

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, May 16, 2018 at 1 p.m. in C-2045.

AGENDA

1. **Regrets**
2. **Adoption of the Minutes of April 18, 2018**
3. **Business Arising from the Minutes:** None
4. **Correspondence:** None
5. **Reports of Standing Committees:**
 - A. **Undergraduate Studies Committee:**
 - a. Department of Biology, paper 5.A.a (Pages 6-28)
 - i) Calendar change to Existing Programs: Chemistry requirements for the Biology and Statistics Joint Honours (B.Sc. only)
 - b. Memo from Senate Committee on Undergraduate Studies requesting feedback on General Regulation 6.3 Residence Requirements, and response from Faculty of Science Undergraduate Studies Committee, paper 5.A.b (Pages 29-31)
 - B. **Graduate Studies Committee:**
 - a. Aquaculture Program, special topics course, AQUA 6203, Applications of Transcriptome Analysis in Aquaculture, approved by the committee and presented to Faculty Council for information only, paper 5.B.a (Pages 32-38)
 - b. Department of Biology, special topics course, BIOL 7948, Lichens: molecular biology and culturing, approved by the committee and presented to Faculty Council for information only, paper 5.B.b (Pages 39-44)
 - 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**



Mary L. Courage, Ph.D.
Interim Dean of Science



Faculty of Science

Office of the Dean
St. John's, NL, Canada A1B 3X7
Tel: 709 864 8154 Fax: 709 864 3316
deansci@mun.ca www.mun.ca/science

FACULTY OF SCIENCE FACULTY COUNCIL OF SCIENCE MINUTES OF MEETING OF APRIL 18, 2018

A meeting of the Faculty Council of the Faculty of Science was held on Wednesday, April 18th at 1:00 p.m. in room C-2004.

FSC 2590

Present

Biochemistry

Berry, M. Booth, V. Mulligan, M.

Biology

Jones, I. Staveley, B.

Chemistry

Bottaro, C. Flinn, C. Fridgen, T. Grover, H. Kerton, F.
Kozak, C. Merschrod, E.

Computer Science

Brown, E.

Earth Sciences

Hanchar, J. Welford, K.

Mathematics & Statistics

Haynes, R. Radford, C. Sullivan, S. Variyath, A.

Ocean Sciences

Fletcher, G.

Physics & Physical Oceanography

Curnoe, S. Lagowski, J. Saika-Voivod, I.

Dean of Science Office

Foss, K. Foster, A. Jackson, G. MacKenzie, T.

Library

Gamsby, M.

Registrar's Office
Edmunds, T.

Faculty of Business
Clift, T.

Marine Institute
Caines, S.

Graduate Students
Aina, A.

FSC 2591 **Regrets**
Catto, N. Loredano-Osti, J.C. Poduska, K. Stordy, M. Todd, A.

FSC 2592 **Adoption of Minutes**
Moved: Minutes of March 21, 2018, meeting be adopted (Sullivan/Kerton).
Two Abstentions. Carried.

FSC 2593 **Business Arising:** None

FSC 2594 **Correspondence:** None

FSC 2595 **Reports of Standing Committees:**

A. Undergraduate Studies Committee:
Report presented by Shannon Sullivan, Chair, Undergraduate Studies
Committee

a) i) Moved: Department of Chemistry, deletion of CHEM 1011
(Sullivan/Fridgen). **Carried.**

ii) Moved: Department of Chemistry, deletion of CHEM 2440
(Sullivan/Flinn). **One Abstention. Carried.**

b) i) Moved: Department of Biology, calendar change, BIOL 4405
(Sullivan/Staveley). **Carried.**

ii) Moved: Department of Biology, calendar change to existing
programs, Biology Cooperative Programs (Sullivan/Staveley).
Carried.

iii) Moved: Department of Biology, calendar change to existing
programs, chemistry requirements for Biology Major and Honours
programs (Sullivan/Staveley). **Carried.**

c) i) Moved: Department of Ocean Sciences, calendar changes, OCSC
2500 (Sullivan/Fletcher). **Carried.**

ii) Department of Ocean Sciences, new special topics course, OCSC 4940, for information only.

B. Graduate Studies Committee:

Report presented by Ron Haynes, Acting Chair, Graduate Studies Committee:

- a) **Moved:** Department of Ocean Sciences, request for new special topics course number range OCSC 7500-7515 (Haynes/Radford). **Carried.**
- b) **Moved:** Department of Mathematics and Statistics, presented eight motions for changes to the Statistics graduate programmes including the addition of several graduate Statistics courses (page 82) (Haynes/Radford). **Carried.**
- c) **Moved:** Department of Psychology, calendar change to course requirement PSYC 6001 (Haynes/Jones). **Carried.**
- d) Department of Psychology, special topics course, PSYC 6001, Substance Abuse and Behavioural Addictions in Youth, presented to council for information purposes only.

C. Nominating Committee: None

D. Library Committee: None

FSC 2596

Report of Teaching Consultant:

The 2018 Teaching & Learning Conference at Memorial University is being held on April 26-27. The format has changed from last year's teaching day, and follows a more typical conference format with keynote speakers, panels, and various breakout talks and sessions. The schedule is posted on the conference website (<https://citl.mun.ca/conference/index.php>), and includes a couple sessions from instructors within the Faculty of Science, as well as a Keynote from Dr. David Helfand, Department of Astronomy, Columbia University.

Registration is FREE, so we really encourage instructors to take part and attend, even if it is only for select sessions of interest.

FSC 2597

Reports of Delegates from Other Councils: None

FSC 2598

Report of the Dean:

Dr. Courage informed Faculty Council members that the NSERC Discovery grant results have been released and the Faculty of Science had a 76% success rate. This is better than the Memorial University success rate of 58%. Dr. Courage thanked everyone for their hard work. In addition, the Faculty of Science was awarded one RTI in the Department of Biology. The faculty has 201 faculty members and 129 are engaged with NSERC.

We are still awaiting to start the searches for several approved faculty positions. Since the new fiscal year, Dr. Courage has written the Provost and VPR to confirm startup funds.

Zach Goudie of CBC News has posted a news article on the construction of the new Core Sciences Facility. The pictures and videos are spectacular and Gail Kenny will send out the web link to the Departments.

FSC 2599 Question Period:

FSC 2600 Adjournment
The meeting adjourned at 1:45 p.m.



Office of the Registrar

St. John's, NL Canada A1C 5S7
Tel: 709 864 8260 Fax: 709 864 2337
www.mun.ca

May 3, 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 a meeting held on April 17, 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 Biology

- (a) Department of Biology - Calendar Changes to Existing Programs - Chemistry requirements for the Biology and Statistics Joint Honours (B.Sc. Only)

Tracey Edmunds

Tracey Edmunds

Proposal

Calendar Change(s) to Existing Program(s)

Executive Summary

The Department of Biology would like to remove CHEM 1010 Introductory Chemistry I, CHEM 1011 Introductory Chemistry II, and CHEM 2440 Organic Chemistry for Biologists from the Biology and Statistics Joint Honours.

The above courses will be replaced CHEM 1050 General Chemistry I, CHEM 1051 General Chemistry II, CHEM 2400 Introduction to Organic Chemistry I, and CHEM 2401 Introduction to Organic Chemistry II to provide students with a more completion foundation in basic and organic chemistry.

Resource Implications: Instructional Costs

No new resources are required. There are no changes to the course content.

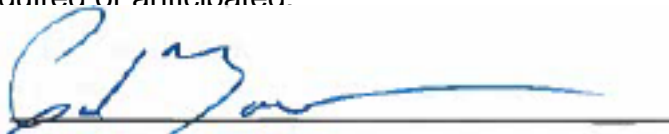
Consultations

The internal distribution list for Calendar changes.

Library Holdings and/or Other Resources Required

No new library resources or costs are required or anticipated.

Signature of Unit Head (if appropriate):



Date:

2-10-17

Signature of Dean/Associate Vice-President (Academic)/Vice-President:

Date:

SUMMARY PAGE FOR SENATE**Approval Form****Biology and Statistics Joint Honours (B.Sc. Only)**

Calendar Change(s) - **See attached**

6.1.11 Biology and Statistics Joint Honours (B.Sc. Only)

See [Regulations for the Honours Degree of Bachelor of Science](#). Students shall complete the following requirements:

1. Mathematics 1000 and 1001, Biology 1001 and 1002, English 1090 or the former English 1080 and 1110, Chemistry ~~4040 and 4041~~ (or 1050 and 1051) (or 1200 and 1001), Physics 1020 and 1021, or equivalent;
2. Mathematics 2000, 2050, 2051, Statistics 2500, 2501 or 2560, 3520, 3521, 4530, and 4581;
3. 9 further credit hours in Statistics courses (excluding those with second digit 0) including at least 6 credit hours in courses at the 4000 level or higher but not including Statistics 459A/B;
4. Chemistry ~~2440~~ (or 2400 and 2401), Biochemistry 2101 and 3106;
5. Biology 2060, 2250, 2600, 2900, one of 3401, 3402, 4245, or 4404. In addition, further Biology courses at the 2000, 3000 or 4000 level must be selected by the student in consultation with the supervisor to make up a minimum of 42 credit hours in Biology but not including Biology 499A or 499B;
6. Either Biology 499A/B or Statistics 459A/B; and
7. A computing course. Computer Science 1510 is recommended.

Secondary Calendar Changes

None.

Calendar Entry After Changes**6.1.11 Biology and Statistics Joint Honours (B.Sc. Only)**

See [Regulations for the Honours Degree of Bachelor of Science](#). Students shall complete the following requirements:

1. Mathematics 1000 and 1001, Biology 1001 and 1002, English 1090 or the former English 1080 and 1110, Chemistry 1050 and 1051 (or 1200 and 1001), Physics 1020 and 1021, or equivalent;
2. Mathematics 2000, 2050, 2051, Statistics 2500, 2501 or 2560, 3520, 3521, 4530, and 4581;
3. 9 further credit hours in Statistics courses (excluding those with second digit 0) including at least 6 credit hours in courses at the 4000 level or higher but not including Statistics 459A/B;
4. Chemistry 2400 and 2401, Biochemistry 2101 and 3106;
5. Biology 2060, 2250, 2600, 2900, one of 3401, 3402, 4245, or 4404. In addition, further Biology courses at the 2000, 3000 or 4000 level must be selected by the student in consultation with the supervisor to make up a minimum of 42 credit hours in Biology but not including Biology 499A or 499B;
6. Either Biology 499A/B or Statistics 459A/B; and
7. A computing course. Computer Science 1510 is recommended.

Rationale

The addition of the more rigorous CHEM 1050/1051 (or CHEM 1200 and 1001) and CHEM 2400/2401 will provide students with a more complete foundation in basic and organic chemistry without disrupting the prescribed course schedule for the Joint Honours program.

Consultations Sought From

Comments Received

Business Administration	No
Co-operative Education	No
Education	Yes
Engineering	No
Grenfell Campus (School of Science and the Environment)	Yes
Human Kinetics and Recreation	Yes
Marine Institute	Yes
Medicine	Yes
Music	No
Nursing	No
Pharmacy	No
Chemistry	No
Biochemistry	Yes
Physics and Physical Oceanography	Yes
Social Work	Yes
Library Report Received	Yes

Signature: Dean, Associate Vice-President (Academic) or Vice-President

Name _____

FOR OFFICE USE ONLY

APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair: _____

Secretary: _____

Date: _____

Jody-Lynn Burke

From: Valerie Booth <vbooth@mun.ca>
Sent: November-06-17 3:50 PM
To: Jody-Lynn Burke
Cc: Biochemistry Head
Subject: Re: Consultation Feedback Request

Importance: High

These are fine by Biochemistry.

Best,
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/>

On Nov 6, 2017, at 9:37 AM, Biochemistry Head <biohead@MUN.CA> wrote:

More chemistry knock-on effects

Mark D. Berry Ph.D.
Professor and Head
Dept. Biochemistry
Memorial University of Newfoundland
St. John's, NL, Canada
A1B 3X9

Associate Member
Beatrice Hunter Cancer Research Institute

Tel: +1-709-864-8529
E-mail: mberry@mun.ca; biohead@mun.ca

From: Dean of Science
Sent: November 6, 2017 9:35 AM
To: Foster, Andy; Chemistry; Computer Science; Earth Sciences; Fletcher, Garth; Ian Neath; Jolanta Lagowski (physicshead@mun.ca); Biochemistry Head; Math & Stats; Marino, Paul
Cc: Foster, Andy
Subject: FW: Consultation Feedback Request

From: Jody-Lynn Burke
Sent: November-05-17 12:22 PM
Subject: Consultation Feedback Request
Importance: High

Dear colleagues,

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

- The removal of CHEM 1010/1011 and 2440 from the Joint Honours program in Biology and Statistics. With the Department of Chemistry's plans to phase out these courses, we are moving to replace them with CHEM 1050/1051 and CHEM 2400/2401.

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

<Changes Existing Programs - Changes to Joint Honours (BIOL and STAT).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/>

Jody-Lynn Burke

From: Collett, Meghan
Sent: November-16-17 10:03 AM
To: Jody-Lynn Burke
Subject: RE: Consultation Feedback Request

Hello Ms. Burke,

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 Undergraduate Programs

Faculty of Education
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1B 3X8
G.A.Hickman Building | Room ED 2020
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Fax: 709 864-2623

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From: Jody-Lynn Burke
Sent: Sunday, November 05, 2017 12:22 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Coady, Peggy <pacoady@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>
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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: Dean - School of Science and the Environment <ssedean@grenfell.mun.ca>
Sent: November-18-17 10:48 AM
To: Jody-Lynn Burke
Subject: Re: Consultation Feedback Request

Categories: Green Category

Dear Jody-Lynn,

The proposals were circulated to the Environmental Science program and the feedback received is pasted below. Several changes have been suggested.

Best wishes,

Michele Piercey-Normore

Dean, School of Science and the Environment

On behalf of the Chemistry Group, Grenfell Campus, we would appreciate the following corrections to the Chemistry Entrance Requirements. In our opinion, the Grenfell Campus, Memorial University, first year chemistry sequence, Chem 1200/1001, deserves 'equal billing' to the first year chemistry sequence of the MUN St. John's Campus. Therefore all entries for the new Calendar descriptions should read:

"Chemistry 1050/1051 **or Chemistry 1200/1001** (or equivalent)"

Such an amendment is need for 10.2.1; 10.2.3.1; 10.2.3.2; 10.2.3.3; 10.2.5.2; 10.2.6.2; 10.2.7.2; 10.2.8.2

And the following changes also need to be made (as currently 1050/1050 are listed as the only permissible chemistry courses):

10.2.3.1

Chemistry 1050 and 1051 **or 1200 and 1001**

11.2

Biol 2010

Chemistry 1050 **or Chemistry 1200**

Biol 2250

PR: Science 1807; BIOL 1001 and 1002; Chemistry 1050 and 1051 **or 1200 and 1001**

Also, on page 2 of the document

point 1 in both the before and after changes listings - Chemistry 1050 and 1051

OR 1200 and 1001

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

Sent: Sunday, November 5, 2017 12:21 PM

To: Faculty of Humanities and Social Sciences; Coady, Peggy; Collett, Meghan; engrconsult@mun.ca; Robinson, Laura;

Dean - School of Science and the Environment; Hennessey, Todd; Rohr, Linda; miugconsultations@mi.mun.ca; deanofmedicine@med.mun.ca; Sutherland,Ian D; DeanNurse; pharminfo@mun.ca; Dean of Science; adeanugradswk; Library Correspondence

Subject: Consultation Feedback Request

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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

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Jody-Lynn Burke

From: Rohr, Linda
Sent: November-14-17 3:48 PM
To: Jody-Lynn Burke
Subject: Re: Consultation Feedback Request

Importance: High

Hi Jody,
No concerns from HKR with the removal of CHEM 1010/1011.
Linda

Linda E. Rohr PhD
Associate Professor & Associate Dean Undergraduate Studies
Human Kinetics and Recreation, Memorial University
t: 709.864.6202 f: 709.864.7531 e: lerohr@mun.ca
PE 2025

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: Sunday, November 5, 2017 at 12:21 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Coady, Peggy" <pacoady@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>
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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: Alcock, Erin
Sent: November-21-17 3:51 PM
To: Jody-Lynn Burke
Subject: Re: Consultation Feedback Request

Importance: High

Hello Jody-Lynn,

I have reviewed three proposals from Biology.

- On the proposed changes to the Chemistry prerequisites, I see no implications for Memorial University Libraries.
- On the regulations for the Biology Cooperative Program I see no implications for Memorial University Libraries.
- On the removal of the lab component for Biology 4405, there are no implications for the research materials from the Library.

All the best with the rest of the process.

Erin Alcock

Erin Alcock

Science Research Liaison Librarian
QE2 Library
Memorial University of Newfoundland
ekalcock@mun.ca
709-864-8316

From: Jody-Lynn Burke <jrotchford@mun.ca>
Date: Sunday, November 5, 2017 at 12:21 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>, "Coady, Peggy" <pacoady@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>
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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: cvardy@mun.ca
Sent: November-08-17 11:26 AM
To: Jody-Lynn Burke
Subject: FW: Consultation Feedback Request
Attachments: Changes Existing Programs - Changes to Joint Honours (BIOL and STAT).pdf
Importance: High

The Faculty of Medicine is supportive of the proposal for calendar change(s) to the existing program(s) as outlined in your document attached.

Regards

Cathy Vardy, MD, FRCPC
Vice Dean and Professor of Pediatrics
Faculty of Medicine
Health Sciences Centre, M2M319
Memorial University of NL

Tel: 709-864-6417
Fax: 709-864-6336

From: Steele, Dr. Margaret: Dean of Medicine
Sent: Sunday, November 5, 2017 1:23 PM
To: Vardy, Cathy <cvardy@mun.ca>
Subject: FW: Consultation Feedback Request
Importance: High

Hi Cathy
Hope TaMMI went well yesterday.
Could you please review
Cheers
Margaret

From: Jody-Lynn Burke [<mailto:jrotchford@mun.ca>]
Sent: Sunday, November 5, 2017 12:22 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Coady, Peggy <pacoady@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>
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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: MIUG Consultations <MIUGconsultations@mi.mun.ca>
Sent: November-09-17 2:43 PM
To: Jody-Lynn Burke
Subject: RE: Consultation Feedback Request

Hi Jody,

Thank you for the opportunity to review and comment on the proposal for calendar changes to the Joint Honours (BIOL and STAT). These will have no impact on Marine Institute programs and we are happy to support this proposal.

All the best,
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: Sunday, November 05, 2017 12:22 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Coady, Peggy <pacoady@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>
Subject: Consultation Feedback Request
Importance: High

Dear colleagues,

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

- The removal of CHEM 1010/1011 and 2440 from the Joint Honours program in Biology and Statistics. With the Department of Chemistry's plans to phase out these courses, we are moving to replace them with CHEM 1050/1051 and CHEM 2400/2401.

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: Ivan Saika-Voivod <saika@mun.ca>
Sent: November-07-17 10:05 AM
To: Jody Burke
Cc: rgouldng Goulding; Physics Head
Subject: Re: Consultation Feedback Request

Dear Jody,

The Department of Physics and Physical Oceanography is supportive the proposal to update the chemistry course requirements for the Joint Honours program in Biology and Statistics.

Best,
Ivan

Ivan Saika-Voivod, Associate Professor
Chair, Undergraduate Studies Committee
Department of Physics and Physical Oceanography, Memorial University of Newfoundland
St. John's, NL, Canada, A1B 3X7
Phone: (709) 864-8886 Fax: (709) 864-8739 Room C3026

On 2017-11-06, at 3:43 PM, Physics Head wrote:

Ivan and Rick,
I see no problem with this. We should do the same to our physics programs. These changes should be first approved by USC.
Jolanta

From: Dean of Science <deansci@mun.ca>
Date: Monday, November 6, 2017 at 9:35 AM
To: "Foster, Andy" <afoster@mun.ca>, Chemistry <chemconsult@mun.ca>, Computer Science <cs-Chair@mun.ca>, Earth Sciences <eascugcon@mun.ca>, "Fletcher, Garth" <fletcher@mun.ca>, Ian Neath <Psychology.Head@mun.ca>, Jolanta Lagowski <physicshead@mun.ca>, Biochemistry Head <biohead@mun.ca>, Math & Stats <mathconsult@mun.ca>, "Marino, Paul" <pmarino@mun.ca>
Cc: "Foster, Andy" <afoster@mun.ca>
Subject: FW: Consultation Feedback Request

From: Jody-Lynn Burke
Sent: November-05-17 12:22 PM
Subject: Consultation Feedback Request
Importance: High

Dear colleagues,

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

- The removal of CHEM 1010/1011 and 2440 from the Joint Honours program in Biology and Statistics. With the Department of Chemistry's plans to phase out these courses, we are moving to replace them with CHEM 1050/1051 and CHEM 2400/2401.

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

<Changes Existing Programs - Changes to Joint Honours (BIOL and STAT).pdf>

Jody-Lynn Burke

From: adeanugradswk
Sent: November-13-17 11:29 AM
To: Jody-Lynn Burke
Subject: RE: Consultation Feedback Request

Hello Jody-Lynn,

I have reviewed your proposed calendar changes and I do not have any suggestions.

The changes you propose do not impact the School of Social Work undergraduate programs.

Regards,

Heather

Heather J. Hair, PhD, RMFT, 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: November 5, 2017 12:22 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Coady, Peggy <pacoady@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 Feedback Request
Importance: High

Dear colleagues,

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

- The removal of CHEM 1010/1011 and 2440 from the Joint Honours program in Biology and Statistics. With the Department of Chemistry's plans to phase out these courses, we are moving to replace them with CHEM 1050/1051 and CHEM 2400/2401.

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

From: [Math Consult](#)
To: [Jody-Lynn Burke](#)
Subject: FW: Joint Honours in Biology and Statistics - Calendar Change
Date: November-05-17 11:42:55 AM
Attachments: [Changes Existing Programs - Changes to Joint Honours \(BIOL and STAT\).pdf](#)

Hi Jody,

Math & Stats is fine with this.

Tara

From: Stuckless, Tara Lee [mailto:tstuckless@mun.ca]
Sent: November-03-17 3:36 PM
To: mathconsult@mun.ca
Subject: FW: Joint Honours in Biology and Statistics - Calendar Change

From: Zhaozhi Fan [mailto:zhaozhi@mun.ca]
Sent: November-03-17 11:26 AM
To: mathugrad <mathugrad@mun.ca>
Subject: Fwd: Joint Honours in Biology and Statistics - Calendar Change

Hi Tara,

I received this email.

I checked with the attached file. There is no changes towards the requirement of statistics courses.

Shall I reply this email, or it be formally done by you?

Thanks,

George

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

Subject: Joint Honours in Biology and Statistics - Calendar Change
Date: Thu, 2 Nov 2017 13:56:41 +0000
From: Jody-Lynn Burke <jjrotchford@mun.ca>
To: zhaozhi@mun.ca <zhaozhi@mun.ca>

Dr. Fan,

The Department of Biology would like to update the calendar entry for the Joint Honours in Biology and Statistics to reflect recent changes to CHEM 1010/1011 and the upcoming changes to CHEM 2440.

In keeping in line with changes made to our Majors/Honours program, we are recommending replacing CHEM 1010/1011 with 1051/1051 and CHEM 2440 with 2400/2401.

Do we have the support of the Statistics Department to forward this proposal for university wide consultation?

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



Office of the Registrar

St. John's, NL Canada A1C 5S7
Tel: 709 864 8260 Fax: 709 864 2337
www.mun.ca

May 3, 2018

TO: All Members of Faculty Council, Faculty of Science

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

SUBJECT: **General Undergraduate Regulation 6.3 Residence Requirement**

In a memorandum dated February 20th, 2018 the Senate Committee on Undergraduate Studies requested input from academic units on a proposal to modify the University's residence requirements for a first degree (General Academic Regulation 6.3.2). Most significantly, this proposal would replace the existing restriction that students complete the last 30 credit hours required for the degree at this University with a requirement that at least half of the total credit hours for the degree be completed at this University.

This proposal was discussed at a meeting of the Undergraduate Studies Committee of the Faculty of Science held on April 17th, 2018. The Committee was generally in support of the proposal, especially given that academic units also retain the option to designate courses as being ineligible for transfer credit.

However, several Committee members felt that Regulation 3 (which requires that students take at least 12 credit hours in each of their Major subjects at this University) was insufficiently strong, and that students should be required to complete an appropriate number of courses from their Major subjects at the 3000-level and above from this University. In particular, Committee members suggested that the University consider adopting the new Science regulation which stipulates that: "At least 15 credit hours in courses from each Major subject at the 3000-level or above must be completed at this University."

These comments are now presented to the Faculty Council for endorsement and transmission to the Senate Committee on Undergraduate Students.

Regards,

Tracey Edmunds

Tracey Edmunds



Office of the Registrar

St. John's, NL Canada A1C 5S7
Tel: 709 864 8260 Fax: 709 864 2337
www.mun.ca

20 February 2018

TO: Secretaries, Academic Councils, Faculties/Schools/Grenfell Campus/Marine Institute
Student Unions (St. John's Campus, Grenfell Campus, Marine Institute, Graduate Studies)
Office of the Registrar (St. John's, Grenfell Campus and Marine Institute)

FROM: Jennifer Porter, Secretary, Senate Committee on Undergraduate Studies

SUBJECT: General Undergraduate Regulation 6.3 Residence Requirement

In 2015, the Senate Committee on Undergraduate Studies reviewed and approved a report of the Subcommittee to Review Transfer Credit. The report included recommendations for changes to Memorial University regulations and related transfer credit evaluation and recognition practices. The following is an excerpt from the subcommittee report:

Residence Requirements The nature of degree programs and how students tend to obtain required credits and progress through their programs has changed over time. Requests to waive the University's residence requirements for a first degree (last 30 credit hours completed at Memorial) are received frequently from students from across the University. These are often from students completing lower-level courses in their last 30 credit hours in order to meet specific degree requirements. So it is most often the case that these students have completed the majority of their total credits and more senior-level course requirements at Memorial. A review of other institutions' requirements indicates that 50% is most commonly used to establish general limits on the extent to which transfer courses may be used to satisfy first degree requirements. **It is recommended that the University's residency requirements be changed to remove the general requirement for completion of the final 30 credit hours at Memorial and instead require that a minimum of 50% of the credit hours required for a first undergraduate degree be completed at Memorial...**

As per the above recommendation, a proposal outlining suggested changes to Undergraduate Regulation 6.3 Residence Requirements and a series of questions related to the proposal are now being forwarded to the university community for consideration and feedback. The Committee is asking that a single coordinated response from each unit (be it as a result of discussion at Academic/Faculty Council or other body) be forwarded by email to scugs@mun.ca by **the end of May 2018**.

If you have any questions regarding the above, please get in touch with me by phone at 864-4410 or by e-mail at scugs@mun.ca.

Yours truly,

A handwritten signature in blue ink that reads "Jennifer Porter".

Jennifer Porter
Deputy Registrar and
Secretary to the Committee

JMP/bjh

Attachment

cc: Committees on Undergraduate Studies
Provost and Vice-President (Academic)

6.3 Residence Requirements

6.3.1 General Information

1. Residence requirements are met by attendance at classes on a campus and/or by the number of credit hours completed at this University.

6.3.2 First Degree

1. For a first bachelor's degree students shall have completed a minimum of 24 credit hours through attendance at classes on the campus of a recognized university or university college, ~~Distance education courses may be used to satisfy the requirements of this clause only~~ except for the degrees of Bachelor of Business Administration, Bachelor of Business Administration (Honours), Bachelor of Maritime Studies, ~~Bachelor of Nursing (Post-RN)~~ and Bachelor of Technology.
2. ~~Students shall complete at this University the last 30 credit hours required for the degree. There are exceptions to this requirement as follows~~ At least half of the total credit hours required for the degree shall consist of the following:
 - ~~Where special circumstances warrant, and only if at least half the courses required for the degree are completed at this University, the appropriate committee on undergraduate studies may permit students to complete, at another recognized institution, not more than 15 of the last 30 credit hours or equivalent required for the degree. The courses which comprise those credit hours must be approved by the appropriate academic unit.~~
 - Courses taken at this University.
 - Courses taken at universities and/or colleges which are included in formal institutional exchange agreements with this University ~~are not subject to the requirements of this clause.~~
 - Courses taken at Francophone universities, as required under specific degree program regulations, ~~are not subject to the requirements of this clause.~~
3. Students who have taken courses in the subject(s) of their major at another university are required to complete at least 12 credit hours in each of their that major subjects at this University.

Questions to be considered:

1. Regulation 6.3.2, #1 was written at a time when online/distance courses were first being introduced, and it was felt that (with some exceptions) students should be required to take a number of on-campus courses as part of their degree. Is this regulation still applicable/relevant? If so, are there any additional degrees which should be exempted from this regulation, apart from those listed?
2. Regulation 6.3.2, #2 would replace the existing requirement that students complete their last 30 credit hours at Memorial with a new requirement that students complete at least half of their total credit hours at Memorial (with some exceptions). Is 50% of a student's total credit hours a reasonable threshold? If not, what is an appropriate percentage, and for what reason?
3. Should Regulation 6.3.2, #3 be brought in line with the overall residence requirement? That is, rather than the current requirement of 12 credit hours, should the percentage of credit hours from the subject(s) of major to be completed at Memorial be made the same as the percentage of total credit hours required to be completed at Memorial, as given in Regulation 6.3.2, #2?



Faculty of Science

Office of the Dean
St. John's, NL Canada A1B 3X7
Tel: 709 864 8154 Fax: 709 864 3316
deansci@mun.ca www.mun.ca/science

May 9, 2018

TO: Registrar's Office
FROM: Secretary, Faculty of Science Faculty Council
SUBJECT: Special Topics Courses

The special topics courses, AQUA 6203, Applications of Transcriptome Analysis in Aquaculture, and BIOL 7948, Lichens: molecular biology and culturing, have been approved by the Faculty of Science Faculty Council Graduate Studies Committee.

The Request for Approval of a Graduate Course forms are attached. If you require more information please let me know.

A handwritten signature in blue ink that reads "Gina Jackson".

Gina Jackson
Secretary, Faculty of Science Faculty Council

/gbk

cc: A. Williams, School of Graduate Studies
S. Kenny, Biology
N. Bishop, Aquaculture



Request for Approval of a Graduate Course

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: sgst@mun.ca

To: Dean, School of Graduate Studies
 From: Faculty/School/Department/Program
 Subject: Regular Course Special/Selected Topics Course

Course No.: AQUA 8203

Course Title: Applications of Transcriptome Analysis in Aquaculture

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) Article Critiques and Term Papers

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. Credit hours for this course: 3

E. Course description (reading list required): See attached doc

See attached document.

F. Method of evaluation:	Percentage	
	Written	Oral
Class tests	0	0
Assignments	30 (3 @ 10% each)	0
Other (specify): Article Critiques and Term Paper	70 (2 @ 35% each)	0
Final examination:	0	0
Total	100	0

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

ju [signature]
ju [signature]
ju [signature]
ju [signature]

Recommended for offering in the Fall Winter Spring 20 18

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

[Signature]

3 May 2018

Approval of the head of the academic unit

Date

IV. This course proposal was approved by the Faculty/School/Council

[Signature]

Secretary, Faculty/School/Council

May 9, 2018

Date

AQUA 6203: Applications of Transcriptome Analysis in Aquaculture

COURSE INSTRUCTOR(S):

Dr. Jillian Westcott, an aquaculture instructor/researcher with the Fisheries and Marine Institute with five years of experience teaching master level courses online, will prepare the course for online delivery and co-instruct.

Dr. Matthew Rise, a professor with the Department of Ocean Sciences and a leading expert in the application of functional genomics approaches in aquaculture research (e.g. related to fish growth and immune responses), will co-instruct.

COURSE DESCRIPTION:

This course will provide a comprehensive overview of transcriptomics methods and applications in aquaculture. It will foster the development of skills required for the critical review of scientific literature and communication of scientific research findings.

METHOD OF DELIVERY:

This course will be offered as a reading course. It will be delivered fully online using Desire2Learn (D2L). A variety of journals, key texts, and technical reports will be assigned for reading in relation to the outlined modules. All resources are available within the Memorial Library systems.

PREREQUISITES: None.

TENTATIVE SYLLABUS:

Module 1 (Week 1-2): Introduction to Transcriptomics in Aquaculture

1.1 Overview of methods used for transcriptome studies in aquaculture (e.g. SSH, microarray, RNA sequencing, miRNA sequencing) (Weeks 1 and 2)

Module 2 (Week 3-7): Transcriptomics in Aquaculture Application I: Immune Function

- 2.1 Fish and shellfish responses to bacterial pathogens (Week 3)
- 2.2 Fish responses to viral pathogens (Week 4)
- 2.3 Shellfish responses to viral pathogens (Week 5)
- 2.4 Fish and shellfish responses to vaccines (Week 6)
- 2.5 Sea lice-related transcriptomics studies (Week 7)

Module 3 (Week 7-10): Transcriptomics in Aquaculture Application II: Growth & Reproduction

- 3.1 Transcriptomics and fish eggs: quest for biomarkers of egg quality (Week 8)
- 3.2 Transcriptome studies of fish gonadal development (Week 9)
- 3.3 Vertebrate and invertebrate growth-related transcriptome studies (Week 10)

Module 4 (Week 11-13): Transcriptomics in Aquaculture Application III: Nutrigenomics

4.1 Fish transcriptome responses to various diets (Week 11)

4.2 Aquatic invertebrate responses to various diets (Week 12)

4.3 Nutrigenomics and impact of nutrition on immune function (Week 13)

LITERATURE:

E-JOURNALS (available through Memorial's online library access portal):

- Animal Genetics
- Aquaculture
- Aquaculture and Aquatic Resources Management
- Aquaculture and Fisheries Management
- Aquaculture Economics and Management

- Aquaculture International
- Aquaculture Research
- Aquatic Living Resources
- BMC Genetics
- BMC Genomics
- Canadian Journal of Fisheries and Aquatic Sciences
- Canadian Journal of Zoology
- Comparative Biochemistry and Physiology
- Developmental and Comparative Immunology
- Fish and Shellfish Immunology
- Fish Physiology and Biochemistry
- Journal of Applied Aquaculture
- Journal of Applied Genetics
- Journal of Fish Biology
- Journal of Fish Diseases
- Journal of Fisheries and Aquatic Science
- Journal of Shellfish Research
- Marine Biotechnology
- Marine Ecology - Progress Series
- Nature
- North American Journal of Aquaculture
- PLoS One (open access journal) <http://www.plosone.org>
- Proceedings of the National Academy of Sciences of the United States of America
- Reviews in Aquaculture
- Science

WEBSITES:

- Aquaculture Association of Canada
www.aquacultureassociation.ca

- Aquaculture Association of Nova Scotia
www.aansonline.ca
- Atlantic Canada Fish Farmers Association
www.atlanticfishfarmers.com
- BC Salmon Farmers Association
www.salmonfarmers.org
- Canadian Aquaculture Industry Alliance
www.aquaculture.ca
- Canadian Food Inspection Agency
www.inspection-gc.ca
- Fisheries and Oceans Canada (aquaculture)
<http://www.dfo-mpo.gc.ca/aquaculture/aquaculture-eng.htm>
- Food and Agriculture Organization of the United Nations
<http://www.fao.org/fishery/aquaculture/en>
- Global Aquaculture Alliance
www.gaalliance.org
- World Aquaculture Society
www.was.org
- World Organization for Animal Health
www.oie.int

TRADE PUBLICATIONS & ONLINE MATERIALS:

- Aquaculture Association of Canada, Bulletin
<http://www.aquacultureassociation.ca/publications>
- Aquaculture Association of Canada, Special Publications
<http://www.aquacultureassociation.ca/publications/special>
- Canadian Aquaculture R & D Review
<http://www.aquacultureassociation.ca/publication/canadian-aquaculture-r-d-review>
- Cold Harvester Magazine
<http://naia.ca/in-the-news/cold-harvester/>
- Global Aquaculture Advocate (free trade publication)
<http://www.gaalliance.org/mag/>
- Global Aquaculture Alliance
<http://www.gaalliance.org>
- Intrafish (via subscription, facilitator can provide ID and password access)
www.intrafish.com
- Salmon Aquaculture Database
<http://www.aquacultureassociation.ca/news/salmon-aquaculture-database>
- United Nations, Food and Agriculture Organization (FAO), Aquaculture publications
<http://www.fao.org/fishery/publications/en>
- World Wildlife Fund - Aquaculture Dialogues
<http://www.worldwildlife.org/what/globalmarkets/aquaculture/aquaculturedialogues.html>

TEXTBOOKS:

- Beaumont, A., Boudry, P., and Hoare, K. (2010). *Biotechnology and Genetics in Fisheries and Aquaculture, Second Edition*. Ames, IA: Wiley-Blackwell. ISBN 978-1-405-18857-9
 - Fletcher, G.L. and Rise, M.L. (Eds.). (2012). *Aquaculture Biotechnology*. Ames, IA: Wiley-Blackwell. ISBN-13: 978-0-8138-1028-7
 - MacKenzie, S., Jentoft, S. (Eds.). (2016). *Genomics in Aquaculture*. San Diego, CA: Academic Press. ISBN 978-0-12-801418-9
 - Watson, J.D., Caudy, A.A., Myers, R.M., and Witkowski, J.A. (2007). *Recombinant DNA: Genes and Genomes – A Short Course*. New York, NY: Cold Spring Harbor Laboratory Press. ISBN-13:978-071672866-5 (Call number QH 442 R37 2007)
 - Zhanjiang (John) Liu (editor). (2007). *Aquaculture Genome Technologies*. Ames, IA: Blackwell. ISBN: 978-0-8138-0203-9 (Call number QH 447 A657 2007)
-

EVALUATION:

- **Assignments:** 30% (3 @ 10% each). The student will be required to prepare a monthly scientific article critique related to modules of the course (four single-spaced typed pages per critique).
- **Term Papers:** 70% (2 @ 35% each). Term paper topics: (1) Transcriptomic studies of aquaculture invertebrate immune responses; (2) Aquaculture nutrigenomics studies.



Request for Approval of a Graduate Course

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.: BIOL 7948

Course Title: Lichens: molecular biology and culturing

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)

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. Credit hours for this course: 3

E. Estimated number of contact hours per semester: 39

F. Course description (reading list required):

This course will provide a general understanding of lichen biology and challenges encountered when working with an obligate symbiosis through structured readings, discussions, problem sets, and small lab exercises. An understanding of basic molecular biology and culturing skills will allow these skills to be used on any organism and allow the student to troubleshoot methodology in the lab. See attached document for syllabus and reading list.

G. Method of evaluation:	Percentage	
	Written	Oral
Class tests		
Assignments	two papers; 60%	
Other (specify):	6 problem sets; 30%	discussions; 10%
Final examination:		
Total	90%	10%

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 MPN
- 2. double credit MPN
- 3. work that is a faculty research product MPN
- 4. overlap with existing courses MPN

Recommended for offering in the Fall Winter Spring 20 18

Length of session if less than a semester: 6-week Intersession

III. This course proposal has been prepared in accordance with General Regulations governing the School of Graduate Studies

Michelle Piersey-Norman or Nancy Norman
Course instructor

17 April 2018
Date

Dean David Cantford
Approval of the head of the academic unit

20180423 / 2018/05/07
Date

IV. This course proposal was approved by the Faculty/School/Council

Lina Jackson
Secretary, Faculty/School/Council

May 9, 2018
Date

**BIOL 7920-7960; Special Topics in Biology
Lichen biology: molecular biology and culturing
Spring 2018 (Intersession)**

Syllabus

Instructor:

Dr. Michele Piercey-Normore

Office: AS 3024; phone (709) 639-7166; email: mpiercey-normore@grenfell.mun.ca

Office hours: Thursday morning 9-10 and any other time by appointment.

Course information:

One lecture/discussion and one problem set/lab exercise per week (7 May to 20 June)

Deadline to drop courses: 17 May 2018.

Course evaluation:

Participation in discussions (10%)

Problem sets (30%)

Two papers (30% each)

- 1) Overcoming challenges in non-lichen symbioses.
- 2) Critique three unrelated papers illustrating controversial issues.

Course goals:

This is a reading course which will provide a general understanding of lichen biology and challenges encountered when working with an obligate symbiosis through structured readings, discussions, problem sets, and small lab exercises. An understanding of basic molecular biology and culturing skills will allow these skills to be used on any organism and allow the student to troubleshoot methodology in the lab.

Academic misconduct:

Plagiarism and other types of academic dishonesty are major academic offences. Please read the University Calendar Regulation 6.12 on Academic Misconduct. Students must be evaluated strictly on their individual knowledge, skills and ability. Therefore, unless clearly indicated otherwise, all assignments or tests are to be individual efforts.

Special accommodations:

If you have a disability or another health/physical condition that requires special arrangement or consideration, you are encouraged to discuss it with staff in the Learning Centre (Student Services) - AS 271, phone 637-6268, e-mail studentservices@grenfell.mun.ca. They will help arrange appropriate accommodations in a confidential setting. The Learning Centre is located in the Student Services offices, which are in close proximity to the atrium. More information on the University's policy is available at <http://www.grenfell.mun.ca/current-students/Pages/disability-services.aspx>.

Course readings:

General readings (specific chapters to be assigned):

- Kranner, Beckett, Varma (eds). 2002. *Protocols in Lichenology. Culturing, Biochemistry, Ecophysiology and Use in Biomonitoring*. Springer. 278 pp.
- Weising et al. 1995. *DNA Fingerprinting in Plants and Fungi*. CRC Press, Inc.
- Nash III, T. 2008. *Lichen Biology*. Cambridge Univ. Press, UK.

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Course outline

Week	Lecture/paper discussion	Problem sets/lab exercise
1	The lichen thallus	What are lichen species; Lichen diversity and sectioning
2	Taxonomy and classification	Phenotypic characters: from morphology to molecules; Lichen identification
3	Fungal chemotaxonomy; lichen chemistry	Lichen secondary metabolites; detection, quantification, identification
4	Controlled parasitism and thallus resynthesis	Preparation of lichens for DNA/RNA work; sources of contamination
5-6	Life history strategies; obligate cellular interactions; associated organisms	Problems and processes with multiple genomes; molecular markers
7	Isolating DNA/RNA from field collected lichens; from cultures	Stock calculations, dilutions, reagents; DNA/RNA extractions;
8-9	Resynthesis and thallus growth; fungal spore size, shape and other features; spore dispersal;	Review of culture methods -spore rains, enumeration spore structure, number and ecology Culturing; separation; resynthesis
10	Poikilohdry, water relations, desiccation and rehydration; RNA degradation and resynthesis	PCR; PCR optimization; lecture and problem set
11	Barcoding of fungi, green algae and cyanobacteria	Primer design; universal and taxon-specific primers; problem set
12	Reproduction, evolution of lichens; evolution of secondary metabolites	BLAST searching; problem set
13	Molecular clock and fossil record in lichen symbionts	Sequencing, alignment, phylogenetic analysis.