: Biochemistry undergraduate calendar changes

Date: November 19, 2018 at 2:32:31 PM NST

To: Valerie Booth <vbooth@mun.ca>

Hi Valerie:

Our committee has reviewed the proposals for minor fixes and updates. We have no issues with them; everything looks good from our perspective.

Cheers, Annie

Annie Mercier, PhD Professor and Deputy
Head, Department of Ocean Sciences Memorial University (Ocean Sciences Centre) St.
John's, NL, Canada, A1C 5S7 Tel: (709) 864-2011 Email: amercier@mun.ca
www.mun.ca/osc/amercier/bio.php

On 24/10/2018 11:37 a.m., Dean of Science wrote:

From: vbooth [<mailto:vbooth@MUN.CA>] Sent: October-24-18 11:10 AM To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Bauer, Larry <lbauer@mun.ca>; Collett, Meghan <mcollett@mun.ca>; Engineering consultation <engrconsult@MUN.CA>; Rohr, Linda <lerohr@mun.ca>; Marine Institute consultations <miugconsultations@mi.mun.ca>; Medicine consultation <DeanofMedicine@med.mun.ca>; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; Pharmacy consulting <pharminfo@MUN.CA>; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>; Irobinson@grenfell.mun.ca; ssedean@grenfell.mun.ca; thennessey@grenfell.mun.ca Cc: Biochemistry Head <biohead@mun.ca> Subject: Biochemistry undergraduate calendar changes

Please find attached a proposal for calendar changes to regulations and course descriptions in Biochemistry (undergraduate). These are minor fixes and updates.

Feedback can be sent to me at vbooth@mun.ca.

Thank you.

From: Suzanne Dufour <sdufour@mun.ca>
Sent: Wednesday, October 31, 2018 2:02 PM
To: Valerie Booth; BiocDHundergrad
Subject: Fwd: FW: Biochemistry undergraduate calendar changes

Hi Valerie,

The Biology Undergraduate committee has met and reviewed your proposed calendar changes. We have no concerns with those changes.

Best wishes,

Suzanne

--

Dr. Suzanne Dufour
Associate Professor
Department of Biology
Memorial University of Newfoundland
St. John's, NL
A1B 3X9
Canada

Tel: (709) 864-8025

Fax: (709) 864-3018

<http://www.mun.ca/biology/dufour/index.php>

From: MIUG Consultations <MIUGconsultations@mi.mun.ca>
Subject: RE: Biochemistry undergraduate calendar changes
Date: November 5, 2018 at 2:01:17 PM NST
To: vbooth <vbooth@mun.ca>

Hello,

Thank you for the opportunity to review and comment on the proposal for Biochemistry undergraduate calendar changes. These will have no impact on Marine Institute programs and we support the proposal.

Regards,
Bev

Bev Fleet
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0369
FAX: 709-778-0535
Bev.Fleet@mi.mun.ca

From: "Davis, Erin" <emdavis@mun.ca>
Subject: FW: Biochemistry undergraduate calendar changes
Date: November 5, 2018 at 8:36:28 AM NST
To: "vbooth@mun.ca" <vbooth@mun.ca>
Cc: "Glew, Csop" <cglew@mun.ca>

Pharmacy has no concerns with the proposed changes.

Erin

--

Dr. Erin Davis
Associate Dean Undergraduate Studies
Chair of the Committee on Undergraduate Studies
Assistant Professor | School of Pharmacy
Clinical Assistant Professor | Discipline of Family Medicine
Memorial University of Newfoundland

T 709 864-8815
F 709 864-6941
E emdavis@mun.ca

From: "Rohr, Linda" <lerohr@mun.ca>
Subject: Re: Biochemistry undergraduate calendar changes
Date: October 26, 2018 at 3:49:57 PM NDT
To: vbooth <vbooth@mun.ca>

Hi Valerie,

No concerns with the proposed changes to Biochemistry.

Linda

Linda E. Rohr PhD

Dean, School of Human Kinetics & Recreation

Memorial University

t: 709.864.8129 f: 709.864.7531 e: lerohr@mun.ca

PE 2027

From: <cvardy@mun.ca>

Subject: FW: Biochemistry undergraduate calendar changes

Date: October 25, 2018 at 10:45:58 AM NDT

To: <vbooth@mun.ca>

Good morning

The Faculty of Medicine is supportive of the attached proposal for calendar changes to regulations and course descriptions in Biochemistry (undergraduate).

Regards

CATHY VARDY, MD, FRCPC | VICE DEAN AND PROFESSOR OF PEDIATRICS Faculty
of Medicine Health Sciences Centre

Room M2M319

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From: Ivan Saika-Voivod <saika@mun.ca>

Subject: Re: Biochemistry undergraduate calendar changes

Date: October 24, 2018 at 6:42:23 PM NDT

To: Valerie Booth <vbooth@mun.ca>

Dear Valerie,

The changes look fine to me.

Cheers,
Ivan

Dr. Ivan Saika-Voivod, Associate Professor
Undergraduate Studies Committee Chair
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
Tel: 709-864-8886, Fax: 709-864-8739, <http://www.physics.mun.ca/~saika/>

From: "Sutherland, Ian D" <isutherland@mun.ca>
Subject: Re: Biochemistry undergraduate calendar changes
Date: October 24, 2018 at 4:50:41 PM NDT
To: vbooth <vbooth@mun.ca>

Dear Dr. Booth,

The School of Music has no issue with these changes.

..... IAN SUTHERLAND, PhD (Exon) | DEAN School
of Music Memorial University St. John's, Newfoundland T 709 864 7486 www.mun.ca/music |
www.facebook.com/musicatmun/ | @musicschooldean | @musicatmemorial |

From: Lawrence Bauer <lbauer@mun.ca>
Subject: Re: Biochemistry undergraduate calendar changes
Date: October 24, 2018 at 11:33:28 AM NDT
To: vbooth <vbooth@mun.ca>

Hello:

Thank you for the opportunity to comment on this proposal. The Faculty of Business
Administration has no concerns with the proposed changes.

--larry

On Oct 24, 2018, at 11:08 AM, vbooth <vbooth@mun.ca> wrote:
Please find attached a proposal for calendar changes to regulations and course descriptions in
Biochemistry (undergraduate). These are minor fixes and updates.

Feedback can be sent to me at vbooth@mun.ca .

Thank you.

<Biochem Calendar Changes for consultation.pdf>

.....
Valerie Booth
Professor
Deputy Head (undergraduate) Department of Biochemistry and
Department of Physics and Physical Oceanography
Memorial University of Newfoundland
St. John's, NL, A1B 3X9, Canada

phone 709 864-4523 fax: 709 864-2422

homepage: <http://www.faculty.mun.ca/vbooth/>

Larry Bauer, Ph.D.
Associate Professor of Finance
Associate Dean (Undergraduate Programs)
Faculty of Business Administration
Memorial University of Newfoundland
St. John's Nfld, A1B 3X5

www: <http://www.business.mun.ca>

e-mail: lbauer@mun.ca

Tel: (709) 864-8512

Fax: (709) 864-8954

SSRN: <http://ssrn.com/author=327175>

Proposal to modify the Faculty of Science Dean's List Criteria

- Change requirement from 7 science courses (21 CH) to 6 science courses (18 CH).
 - Students who are doing a minor outside the FOS and only have 6 science course are exempt from the 7 science course minimum, but under current regulations, they need to contact the DOS office. Many students in first year are being excluded from the Dean's list because they have not declared a minor outside the faculty of science. Changing from a 7 to 6 science course minimum levels makes it fairer for all students

- I have also deleted the statement "All other courses taken should be applicable to the degree" because I don't think this has any meaning presently. Shannon believes this was a reference to courses which were specifically barred from use toward certain majors and we are unaware that there are any of these left.

Faculty of Science Dean's List Criteria

The Dean's List is selected in June of each year. The top 10 per cent of students in the Faculty of Science are admitted to the Dean's List, provided that they have met the following requirements:

- registered for the degree of B.Sc. or B.Sc. honours (undeclared first-year students are also eligible if they meet the remaining criteria);
- completed at least 9 courses (27 credit hours) over two of the previous three semesters, attained an average grade of at least 80% in these courses, and attained a grade of A in at least seven of them;
- taken at least 7 6 of those courses (~~21 18~~ credit hours) from departments in the Faculty of Science, inclusive of the Departments of Economics and Geography. ~~All other courses taken should be applicable to the degree;~~
- Other nominations may be made at the discretion of the Dean of Science in recognition of academic performance of exceptional merit.

NOTES: Typically the top 10 per cent of students in the Faculty of Science satisfying the criteria above have average grades greater than 83 per cent. ~~Students registered for a non-science minor who meet all of the above criteria, except for the requirement for at least seven Science courses, should contact the Dean of Science Office.~~

Clean version of new wording.

Faculty of Science Dean's List Criteria

The Dean's List is selected in June of each year. The top 10 per cent of students in the Faculty of Science are admitted to the Dean's List, provided that they have met the following requirements:

- registered for the degree of B.Sc. or B.Sc. honours (undeclared first-year students are also eligible if they meet the remaining criteria);
- completed at least 9 courses (27 credit hours) over two of the previous three semesters, attained an average grade of at least 80% in these courses, and attained a grade of A in at least seven of them;
- taken at least 6 of those courses (18 credit hours) from departments in the Faculty of Science, inclusive of the Departments of Economics and Geography;
- Other nominations may be made at the discretion of the Dean of Science in recognition of academic performance of exceptional merit.

NOTES: Typically the top 10 per cent of students in the Faculty of Science satisfying the criteria above have average grades greater than 83 per cent.



Dean of Science Office
Aquaculture Program
St. John's, NL Canada A1B 3X7
Tel: 709-737-3414; Fax: 709-737-3316
www.mun.ca

TO: Secretary, Graduate Studies Committee, Faculty of Science

FROM: Aquaculture Board of Study

DATE: November 20, 2018

SUBJECT: Proposed change to Aquaculture Program title, addition of new courses, and removal of courses no longer offered

The Aquaculture Board of Study has reviewed and approved the proposed name change of the Aquaculture Program to Sustainable Aquaculture, as well as minor changes to the Calendar section of the School of Graduate Studies Regulations Governing the Degree of Master of Science, 25.5 Aquaculture.

The rationale for these changes is as follows:

Most of the research undertaken by the faculty in relation to aquaculture revolves around the sustainable production of aquaculture species. Thus, fish health, wild-farmed interactions, genetics, climate-change adaptation, aquatic animal nutrition, integrated aquaculture etc. are all areas of science where research is needed to maintain, or improve, the industry's sustainability. The program name changes reflects the actual areas of research being undertaken by faculty and students in the program now, and likely well into the future.

The name change should aid in the recruitment of students as it provides a more positive view on the discipline of aquaculture science.

Other proposed changes to the Calendar entry for the programme include the deletion of courses no longer being offered by various departments, addition of a few alternate courses in Ocean Sciences, and a few minor word changes.

A handwritten signature in blue ink, appearing to read "Cyr Couturier".

Cyr Couturier, Chair
Aquaculture Program, Faculty of Science

CC/nb

25.5 Sustainable Aquaculture

- www.mun.ca/sgs/contacts/sgscontacts.php
- www.mun.ca/science

The program of study leading to the Master of Science in Sustainable Aquaculture is designed to instruct students in research using scientific principles derived from a wide range of disciplines including Behaviour, Biochemistry, Biology, Ecology, Food Science, Genomics, Nutrition, and Physiology. It is an interdisciplinary program and often involves several fields of study. Research ~~problems~~ projects may include field and/or laboratory studies of one or more species of marine or freshwater flora and/or fauna. The Aquaculture group consists of faculty members from the Fisheries and Marine Institute of Memorial University of Newfoundland and the Departments of Biology, Biochemistry, and Ocean Sciences of Memorial University of Newfoundland. Research scientists at other institutions, e.g., Fisheries and Oceans Canada, complement the group in offering advice, facilities, and expertise to students in the program.

The Sustainable Aquaculture Administrative Committee is responsible for the program. This Committee is composed of seven members appointed by the Dean of Science including two to three members from the Department of Ocean Sciences, two to three members from the Fisheries and Marine Institute of Memorial University of Newfoundland, and two members from appropriate academic units at Memorial University of Newfoundland. In addition, the Heads of the Departments of Biochemistry, Biology, and Ocean Sciences, and the Head of the School of Fisheries of the Fisheries and Marine Institute of Memorial University of Newfoundland are ex-officio members. The Committee makes recommendations to the Dean of the School of Graduate Studies concerning the academic requirements of the program: admission, course programs of individual students, financial support, composition of supervisory committees, and theses examiners. The Chair of the Committee will also ensure that a supervisory report form for each student in the program is submitted annually to the Dean.

25.5.1 Qualifications for Admission

To be considered for admission to the Master of Science in Sustainable Aquaculture, an applicant shall normally hold one of the following: at least a second class Honours degree, or an equivalent both in achievement and depth of study, from an institution recognized by the Senate, or successful completion of the Advanced Diploma in Sustainable Aquaculture offered by the Fisheries and Marine Institute of Memorial University of Newfoundland, with academic standing deemed appropriate by the Committee.

25.5.2 Program of Study

1. The Master of Science Degree requires the successful completion of a program of courses and of a thesis embodying original research.
2. All candidates will be required to ~~take~~ complete 6 credit hours in graduate courses which will normally include at least one of the following: AQUA 6000 - Shellfish Culture and Enhancement, AQUA 6100 - Finfish Aquaculture, or AQUA 6200 - Aquaculture and the Environment.
3. Candidates who do not hold the Advanced Diploma in Sustainable Aquaculture may be required to successfully complete a selection of its component courses.
4. Further courses may be required depending on the background of the individual student.
5. Before the thesis is submitted, the student shall present an open seminar on the topic of investigation to the appropriate academic units, as recommended by the Administrative Committee. Any serious deficiencies in the thesis noticed at this stage should be carefully considered, in consultation with the Supervisor, for rectification.

6. The student will be required to comply with all other regulations governing the graduate Degree of Master of Science.

25.5.3 Courses

A selection of the following graduate courses will be offered to meet the requirements of candidates as far as the resources of the Department will allow.

- **Aquaculture**
 - 6000 - Shellfish Culture and Enhancement
 - 6100 - Finfish Aquaculture
 - 6200 - Aquaculture and the Environment
 - 6201-6209 - Special Topics in Aquaculture (*prerequisite: Permission of Chair of Program*)
- **Biochemistry**
 - ~~BIOC 6670 – Biological Waste Treatment~~
 - 6630 – Marine Biochemistry
- **Biology**
 - 6000 - Research Topics in Microbiology
 - 6710 - Marine Benthic Biology
 - 7101 - Topics in Marine Biology
 - 7220 - Quantitative Methods in Biology
 - ~~7933 – Advanced Topics in Marine Invertebrates~~
 - ~~7938 – Genomics~~
 - ~~7531 – Biological Oceanography~~
 - ~~7535 – Research Methods in Marine Science~~
 - ~~7550 – Fishery Biology~~
 - 7551 - Fisheries Resource Management
 - ~~7560 – Physiology of Marine Invertebrates~~
 - ~~7561 – Physiology of Marine Vertebrates~~
 - ~~7570 – Marine Benthic Biology~~
 - ~~7910 – Community and Ecosystem Ecology~~
- **Cognitive and Behavioural Ecology**
 - 6351 - Behavioural Ecology and Sociobiology
- **Engineering**
 - 9603 - Environmental Sampling and Pollutant Analysis (*cross-listed as Environmental Science 6005*)
 - 9605 - Advanced Waste Water Treatment
 - 9622 - Environmental Statistics
- **Environmental Science**
 - 6000 - Environmental Science and Technology
 - 6001 - Earth and Ocean Systems
 - 6002 - Environmental Chemistry and Toxicology
 - 6003 - Applied Ecology
 - 6007 - Environmental Risk Assessment (*same as Engineering 9609*)
- **Geography**
 - 6250 - Conservation of Natural Resources
 - 6410 - Climatology
- **Marine Studies (Fisheries Resource Management) Program Courses**

- 6001 - Fisheries Ecology
- 6005 - Overview of World Fisheries
- 6009 - Current Issues for Sustainable Fisheries
- **Ocean Sciences**
 - 7100 - Biological Oceanography
 - 7200 - Adaptations to the Marine Environment
 - 7300 - Plankton Dynamics
 - 7400 - Fisheries Resource Management
 - 7500 – Immunology and Diseases of Aquatic Organisms
- **Physics**
 - 6316 - Ocean Measurements and Data Analysis
 - 6320 - Turbulence
- **Technology Management (Aquaculture Technology Option) Program Courses**
 - 6056 - Management of International Development
 - 6071 - Management of Aquaculture Technology
 - 6072 - Animal Husbandry Management
 - 6073 - Aquaculture Environmental Management
 - 6074 - Aquaculture Site and Operational Assessment
 - 6075 - Aquaculture Engineering Technology Management

Note:

Consult the Program for a list of titles and information regarding availability.

25.5 Sustainable Aquaculture

- www.mun.ca/sgs/contacts/sgscontacts.php
- www.mun.ca/science

The program of study leading to the Master of Science in Sustainable Aquaculture is designed to instruct students in research using scientific principles derived from a wide range of disciplines including Behaviour, Biochemistry, Biology, Ecology, Food Science, Genomics, Nutrition, and Physiology. It is an interdisciplinary program and often involves several fields of study. Research projects may include field and/or laboratory studies of one or more species of marine or freshwater flora and/or fauna. The Aquaculture group consists of faculty members from the Fisheries and Marine Institute of Memorial University of Newfoundland and the Departments of Biology, Biochemistry, and Ocean Sciences of Memorial University of Newfoundland. Research scientists at other institutions, e.g., Fisheries and Oceans Canada, complement the group in offering advice, facilities, and expertise to students in the program.

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9. Candidates who do not hold the Advanced Diploma in Sustainable Aquaculture may be required to successfully complete a selection of its component courses.
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 - 7101 - Topics in Marine Biology
 - 7220 - Quantitative Methods in Biology
- **Cognitive and Behavioural Ecology**
 - 6351 - Behavioural Ecology and Sociobiology
- **Engineering**
 - 9603 - Environmental Sampling and Pollutant Analysis (*cross-listed as Environmental Science 6005*)
 - 9605 - Advanced Waste Water Treatment
 - 9622 - Environmental Statistics
- **Environmental Science**
 - 6000 - Environmental Science and Technology
 - 6001 - Earth and Ocean Systems
 - 6002 - Environmental Chemistry and Toxicology
 - 6003 - Applied Ecology
 - 6007 - Environmental Risk Assessment (*same as Engineering 9609*)
- **Geography**
 - 6250 - Conservation of Natural Resources
 - 6410 - Climatology
- **Marine Studies (Fisheries Resource Management) Program Courses**
 - 6001 - Fisheries Ecology
 - 6005 - Overview of World Fisheries
 - 6009 - Current Issues for Sustainable Fisheries
- **Ocean Sciences**
 - 7100 - Biological Oceanography
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 - 7500 – Immunology and Diseases of Aquatic Organisms
- **Physics**
 - 6316 - Ocean Measurements and Data Analysis

- 6320 - Turbulence
- **Technology Management (Aquaculture Technology Option) Program Courses**
 - 6056 - Management of International Development
 - 6071 - Management of Aquaculture Technology
 - 6072 - Animal Husbandry Management
 - 6073 - Aquaculture Environmental Management
 - 6074 - Aquaculture Site and Operational Assessment
 - 6075 - Aquaculture Engineering Technology Management

Note:

Consult the Program for a list of titles and information regarding availability.



Dean of Science Office
Environmental Science Program
St. John's, NL Canada A1B 3X7
Tel: 709-737-3414; Fax: 709-737-3316 www.mun.ca

TO: Secretary, Graduate Studies Committee, Faculty of Science
FROM: Environmental Science Board of Study
DATE: October 19, 2018
SUBJECT: Proposed change to calendar language regarding the Co-op program

The Environmental Science Board of Study has reviewed and approved the proposed calendar changes to the School of Graduate Studies, 15: Regulations Governing the Degree of Master of Environmental Science, 15.3 Degree Requirements. These changes were proposed by the Co-operative Education office for the Faculty of Science.

The rationale for these changes is as follows:

- to clarify that admission to OPTION B is limited, selective and competitive, and therefore not guaranteed. This language is used for all optional co-operative education programs within the faculty and reflects ASM-CE capacity. The maximum number of students who may be admitted to OPTION B changes annually and is dependent on the number of students admitted to other optional and mandatory co-op programs managed by the Science/HSS co-op office.
- to provide a specific and early deadline for applications that allows enough time for international students to secure work permits and for all admitted students to engage in co-op professional development sessions.
- to clarify that students who are admitted to the program are not placed in a paid work term position but must compete for available opportunities. Students are not 'placed' in a work term. Work terms are not guaranteed in any co-operative education program at Memorial; employers make decisions on who they will hire.
- to provide additional information on the work term course 601W and its evaluation. Details on the course assignment(s) are outlined in the course syllabus. The language change from a single report to one or more assignments allows flexibility in the course design, such as introduction of multiple short assignments over the work term (reflecting best practice) in lieu of a single end-of-term report.

Dr. Joe Wroblewski, Professor
Interim Chair, Environmental Science Interdisciplinary Graduate Program

JW/nb

15 Regulations Governing the Degree of Master of Environmental Science

15.3 Degree Requirements

15.3 Degree Requirements

To the extent that resources permit, individual programs will be developed to suit students' interests and needs. However all programs must be approved by the Board of Studies and by the Dean of Graduate Studies. All **General Regulations** of the School of Graduate Studies shall apply to these degrees.

1. The Master of Environmental Science (M.Env.Sci.) is a multidisciplinary course-based degree, focussed on environmental issues. The Degree program provides for both multidisciplinary courses and for courses focussed on the student's specific area of interest.
2. The Degree program requires completion of 24 credit hours of either **Option A** or **Option B** and a project report. The project report will be evaluated according to procedures outlined in **General Regulations, Theses and Reports**.

Option A

Students will be required to take a minimum of 15 credit hours in program courses, 9 credit hours of which must be Environmental Science 6000, Environmental Science 6009, and Environmental Science 6010 and 6 credit hours from Environmental Science 6001, 6002, and 6003. Students will also be required to take a minimum of 9 credit hours in elective courses approved by the Board of Studies, 6 credit hours of which will normally be selected from graduate courses offered by the Faculty of Science and the Faculty of Engineering and Applied Science. Students are advised to consult with instructors and Faculties regarding necessary prerequisites and availability.

Option B

Admission into Option B is limited, competitive and selective. Students may be requested to participate in an interview as part of the selection process. The application deadline for admission to Option B is October 15th.

Students will be required to take a minimum of 15 credit hours in program courses, 9 credit hours of which must be Environmental Science 6000, Environmental Science 6009, and Environmental Science 6010 and 6 credit hours from Environmental Science 6001, 6002, and 6003. Students will also be required to take a minimum of 6 credit hours in elective courses approved by the Board of Studies, normally selected from graduate courses offered by the Faculty of Science and Faculty of Engineering and Applied Science. In addition, students will be required to complete the 3 credit hours course Environmental Science 601W (work term).

Environmental Science 601W is a work term of one semester duration. The work term is a full-time period of employment, normally paid and normally in the spring semester. Students are ultimately responsible for securing work term placements. Academic Staff Members in Co-operative Education, in consultation with the Program Chair and the student's Supervisor, provide support for the job search and inform students of potential opportunities. Work terms must be approved by the Academic Staff Members in Co-operative Education before the start of the term.

Work term evaluations consist of two components:

- i. On-the-job Student Performance: job performance shall be assessed by the Academic Staff Members in Co-operative Education using information gathered during the work term and input from the employer toward the end of the work term. Evaluation of the job performance will result in one of the following classifications: PASS WITH DISTINCTION, PASS, or FAIL.
- ii. Assignment(s): students are required to submit one or more assignments to the Academic Staff Members in Co-operative Education as outlined in the course syllabus. Evaluation of the assignment(s) will result in one of the following classifications: PASS WITH DISTINCTION, PASS, or FAIL.

Overall evaluation of the work term will result in one of the following final grades being awarded: PASS WITH DISTINCTION indicates the student received a grade of pass with distinction on both the on-the-job performance and the assignment(s).

PASS indicates the student received a grade of PASS on both the on-the-job performance and the assignment(s) or a grade of PASS on one component and PASS WITH DISTINCTION on the other component.

FAIL indicates the student receive a grade of FAIL on either one or both of the on-the-job performance and assignment(s).

Work term placements are arranged by Co-operative Education in consultation with the Program Chair and the student's Supervisor. The on-site employment supervisor and Co-operative Education evaluate the work term based on the student's performance on the job and on a written work term

report submitted by the student. The topic of the work term report must be related to the work experience and will be chosen by the student in consultation with the on-site employment supervisor and Co-operative Education. The student will be permitted to submit a work term report only after the on-site employment supervisor and Co-operative Education determine that the work term has been successfully completed. The work term report may become the basis for the project report for Environmental Science 6009 (Project) which is required for the M.Env.Sci. Degree. The Program Chair, on the advice of Co-operative Education with input from the on-site employment supervisor, will recommend to the Dean of Graduate Studies a grade of Pass with Distinction, Pass, or Fail. In cases where Co-operative Education and the on-site employment supervisor are unable to reach agreement concerning the grade, the final decision lies with the Program Chair. Should a student fail to complete a work term successfully, the graduate student's M.Env.Sci. Supervisor and the Program Chair may submit to Co-operative Education a proposal for a different work term placement (only once), or the student may apply to the Board of Studies for a change to the course-based M.Env.Sci. Option A, or to the thesis-based M.Sc. (Environmental Science).

15 Regulations Governing the Degree of Master of Environmental Science

15.3 Degree Requirements

15.3 Degree Requirements

To the extent that resources permit, individual programs will be developed to suit students' interests and needs. However all programs must be approved by the Board of Studies and by the Dean of Graduate Studies. All **General Regulations** of the School of Graduate Studies shall apply to these degrees.

3. The Master of Environmental Science (M.Env.Sci.) is a multidisciplinary course-based degree, focussed on environmental issues. The Degree program provides for both multidisciplinary courses and for courses focussed on the student's specific area of interest.
4. The Degree program requires completion of 24 credit hours of either **Option A** or **Option B** and a project report. The project report will be evaluated according to procedures outlined in **General Regulations, Theses and Reports**.

Option A

Students will be required to take a minimum of 15 credit hours in program courses, 9 credit hours of which must be Environmental Science 6000, Environmental Science 6009, and Environmental Science 6010 and 6 credit hours from Environmental Science 6001, 6002, and 6003. Students will also be required to take a minimum of 9 credit hours in elective courses approved by the Board of Studies, 6 credit hours of which will normally be selected from graduate courses offered by the Faculty of Science and the Faculty of Engineering and Applied Science. Students are advised to consult with instructors and Faculties regarding necessary prerequisites and availability.

Option B

Admission into Option B is limited, competitive and selective. Students may be requested to participate in an interview as part of the selection process. The application deadline for admission to Option B is October 15th.

Students will be required to take a minimum of 15 credit hours in program courses, 9 credit hours of which must be Environmental Science 6000, Environmental Science 6009, and Environmental Science 6010 and 6 credit hours from Environmental Science 6001, 6002, and 6003. Students will also be required to take a minimum of 6 credit hours in elective courses approved by the Board of Studies, normally selected from graduate courses offered by the Faculty of Science and Faculty of Engineering and Applied Science. In addition, students will be required to complete the 3 credit hours course Environmental Science 601W (work term).

Environmental Science 601W is a work term of one semester duration. The work term is a full-time period of employment, normally paid and normally in the spring semester. Students are ultimately responsible for securing work term placements. Academic Staff Members in Co-operative Education, in consultation with the Program Chair and the student's Supervisor, provide support for the job search and inform students of potential opportunities. Work terms must be approved by the Academic Staff Members in Co-operative Education before the start of the term.

Work term evaluations consist of two components:

- iii. On-the-job Student Performance: job performance shall be assessed by the Academic Staff Members in Co-operative Education using information gathered during the work term and input from the employer toward the end of the work term. Evaluation of the job performance will result in one of the following classifications: PASS WITH DISTINCTION, PASS, or FAIL.
- iv. Assignment(s): students are required to submit one or more assignments to the Academic Staff Members in Co-operative Education as outlined in the course syllabus. Evaluation of the assignment(s) will result in one of the following classifications: PASS WITH DISTINCTION, PASS, or FAIL.

Overall evaluation of the work term will result in one of the following final grades being awarded: PASS WITH DISTINCTION indicates the student received a grade of pass with distinction on both the on-the-job performance and the assignment(s).

PASS indicates the student received a grade of PASS on both the on-the-job performance and the assignment(s) or a grade of PASS on one component and PASS WITH DISTINCTION on the other component.

FAIL indicates the student receive a grade of FAIL on either one or both of the on-the-job performance and assignment(s).



Request for Approval of a Graduate Course

Paper 5.B.c (page 462 of 463)

School of Graduate Studies

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) Fill in the required data and save the file; (5) Submit the completed form to:

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.: EASC 7000

Course Title: Graduate Internship in Earth Sciences

I. To be completed for all requests:

A. Course Type: ☐ Lecture course ☐ Lecture course with laboratory
☐ Laboratory course ☐ Undergraduate course¹
☐ Directed readings ☒ Other (please specify) see attached

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 formal assessment)? ☐ Yes ☒ No

E. Credit hours for this course: no credit hours are assigned to this course

F. Course description (reading list required):
see attached

G. Method of evaluation:

	Written	Percentage	Oral
Class tests			
Assignments			
Other (specify):			
Final examination:	inter		

Total pass or fail

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

Course instructor

G.D. LAYNE

Date

2018-11-21

Approval of the head of the academic unit

G.D. LAYNE D/H

Date

2018-11-21

IV. This course proposal was approved by the Faculty/School/Council

Secretary, Faculty/School/Council

Date