

**Dean of Science Office**

St. John's, NL Canada A1B 3X7  
Tel: 709 864 8153 Fax: 709 864 3316  
deansci@mun.ca www.mun.ca/science

## **MEETING OF THE FACULTY COUNCIL OF THE FACULTY OF SCIENCE**

A regular meeting of the Faculty Council of the Faculty of Science will be held on Wednesday, September 20, 2017, at 1 p.m. in C-2045.

### **AGENDA**

- 1. Regrets**
- 2. Adoption of the Minutes of April 19, 2017**
- 3. Business Arising from the Minutes:** None
- 4. Correspondence:** None
- 5. Reports of Standing Committees:**
  - A. Undergraduate Studies Committee:**
    - a. Department of Earth Sciences, paper 5.A.a (8 pages)**
      - i. Change to prerequisites of EASC 2702**
    - b. Department of Physics and Physical Oceanography, paper 5.A.b (17 pages)**
      - i. New course proposal Physics 3050, Introduction to Biophysics**
      - ii. Changes to the Joint Honours Physics and Applied Mathematics program**
    - c. Department of Chemistry, paper 5.A.c (24 pages)**
      - i. Change to calendar description of Chemistry 2400 and 2401**
      - ii. New course proposals Chemistry 4250, Special Topics in Inorganic Chemistry and Chemistry 4450, Special Topics in Organic Chemistry**
      - iii. Changes to course descriptions of Chemistry 4150 and 4350**
  - B. Graduate Studies Committee:**
    - a. Aquaculture program, special topics course AQUA 6202, Ploidy Manipulation in Aquaculture, already approved by the committee and presented to Faculty Council for information only, paper 5.B.a (8 pages)**
  - C. Nominating Committee:**
    - a. Approval of Committee matrix, paper 5.C.a (1 page)**
  - D. Library Committee:** None
- 6. Reports of Teaching Consultant**
- 7. Reports of Delegates from Other Councils**
- 9. Report of the Dean**
- 10. Question Period**
- 11. Adjournment**



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



Office of the Registrar

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

June 28, 2017

**TO:** All Members, Faculty Council of Science  
**FROM:** Joan Burry, Secretary  
Committee on Undergraduate Studies, Faculty of Science  
**SUBJECT:** Calendar Changes and New Course Proposals

---

At a meeting held on June 23, 2017, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

**1. Department of Earth Sciences**

- Change to prerequisites for Earth Sciences 2702

**2.. Department of Physics and Physical Oceanography**

- (i) New Course Proposal: Physics 3050-Introduction to Biophysics
- (ii) Changes to the Joint Honours Physics and Applied Mathematics program

**3. Department of Chemistry**

- (i) Change to the Calendar description of Chemistry 2400 and 2401
- (ii) New Course Proposals: Chemistry 4250-Special Topics in Inorganic Chemistry and Chemistry 4450-Special Topics in Organic Chemistry
- (iii) Changes to course descriptions of Chemistry 4150 and 4350

A handwritten signature in black ink, appearing to read "Joan Burry", written over a horizontal line.

Joan Burry

Associate Registrar and  
Secretary: Committee  
on Undergraduate Studies,  
Faculty of Science

# Proposal Calendar Change to EASC 2702 Sedimentology and Stratigraphy

## Executive Summary

We propose to make EASC 2030 Mineralogy a co-requisite for EASC 2702 Sedimentology and Stratigraphy so that the instructor and teaching assistants can focus on teaching sedimentology in the laboratories and not mineral identification which is taught in mineralogy. Both of these courses are required for our EASC Major and Honours degree and are offered in the same semester every year.

## Resource Implications: Instructional Costs

There will be no implications to resources or instructional costs.

## Consultations

This proposal was sent to the distribution list for Consultation on Calendar Changes on 12 April 2017.

## Library Holdings and/or Other Resources Required

No library holdings or other resources are required due to the proposed changes.

Signature of Unit Head (if appropriate): \_\_\_\_\_

Date: \_\_\_\_\_

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

Date: \_\_\_\_\_

**SUMMARY PAGE FOR SENATE**

**Approval Form**

**Course Number and Title**

EASC 2702 Sedimentology and Stratigraphy

**Abbreviated Course Title**

EASC 2702 Sedimentology&Stratigraphy

**Calendar Change(s)**

2702 Sedimentology and Stratigraphy is a study of the origin and composition of sediments with a focus on depositional processes and resulting sedimentary structures. Study of environments of deposition and the stratigraphic framework of sedimentary successions. Laboratories involve local field trips, petrographic analysis, and the study of hand samples of sedimentary rocks.

CO: EASC 2030

CR: the former Geology 3070 or the former EASC 3070 or the former EASC 3701

LH: 3

PR: EASC 1002

**Secondary Calendar Changes**

None.

**Calendar Entry After Changes**

2702 Sedimentology and Stratigraphy is a study of the origin and composition of sediments with a focus on depositional processes and resulting sedimentary structures. Study of environments of deposition and the stratigraphic framework of sedimentary successions. Laboratories involve local field trips, petrographic analysis, and the study of hand samples of sedimentary rocks.

CO: EASC 2030

CR: the former Geology 3070 or the former EASC 3070 or the former EASC 3701

LH: 3

PR: EASC 1002

**Rationale**

We propose to make EASC 2030 Mineralogy a co-requisite for EASC 2702 Sedimentology and Stratigraphy so that the instructor and teaching assistants can focus on teaching sedimentology in the laboratories and not mineral identification which is taught in our 2<sup>nd</sup> year mineralogy class. The majority of our students do take both of these courses at the same time; however, some students choose to take mineralogy later in their degree. It was noted that the students who were not concurrently taking both classes struggled with sedimentology laboratory content with respect to the mineralogical identification. Both of these courses are required for our EASC Major and Honours degree and are offered in the same semester every year.

**Consultations Sought From**  
Arts  
Business Administration  
Co-operative Education  
Education  
Engineering  
Grenfell Campus  
Human Kinetics and Recreation  
Marine Institute  
Medicine  
Music  
Nursing  
Pharmacy  
Science  
Social Work  
Library

**Comments Received**  
No  
Yes  
No  
No  
Yes  
No  
Yes  
Yes  
Yes  
No  
No  
No  
Yes (Only Geography)  
No  
Yes

**Library Report Received**

No

**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: \_\_\_\_\_

**Responses to Changes\_to\_Exist\_Course\_EASC2702\_20170412**

On 2017-04-12 15:11, Penny L Morrill wrote:  
April 12, 2017

To whom it may concern,

Attached is a course change proposal that the Department of Earth Sciences would like to make in the University Calendar.

We propose to make EASC 2030 Mineralogy a co-requisite for EASC 2702 Sedimentology and Stratigraphy so that the instructor and teaching assistants can focus on teaching sedimentology in the laboratories and not mineral identification which is taught in mineralogy.

Both of these courses are required for our EASC Major and Honours degree and are offered in the same semester every year. At this stage I am sending them to you as part of the consultation process.

Thank you for your time and consideration.

Cheers,  
Penny Morrill  
Chair of the Undergraduate Matters Committee

**Subject Re: EASC 2702 course change proposal**  
**From Engineering Consult**  
**To Penny L Morrill**  
**Cc Dennis Peters, Jennifer Williams, Theodore Norvell**  
**Date 2017-05-04 08:37**

Dear Dr. Morrill,

Thank you for the opportunity to comment on the proposed addition of EASC 2030 as a co-requisite for EASC 2702.

After consultation with the heads of department in the Faculty of Engineering and Applied Science, we find that this change will have no impact on our programs.

I wish you well in the progress of 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

**Subject RE: EASC 2702 course change proposal**  
**From cvardy@mun.ca**  
**To pmorrill@mun.ca**  
**Date 2017-04-27 08:45**

The Faculty of Medicine supports the proposed calendar change.


Regards  
Cathy

Cathy Vardy, MD, FRCP(C)  
Vice Dean  
Faculty of Medicine  
Health Sciences Centre, Room M2M319  
Memorial University of Newfoundland  
St. John's, NL, Canada, A1B 3V6  
Tel: 709-864-6417 or Fax: 709-864-6336

**Subject RE: EASC 2702 course change proposal**

**From** MIUG Consultations 

**Sender** Dawn King 

**To** Penny L Morrill 

**Date** 2017-04-19 08:40

Dr. Morrill,

Thank you for the opportunity to review and comment on the proposed changes to the course EASC 2702 Sedimentology and Stratigraphy.

This change will have no impact on the programs at the Marine Institute. We are happy to support this proposal as presented.

All the best,

Derek Howse

Derek Howse  
Chair, Undergraduate Studies Committee  
Marine Institute, Memorial University  
TEL: 709-778-0586  
FAX: 709-778-0394  
[Derek.Howse@mi.mun.ca](mailto:Derek.Howse@mi.mun.ca)

**Subject Re: EASC 2702 course change proposal**

**From** Associate Dean of Under Graduate Faculty of Business Administration 

**To** Penny L Morrill 

**Date** 2017-04-18 11:55

Hello:

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

—Larry

**Subject RE: EASC 2702 course change proposal**

**From** adeanugradswk 

**To** Penny L Morrill 

**Date** 2017-04-17 15:38

Hello Penny,

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

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


Regards

Heather

---

Heather J. Hair, PhD  
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

**Subject** EASC 2702

**From** Rohr, Linda 

**To** pmorrill@mun.ca 

**Date** 2017-04-17 14:25

Hi Penny,

I have reviewed the documentation for EASC 2702. Although I am supportive of the proposed change, the course description is incomplete. I suspect the description exists in the calendar as presented — but it may be worthwhile to update the current language along with the co-requisite.

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

**Subject** FW: EASC 2702 course change proposal

**From** Griffiths, Stacey 

**To** pmorrill@mun.ca 

**Date** 2017-04-13 10:47

-----Original Message-----

**From:** Catto, Norm

**Sent:** April 13, 2017 8:20 AM

**To:** Griffiths, Stacey

**Subject:** RE: EASC 2702 course change 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



Subject FW: EASC 2702 course change proposal

From Ambi, Alison 

To pmorrill@mun.ca 

Date 2017-04-12 19:14

• Form\_1\_-Changes\_to\_Exis...se\_EASC2702\_20170412.pdf (~12 KB)

Hello Penny,

I have reviewed the proposed changes to the co-requisite for EASC 2702 and confirm that no library evaluation will be needed.

Sincerely,

Alison

---

Alison Ambi

709 864 7125

Interim Head, Collections

Subject Librarian:

Earth Sciences

Computer Science

Mathematics and Statistics

Physics and Physical Oceanography

Psychology

QEII Library

Memorial University of Newfoundland

[www.library.mun.ca](http://www.library.mun.ca)



Office of the Registrar

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

June 28, 2017

**TO:** All Members, Faculty Council of Science  
**FROM:** Joan Burry, Secretary  
Committee on Undergraduate Studies, Faculty of Science  
**SUBJECT:** Calendar Changes and New Course Proposals

---

At a meeting held on June 23, 2017, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Earth Sciences

- Change to prerequisites for Earth Sciences 2702

2.. Department of Physics and Physical Oceanography

- (i) New Course Proposal: Physics 3050-Introduction to Biophysics
- (ii) Changes to the Joint Honours Physics and Applied Mathematics program

3. Department of Chemistry

- (i) Change to the Calendar description of Chemistry 2400 and 2401
- (ii) New Course Proposals: Chemistry 4250-Special Topics in Inorganic Chemistry and Chemistry 4450-Special Topics in Organic Chemistry
- (iii) Changes to course descriptions of Chemistry 4150 and 4350

A handwritten signature in black ink, appearing to read "Joan Burry". The signature is written in a cursive style with a horizontal line underneath the name.

Joan Burry

Associate Registrar and  
Secretary: Committee  
on Undergraduate Studies,  
Faculty of Science

# Proposal New Course Introduction to Biophysics

## Executive Summary

The department of Physics and Physical Oceanography proposes a new course at the third-year level, Introduction to Biophysics.

## Resource Implications: Instructional Costs

No new resources are anticipated. Course instruction will be integrated into the normal teaching load of regular faculty within the department of Physics and Physical Oceanography. If necessary due to resource limitations, this new course can be offered on alternate years. There is no laboratory component planned at this time.

## Consultations

From: Martin Plumer [mailto:plumer@mun.ca]

Sent: April-10-17 2:15 PM

To: Biochemistry Head; Marino, Paul; 'Chemistry'; 'Computer Science'; 'Earth Science'; 'Engineering'; 'Grenfell'; 'GrenfellPhysics'; Ambi, Alison; 'Marine Inst'; 'Math'; Fletcher, Garth; Lagowski, Jolanta; 'Psychology'

Subject: Consultation: new course Introduction to Biophysics

The Department of Physics and Physical Oceanography is proposing a new course: Introduction to Biophysics.

Please see the attached.

Feedback is requested by May 29, 2017.

Thank you.

Martin Plumer, Chair, Undergraduate Studies Committee (plumer@mun.ca)

Jolanta Lagowski, Head (jolantal@mun.ca).

April 10, 2017.

**Consultations Sought From**

- Faculty of Science.
- Grenfell Campus
- Marine Institute
- Faculty of Engineering

**Comments Received**

1. Grenfell Campus	No
2. Marine Institute	Yes
3. Department of Biochemistry	Yes
4. Department of Biology	Yes
5. Department of Chemistry	No
6. Department of Computer Science	No
7. Department of Earth Sciences	Yes
8. Department of Ocean Sciences	No
9. Department of Psychology	No
10. Department of Mathematics and Statistics	No
11. Engineering	No

**Library Holdings and/or Other Resources Required**

Signature of Unit Head (if appropriate): \_\_\_\_\_

Date: \_\_\_\_\_

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

Date: \_\_\_\_\_

## Sample Course Outline and Method of Evaluation

Based on Rob Phillips' book: *Physical Biology of the Cell* (see below)

### Chapter 1 - 4 (2 weeks)

Biological macromolecules; Basic structures of cells and viruses; Hierarchy of times scales: evolution, gene expression, cell cycle, enzyme kinetics, diffusion.

### Chapter 5 Mechanical and Chemical Equilibrium in the Living Cell (2 weeks)

Configurational energy; Hydrophobicity; Free energy minimization as a competition between energy and entropy.

### Chapter 6 Entropy Rules! (2 weeks)

First look at ligand-receptor binding; The Boltzmann distribution; Free energy of dilute solutions; law of mass action and equilibrium constants.

### Chapter 7 Two-State Systems: From Ion Channels to Cooperative Binding (1.5 weeks)

Ligand-receptor binding revisited; Ion channels as an example of internal state variables; Hemoglobin as a case study in cooperativity.

### Chapter 8 Random Walks and the Structure of Macromolecules (1.5 weeks)

Persistence length; Single-molecule mechanics; Force-extension curves; HP model of protein folding.

### Chapter 9 Electrostatics for Salty Solutions (1 week)

pH and the Equilibrium Constant; The charge on DNA and proteins; The Poisson-Boltzmann equation.

### Chapter 11 Biological Membranes: Life in Two Dimensions (1 week)

The chemistry and shape of lipids; Free energy of membrane deformation; Shapes of cells.

### Chapter 14 Life in Crowded and Disordered Environments (1 week)

Crowding and binding; osmotic pressure; depletion forces; diffusion in crowded environments.

### Evaluation :

1. Problem sets (every two weeks). Can be taken from the textbook. (30%)
2. Computer assignments (~2): (20%)
  - (i) Protein folding (developed)
  - (ii) Depletion forces (to be developed)
3. Student presentations (10%). As a way to cover some of the later material in Phillips' book, students will work in groups of 3-4 to give a 45 min presentation on a given topic. The topics could include molecular motors (chapter 16), Hodgkin-Huxley model of action potential (chapter 17), photosynthesis (chapter 18), genetic networks and cell regulation (chapter 19).
4. Final written exam (40%).

**Texts (available in the Library)**

Suggestion for course textbook:

*Physical Biology of the Cell* by Rob Phillips, Jane Kondev, Julie Theriot, Hernan G. Garcia, 2nd edition, Garland Science (2013).

Two other good books:

*Biological Physics: Energy, Information, Life* by Phillip Nelson, W H Freeman; Updated edition (2007).

*Molecular and Cellular Biophysics* by Meyer B. Jackson. Cambridge University Press; 1 edition (2006).

**Instructors**

Qualified instructors include Drs. S. Wallin, M. Morrow, A. Yethiraj, and I. Saika-Voivod.

## SUMMARY PAGE FOR SENATE

### Approval Form

**Course Number and Title:** Physics 3050 Introduction to Biophysics

**Abbreviated Course Title:** Introduction to Biophysics

#### Calendar Entry

**3050 Introduction to Biophysics** focuses on theoretical and computational modeling of biological processes using tools and concepts from physics, including the statistical physics of polymers, electrostatics of aqueous solutions, free energy minimization, energy-entropy competition, random walks, diffusion, the Einstein relation and depletion forces. With these tools the course examines the physics of biological processes such as osmotic pressure in cells, folding and cooperativity of macromolecules, ligand-receptor binding, energy balance of the cell, cell membrane shapes, ion channels, and molecular motors.

PR: One of Computer Science 1510 or 1001 or PHYS 2820, and one of PHYS 2053 or Chemistry 2301.

#### Rationale

The department of Physics and Physical Oceanography does not currently offer a dedicated biophysics course despite student interest and faculty expertise (Valerie Booth, Mike Morrow, Ivan Saika-Voivod, Anand Yethiraj, Stefan Wallin).

The main target is students in our various physics programs, including joint programs, where the course could be taken as an elective in year 3 or 4. The course might also attract students with the appropriate background in other programs, e.g. chemistry and biochemistry.

This course would also be useful to honours students engaged in projects supervised by faculty members in the department whose research areas involve biophysics (Wallin, Morrow, Yethiraj, and Saika-Voivod).

A new course in biophysics is in line with a recent Academic Unit Planning Report, which included a recommendation (Item 2C) that the department "Develop new courses that could reflect and highlight exciting areas of physics, aligned with faculty interests, to attract and retain physics students in upper years."

#### Relationship with other courses at MUN:

The new course includes a range of "bio" topics and naturally overlaps somewhat with several courses at the Biochemistry and Biology departments. The main focus of the new course is, however, on the underlying physics of the biological processes rather than their biological implications (although mentioned when appropriate). This is reflected in the prerequisites. The following three courses are perhaps the most closely related to the new course in terms of biology/biochemistry content:

BIOC 3105 Physical Biochemistry. Examines topics such as: types of intermolecular forces in biomolecules; the folding of biomolecules and the role of water; pH, buffers, and ionisation of biomolecules; thermodynamics: equilibria, coupled reactions, transport across membranes and redox reactions; and ligand binding.

**BIOL 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.

**BIOL 4245 Biophysics.** Is an examination of the physical properties involved in defining diffusion, membrane properties, electrochemical potentials and the processes of bioenergetics within cells and organelles. Selected topics in biomechanics and the functioning of whole organisms with respect to size, shape, support, orientation, transport and motility.

Comment: Last time offered was W14. Focus was then mainly on biomechanics (animal locomotion).

**Consultations Sought From**

**Library Report Received**

Yes

**Reminder:**

**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: \_\_\_\_\_



paper 5A.b. (page 8 of 17)

From: Ambi, Alison [aambi@mun.ca]  
Sent: April-12-17 7:34 PM  
To: Martin Plumer  
Subject: RE: Consultation: new course Introduction to Biophysics

Hello Martin,

This is to confirm that the library is adequately resourced to support the proposed new "Introduction to Biophysics" course. The three recommended texts are available in the library, as well as many other books under the Library of Congress subject heading "Biophysics". It is also noted in the proposal that the content of this course has substantial overlap with other courses already offered at MUN, which are already adequately supported by the current library collection.

Sincerely,  
Alison

---

Alison Ambi  
709 864 7125  
Interim Head, Collections

Subject Librarian:  
Earth Sciences  
Computer Science  
Mathematics and Statistics  
Physics and Physical Oceanography  
Psychology

QEII Library  
Memorial University of Newfoundland  
www.library.mun.ca

From: Penny L Morrill [pmorrill@mun.ca]  
Sent: May-04-17 11:56 AM  
To: Martin Plumer  
Subject: Re: Consultation: new course Introduction to Biophysics

May 4th, 2014

Dear Martin Plumer,

Earth Sciences sees no issues with the newly proposed course in Biophysics.

Cheers,

Penny

Penny Morrill, Ph.D.

Associate Professor

Department of Earth Sciences

Memorial University of Newfoundland

St. John's, NL A1B 3X5

Canada

phone: (709) 864-6729

fax: (709) 864-2589

From: Jody-Lynn Burke [jrotchford@mun.ca]  
Sent: April-26-17 3:50 PM  
To: plumer@mun.ca  
Subject: RE: Consultation: new course Introduction to Biophysics

Dr. Plumber,

The Department of Biology supports the proposed new course, Introduction to Biophysics.

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: Marino, Paul [mailto:pmarino@mun.ca]  
Sent: April-10-17 2:32 PM  
To: jodyb@mun.ca  
Subject: FW: Consultation: new course Introduction to Biophysics

This one is definitely one that BUGS needs to review since we have our own biophysics course. The syllabus is totally molecular whereas Biophysics can be at an organismal/ecological level as well (this is how Michele Durand teaches it, I believe). It might be good to have Michele involved in the discussion. However, it is a 3<sup>rd</sup> year physics course, so my guess is that it is much more mathematical than anything we would teach.  
Paul

---

Hi Mark,

We have clarified the pre-requisite wording as suggested.

As for BIOC2101, the feedback we received is that it is unlikely any of our students would be taking the pre-requisite organic chemistry so even indicating it as recommended might lead to confusion – at least in the Calendar. However, we do have a separate section of our web page devoted to course descriptions and we could add the recommendation there.

Best,  
Martin

From: Biochemistry Head [mailto:biohead@mun.ca]  
Sent: May-09-17 8:38 AM  
To: Martin Plumer  
Subject: RE: Consultation: new course Introduction to Biophysics

Hi Martin

Biochemistry is supportive of this. Just two minor comments from our undergraduate committee:

1) they suggest you may want to consider having bioc2101 as a recommended (but not mandatory)

pre-req

- 2) They felt that the pre-requisite wording was potentially prone to confusion, is it one of comp 1510, comp 1001 or Phys 2820 plus one of phys 2053 or chem 2301; or is it one of comp 1510, comp 1001, chem 2301 or both of Phys 2820 + phys 2053?

All the best

Mark

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

---

From: Dawn King [Dawn.King@mi.mun.ca] on behalf of MIUG Consultations  
[MIUGconsultations@mi.mun.ca]  
Sent: April-19-17 8:34 AM  
To: Martin Plumer  
Subject: RE: Consultation: new course Introduction to Biophysics

Martin,

Thank you for the opportunity to review and comment on the proposed new course PHYS 3050 Introduction to Biophysics.

This new course will have no impact on the programs at the Marine Institute. We are happy to support this proposal as presented.

A couple of general comments:

- Since this course is titled Introduction to Biophysics course, would it be reasonable to assume that it would/should become the prerequisite for the course BIOL 4245 Biophysics?
- Is there an opportunity and any benefit to having the course crosslisted as BIOL 3050?

All the best,  
Derek

Derek Howse  
Chair, Undergraduate Studies Committee  
Marine Institute, Memorial University  
TEL: 709-778-0586  
FAX: 709-778-0394  
Derek.Howse@mi.mun.ca

# Proposal Calendar Changes to Applied Mathematics and Physics Joint Honours Program

## Executive Summary

Several modifications and additions to course requirements for the Applied Mathematics and Physics Honours program are proposed. A number of minor changes are also proposed. No new courses are involved.

## Resource Implications: Instructional Costs

No additional teaching resources.

## Consultations

The University Library, Grenfell Campus, the Marine Institute, Faculty of Engineering, and Departments within the Faculty of Science.

From: Martin Plumer [plumer@mun.ca]

Sent: March-09-17 10:03 AM

To: 'BioChem'; 'Biology'; 'Chemistry'; 'Computer Science'; 'Earth Science';  
'Engineering'; 'Grenfell'; 'GrenfellPhysics'; 'Library'; 'Marine Inst'; 'Math';  
'Ocean Sciences'; 'Physics'; 'Psychology'

Subject: Proposed Calendar change: ApplMath\_Phys Honours

Attachments: ApplMath\_PhysProgramChange.pdf

The Department of Physics and Physical Oceanography is proposing Calendar changes to the Applied Math Physics joint honours program.

Please see the attached.

Feedback is requested by April 17, 2017.

Thank you.

Martin Plumer, Chair, Undergraduate Studies Committee (plumer@mun.ca)

Jolanta Lagowski, Head (jolantal@mun.ca).

March 9, 2017.

**Library Holdings and/or Other Resources Required**

No additional costs are implicated.

Signature of Unit Head (if appropriate): \_\_\_\_\_

Date: \_\_\_\_\_

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

\_\_\_\_\_

Date: \_\_\_\_\_

## SUMMARY PAGE FOR SENATE

### Approval Form

**Programs Titles: Applied Mathematics and Physics Joint Honours**

#### Calendar Changes

##### 5.1.2 Applied Mathematics and Physics Joint Honours

The following courses are required:

1. English 1080 and English 1110 (or equivalent).
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 or 1001 may be counted as three of these hours).
4. Mathematics 1000, 1001, 2000, 2050, 2051, 2260 ~~(or 3260)~~, 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. ~~Three additional credit hours chosen from courses numbered 3000 or higher that are offered by the Department of Physics and Physical Oceanography.~~
8. One of Mathematics 3161 or Physics 3820 and one of Mathematics 4160, or ~~Physics 3820 and Physics 4820.~~
9. Physics 490A/B or Mathematics 419A/B.
10. 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.
11. ~~A sufficient number of elective courses to bring the degree to a total of 120 credit hours.~~ Twelve credit hours in applicable elective courses.

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.

#### Secondary Calendar Changes

None.

## Calendar Entry After Changes

### 5.1.2 Applied Mathematics and Physics Joint Honours

The following courses are required:

1. English 1080 and English 1110 (or equivalent).
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 or 1001 may be counted as three of these hours).
4. Mathematics 1000, 1001, 2000, 2050, 2051, 2260, 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.

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.

## Rationale

There are three main items:

1. Including the new COMP 1001 as an alternative to COMP 1510 (Python vs Fortran/C++).
2. Replacing the physics elective (line 8) with the requirement of PHYS 3800 Computational Physics or 3900 Experimental Physics. These courses share a common goal of teaching students to execute major physics projects with detailed reports. There are no final exams, with project write-ups occupying the majority of the grading scheme. The department of Physics and Physical Oceanography views these as essential skills for honours students and will be useful for their future thesis courses.
3. Allowing students more freedom in their choice of the math and physics courses specified in line 8. This is motivated by the fact our math-physics courses PHYS 3820 and PHYS 4820 cover much of the same material as MATH 3161 and 4160.

**Consultations Sought From**

**Comments Received**

- Faculty of Science.
- Grenfell Campus
- Marine Institute
- Faculty of Engineering

1. Grenfell Campus	Yes/No
2. Marine Institute	Yes
3. Department of Biochemistry	Yes/No
4. Department of Biology	Yes/No
5. Department of Chemistry	Yes/No
6. Department of Computer Science	Yes/No
7. Department of Earth Sciences	Yes/No
8. Department of Ocean Sciences	Yes/No
9. Department of Psychology	Yes/No
10. Department of Mathematics and Statistics	Yes
11. Engineering	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: \_\_\_\_\_



-----Original Message-----

From: Shannon Patrick Sullivan [mailto:shannon@mun.ca]  
Sent: March-08-17 1:59 PM  
To: Martin Plumer  
Cc: jolantal@mun.ca  
Subject: Re: ApplMathPhys program

Hi Martin,

At its meeting on March 8th, the Department of Mathematics and Statistics endorsed the proposed changes to the Joint Honours program in Applied Mathematics and Physics.

A small editorial change was suggested: that, for clarity, the words "one of" be inserted before "3800 or 3900" in the list of required Physics courses.

Regards,  
Shannon

--

Dr. Shannon Patrick Sullivan  
Dept. of Mathematics & Statistics  
Senior Faculty Advisor, Faculty of Science Memorial University of Newfoundland St. John's · NL ·  
Canada [shannon@mun.ca](mailto:shannon@mun.ca) · [www.uccs.mun.ca/~shannon](http://www.uccs.mun.ca/~shannon)

---

From: Ambi, Alison [aambi@mun.ca]  
Sent: March-09-17 11:43 AM  
To: Martin Plumer  
Subject: RE: Proposed Calendar change: ApplMath\_Phys Honours

Hello Martin,

I have reviewed the proposed changes. They will no impact on the Physics department's resource requirements from the library.

---

Alison Ambi  
709 864 7125  
Interim Head, Collections

Subject Librarian:  
Earth Sciences  
Computer Science  
Mathematics and Statistics  
Physics and Physical Oceanography  
Psychology

QEII Library  
Memorial University of Newfoundland  
[www.library.mun.ca](http://www.library.mun.ca)

From: Engineering Consult [engrconsult@mun.ca]  
Sent: March-15-17 2:08 PM  
To: Martin Plumer  
Cc: Jolanta Lagowski; Dennis Peters; Jennifer Williams  
Subject: Re: Proposed Calendar change: ApplMath\_Phys Honours

Dear Dr. Plumer,

Thank you for the opportunity to comment on the proposed changes to the joint honours in Mathematics and Physics.

At this afternoon's meeting, the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on our programs.

I wish you well in the development of these Calendar changes.

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

---

From: Dawn King [Dawn.King@mi.mun.ca] on behalf of MIUG Consultations [MIUGconsultations@mi.mun.ca]  
Sent: March-14-17 9:08 AM  
To: Martin Plumer  
Subject: RE: Proposed Calendar change: ApplMath\_Phys Honours

Martin,

Thank you for the opportunity to review and comment on the proposed Calendar Changes to Applied Mathematics and Physics Joint Honours Program.

These changes will have no impact on the programs at the Marine Institute. We are happy to support these changes as presented.

All the best,

Derek

Derek Howse  
Chair, Undergraduate Studies Committee  
Marine Institute, Memorial University  
TEL: 709-778-0586  
FAX: 709-778-0394  
Derek.Howse@mi.mun.ca

**MEMORIAL  
UNIVERSITY**

**Office of the Registrar**

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

June 28, 2017

**TO:** All Members, Faculty Council of Science  
**FROM:** Joan Burry, Secretary  
Committee on Undergraduate Studies, Faculty of Science  
**SUBJECT:** Calendar Changes and New Course Proposals

---

At a meeting held on June 23, 2017, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

**1. Department of Earth Sciences**

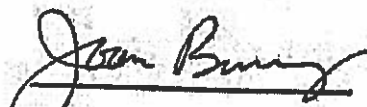
- Change to prerequisites for Earth Sciences 2702

**2.. Department of Physics and Physical Oceanography**

- (i) New Course Proposal: Physics 3050-Introduction to Biophysics
- (ii) Changes to the Joint Honours Physics and Applied Mathematics program

**3. Department of Chemistry**

- (i) Change to the Calendar description of Chemistry 2400 and 2401
- (ii) New Course Proposals: Chemistry 4250-Special Topics in Inorganic Chemistry and Chemistry 4450-Special Topics in Organic Chemistry
- (iii) Changes to course descriptions of Chemistry 4150 and 4350

  
Joan Burry

Associate Registrar and

Secretary: Committee  
on Undergraduate Studies,  
Faculty of Science

## Proposal

### Addition of Non-Mandatory Tutorial Hours to CHEM 2400 and 2401

#### Executive Summary

This is a proposal for the formal addition of a weekly 2 hour tutorial to the calendar entry for both CHEM 2400 and 2401.

#### Resource Implications: Instructional Costs

A weekly 2 hour tutorial has been offered for both 2400 and 2401 for at least the last four years and is staffed by a senior organic chemistry graduate student. This proposal simply seeks to make the tutorial part of the instructional time in the calendar, so it will show on student schedules. As such, there are no added resource implications beyond what is already in place. If the size of 2400 and 2401 increases beyond what is manageable for a tutorial, then the cost of a second graduate student tutorial leader will be covered by existing departmental resources.

#### Library Holdings and/or Other Resources Required

There are no added library costs associated with the new course.

Signature of Unit Head (if appropriate):

---

Date:

---

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

---

Date:

---

Tutorials for Chemistry 2400 and 2401

SUMMARY PAGE FOR SENATE

Approval Form

Edits:

Calendar Entries

Under 10.3 Chemistry

**2400 Introductory Organic Chemistry I** is a course on bonding involving carbon; conformations and stereochemistry; introduction to functional groups and nomenclature; properties, syntheses and reactions of hydrocarbons, alkyl halides, alcohols, and ethers.

AR: attendance is required in the laboratory component of this course. Failure to attend may result in a failing grade or deregistration from the course.

CR: CHEM 2440

LH: 3

OR: 2 hours of non-mandatory\* tutorial weekly

PR: Science 1807; a minimum 60% in CHEM 1051; or CHEM 1010 and 1011 with a grade of at least 80% in each; or CHEM 1011 with a grade of at least 85%; or CHEM 1001 (or the former 1031) with a grade of at least 65%

**2401 Introductory Organic Chemistry II** is an introduction to the interpretation of mass, infrared,  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra; properties, syntheses and reactions of simple aromatic and heteroaromatic compounds, ketones, aldehydes, amines, carboxylic acids and their derivatives; aldol and related reactions.

AR: attendance is required in the laboratory component of this course. Failure to attend may result in a failing grade or deregistration from the course.

CR: CHEM 2440

LH: 3

OR: 2 hours of non-mandatory\* tutorial weekly

PR: CHEM 2400

## Tutorials for Chemistry 2400 and 2401

**Secondary Calendar Changes**

There are no secondary calendar changes.

**Clean Version**

**2400 Introductory Organic Chemistry I** is a course on bonding involving carbon; conformations and stereochemistry; introduction to functional groups and nomenclature; properties, syntheses and reactions of hydrocarbons, alkyl halides, alcohols, and ethers.

AR: attendance is required in the laboratory component of this course. Failure to attend may result in a failing grade or deregistration from the course.

CR: CHEM 2440

LH: 3

OR: 2 hours of non-mandatory\* tutorial weekly

PR: Science 1807; a minimum 60% in CHEM 1051; or CHEM 1010 and 1011 with a grade of at least 80% in each; or CHEM 1011 with a grade of at least 85%; or CHEM 1001 (or the former 1031) with a grade of at least 65%

**2401 Introductory Organic Chemistry II** is an introduction to the interpretation of mass, infrared,  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra; properties, syntheses and reactions of simple aromatic and heteroaromatic compounds, ketones, aldehydes, amines, carboxylic acids and their derivatives; aldol and related reactions.

AR: attendance is required in the laboratory component of this course. Failure to attend may result in a failing grade or deregistration from the course.

CR: CHEM 2440

LH: 3

OR: 2 hours of non-mandatory\* tutorial weekly

PR: CHEM 2400

\* The words "non-mandatory" were inserted into this proposal in order to pass this through Faculty of Science Undergraduate Studies Committee. The Chemistry Department has stated that these tutorials are non-mandatory throughout the proposal and Chemistry feels that the wording is unnecessary since the same is not stated explicitly for lectures (which are not mandatory). We feel that the words "non-mandatory" minimize the importance of the lectures. It already states in the calendar:

## 6.6 Attendance

1. Attendance regulations must be approved by the Senate and will be allowed only in cases where the academic unit has demonstrated that attendance is necessary for safety reasons, for teaching practical skills, or for attaining other clearly specified objectives. This may include an attendance regulation that may, by itself, cause a student who contravenes the regulation to fail or be dropped from a course.
2. The course where an attendance regulation is to be enforced must have the statement "attendance required" included in the calendar description.

With attendance not being explicitly required and since there is no precedent, Chemistry moves that this proposal be passed without the words "non-mandatory".

Tutorials for Chemistry 2400 and 2401

**Rationale**

For years non-mandatory tutorials have been offered in conjunction with CHEM 2400 and 2401. The purpose of this proposal is to emphasize the importance of these tutorials for student success. Non-mandatory tutorials have been and will continue to be offered at 5 pm on Wednesday evenings. The Head of the Chemistry Department has personally confirmed that this time slot available for all but 3 students in 2016/17 total for both courses. For each of these three students, there were other options available for their courses. These tutorials are offered to students to help them through the course material. No new material is presented in these tutorials. The format is questions and answer from weekly problem sets provided for students for study purposes. It is beneficial to have these non-mandatory student tutorials on the students' radar as a part of the course rather than an informal part and so that students are able to attend. These are for the benefit of the students, to give them every possibility to pass the course. It should also be noted that tutorials are part of the second year organic chemistry curriculum at many other institutions and are typically mandatory.

Tutorials for Chemistry 2400 and 2401

Consultations Sought From	Comments Received
Grenfell	no
Marine Institute	yes
Mathematics and Statistics	no
Computer Science	no
Physics	yes
Biochemistry	no
Biology	yes
Psychology	no
Ocean Sciences	yes
Earth Sciences	no
Pharmacy	yes
Engineering	yes
Faculty of Education	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:



Tutorials for Chemistry 2400 and 2401

**Consultation email:**

-----Original Message-----

From: Chris Flinn [mailto:cgflinn@mun.ca]

Sent: Thursday, February 16, 2017 3:17 PM

To: [associatevpoffice@grenfell.mun.ca](mailto:associatevpoffice@grenfell.mun.ca); MIUG Consultations  
<[MIUGconsultations@mi.mun.ca](mailto:MIUGconsultations@mi.mun.ca)>; [mathconsult@mun.ca](mailto:mathconsult@mun.ca); Mellor, Judith  
<[jmellor@mun.ca](mailto:jmellor@mun.ca)>; Biochemistry Head <[biohead@mun.ca](mailto:biohead@mun.ca)>; Annie Mercier  
<[amercier@mun.ca](mailto:amercier@mun.ca)>; [psychology.head@mun.ca](mailto:psychology.head@mun.ca); Engineering Consultations  
<[engrconsult@mun.ca](mailto:engrconsult@mun.ca)>; [pharminfo@mun.ca](mailto:pharminfo@mun.ca); [pmarino@mun.ca](mailto:pmarino@mun.ca); Alison Leitch  
<[aleitch@mun.ca](mailto:aleitch@mun.ca)>; 'Lagowski, Jolanta' <[jolantal@mun.ca](mailto:jolantal@mun.ca)>; [mgamsby@mun.ca](mailto:mgamsby@mun.ca)

Cc: Head of Chemistry <[chemhead@mun.ca](mailto:chemhead@mun.ca)>

Subject: consultations requests from chemistry

Hello Everyone,

Please review the attached proposals from chemistry and send me your comments. I understand that Megan Gamsby is taking place of Erin Alcock at the library this year for consultations. I look forward to hearing from Megan.

thanks,

Chris Flinn  
Chemistry

**Library Report:**

Collection Development Division  
Queen Elizabeth II Library  
St. John's, NL A1B 3Y1

**TO:** Chris Flinn, Department of Chemistry  
**FROM:** Meghan Gamsby, Head of Information Services,  
Temporary Collections Librarian for Chemistry  
**RE:** Proposed addition of tutorial hours to CHEM 2400  
and 2401  
**DATE:** March 17, 2017

I have reviewed the proposed edit to the calendar entry for CHEM 2400 and 2401 to add a weekly tutorial and have determined that the changes will have no impact on library resources.

**Responses from Other Departments :**

**Marine Institute:**

Tutorials for Chemistry 2400 and 2401

Chris,

Thank you for the opportunity to review and comment on the proposed formalization of the tutorial hours for CHEM 2400 and 2401.

This proposal will have no impact on the programs at the Marine Institute. We are happy to support this change as presented.

All the best,

Derek Howse

Derek Howse  
Chair, Undergraduate Studies Committee  
Marine Institute, Memorial University  
TEL: 709-778-0586  
FAX: 709-778-0394  
[Derek.Howse@mi.mun.ca](mailto:Derek.Howse@mi.mun.ca)

**Pharmacy:**

Hi Chris,

Thanks for the opportunity to review Chemistry's proposals regarding organic chemistry and some special topics courses.

**Re CHEM 2400/01 proposal:**

As you are aware Pharmacy will be replacing CHEM2440 with CHEM2400/01 effective Fall 2017 in conjunction with its new Entry-to-Practice Pharm. D program. We would appreciate the opportunity for our 40 pharmacy students to avail of the tutorial session on Wednesday afternoons. Their schedule is pretty tight and they are in class/labs, etc. daily from 8:30am-5:00pm with not a lot of free time in between. I'm not sure if you are planning on offering the tutorials more than once a week, or if the one session on Wednesday is sufficient to accommodate student needs (bearing in mind there will be 40 extra students taking this course)? We do have some flexibility in the schedule to move up their last class on Wednesdays in order to facilitate access to a 5 pm Chemistry tutorial. So this day/time will work for us.

**Re Special topics Courses:**

Pharmacy has no concerns with this proposal.

Thanks,

Leslie  
DR LESLIE PHILLIPS  
ASSOCIATE DEAN UNDERGRADUATE STUDIES  
PROFESSOR | MUN SCHOOL of PHARMACY  
Joint Appointment | FACULTY of MEDICINE/Psychiatry

Tutorials for Chemistry 2400 and 2401

Clinical Pharmacotherapy Specialist | EASTERN HEALTH

**Physics:**

Hi Chris,

We had a few comments from our USC on the tutorial proposal for 2400 and 2401:

1. Total time commitments per week would then be: 3 hours classroom + 3 hours lab + 2 hours tutorial = 8 hours?

This seems excessive for a course. Physics typically uses lab time for tutorials.

Perhaps 2400 and 2401 are attempting to cover too much material?

2. Might be scheduling issues for the students with so many hours per week.

Cheers,  
Martin

-----Original Message-----

From: Lagowski, Jolanta [<mailto:jolantal@mun.ca>]  
Sent: February-16-17 4:32 PM  
To: Martin Plumer  
Cc: Richard J Goulding  
Subject: FW: consultations requests from chemistry

Martin,  
For your and USC consideration. I see no problem with these proposals.  
Jolanta

**Response to Physics from Chemistry Head re Physics concerns:**

Hi Martin,

Thanks for your questions.

I have consulted with the organic chemists and we have looked at Dalhousie as an example and it turns out we teach pretty much the same courses, rearranged a bit differently, but they cover the same chapters in the same book as we do in a total of two courses.

Being a synthesis course, the students are required to do labs to put what they learn in the classroom to use. That is the nature of this course so tutorials in place of labs is not an option.

Furthermore, these tutorials are taking place right now and have been for many years, we have decided that we want to formalize it. This should be thought of as us trying to help the students get through the course and offering help to these students. Much like all of our lectures and tutorials, they are not mandatory for students

Tutorials for Chemistry 2400 and 2401

to attend. I know that sounds strange, but that is the University's policy that classes are not mandatory. The number of students is set to explode in 2400 and 2401 since all of the faculty of science who require organic chemistry will be turning to these courses (ie. Biology has already approved dropping 2440 for 2400 and 2401) and this is the best way to help the lower level students get through the course. It is not feasible to teach less material as our graduates would, then, be less prepared than their colleagues from other universities.

Also, I personally went through the schedules of each student in 2400 last term and 2401 this term and there were three or four people who had courses such as Math or English at the same time (and not the same level, ie. not 2XXX). However, there are many slots for Math and English for these few students to get into.

Take care,

Travis

**Biology:**

Hi Chris,

The Department of Biology supports the addition of the 2 hour weekly tutorial to CHEM 2400 and 2401 and the creation and editing of special topics courses in Chemistry.

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](mailto:jodyb@mun.ca)

-----Original Message-----

From: Marino, Paul [<mailto:pmarino@mun.ca>]  
Sent: February-16-17 3:36 PM  
To: [jodyb@mun.ca](mailto:jodyb@mun.ca)  
Subject: FW: consultations requests from chemistry

For BUGS Jody.  
Paul

**Ocean Sciences:**

Dear Chris:

Our undergraduate Studies committee has reviewed the proposed calendar changes. We are supportive of formalization of the tutorial hours for CHEM 2400 and 2401, and of the addition of special topics courses for each of the subdisciplines of chemistry.

As we are currently developing similar proposals for special topics courses, we were curious about the very succinct model for this proposal - is it typical?

Tutorials for Chemistry 2400 and 2401

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](mailto:amercier@mun.ca)  
[www.mun.ca/osc/amercier/bio.php](http://www.mun.ca/osc/amercier/bio.php)

**Engineering:**

Dear Dr. Flinn,

Thank you for the opportunity to comment on the proposed new special topics courses and on the addition of tutorial hours to CHEM 2400 and 2401.

At this afternoon's meeting, the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on our programs.

I wish you well in the development of these Calendar changes.

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

**Education:**

Dear Chris:

My apologies for the delay. For the record, we are pleased to support your proposal.  
Judith

Judith Mellor  
Co-ordinator, Undergraduate Programs  
Faculty of Education  
Memorial University of Newfoundland  
T: 709.864.7554  
F: 709.864.2623



Special Topics Courses in Chemistry

**Proposal**  
**New Special Topics Courses in Inorganic and Organic Chemistry**

**Executive Summary**

This is a proposal for new general special topics courses in Inorganic and Organic Chemistry at the fourth year level.

**Resource Implications: Instructional Costs**

These courses are not mandatory courses for any degree and will be taught when necessary and in place of other advanced course. There are no resource implications.

**Library Holdings and/or Other Resources Required**

There are no added library costs associated with the new course.

Signature of Unit Head (if appropriate):

\_\_\_\_\_

Date:

\_\_\_\_\_

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

\_\_\_\_\_

Date:

\_\_\_\_\_

Special Topics Courses in Chemistry

SUMMARY PAGE FOR SENATE

Approval Form

**New Courses:**

**Calendar Entries**

**Under 10.3 Chemistry**

**4250 Special Topics in Inorganic Chemistry** is a course for senior level undergraduate students and covers one or a number of specialized topics of current interest in inorganic chemistry.

PR: CHEM 3210 or 3211

**4450 Special Topics in Organic Chemistry** is a course for senior level undergraduate students and covers one or a number of specialized topics of current interest in organic chemistry.

PR: CHEM 3411



Special Topics Courses in Chemistry

**Secondary Calendar Changes**

There are no secondary calendar changes.

**Rationale**

In the past, special topics courses have been used to design new senior level courses or to deliver a one-off course of interest to faculty and/or students. We would like to have one of these courses in each of the sub-disciplines of chemistry; analytical, inorganic, physical, and organic. This proposal adds a course for the inorganic and organic and a separate proposal modifies the existing courses for physical and analytical.

Special Topics Courses in

Consultations Sought From

Comments Received

Grenfell	yes/no
Marine Institute	yes/no
Mathematics and Statistics	yes/no
Computer Science	yes/no
Physics	yes/no
Biochemistry	yes/no
Biology	yes/no
Psychology	yes/no
Ocean Sciences	yes/no
Earth Sciences	yes/no
Pharmacy	yes/no
Engineering	yes/no
Faculty of Education	yes/no
Library Report Received	yes/no

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:

Special Topics Courses in Chemistry

**Proposal**

**Some Edits to Existing Special Topics Courses CHEM 4150 and 4350**

**Executive Summary**

This is a proposal for some minor changes to existing special topics Chemistry courses.

**Resource Implications: Instructional Costs**

These courses are not mandatory courses for any degree and will be taught when necessary and in place of other advanced course. There are no resource implications.

**Library Holdings and/or Other Resources Required**

There are no added library costs associated with the new course.

Signature of Unit Head (if appropriate): \_\_\_\_\_

Date: \_\_\_\_\_

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

Date: \_\_\_\_\_

Special Topics Courses in Chemistry

SUMMARY PAGE FOR SENATE

Approval Form

Course Changes:

Calendar Changes

~~4150 Advanced Spectrometric Techniques~~ Special Topics in Analytical Chemistry is a course for senior level undergraduate students and covers one or a number of specialized topics of current interest in analytical chemistry.

PR: CHEM 3110

~~4350 Special Topics in Physical Chemistry~~ is a course for senior level undergraduate students and covers one or a number of specialized topics of current interest in physical chemistry. ~~Advanced Physical Chemistry III: Selected Topics in Physical Chemistry~~ is discussion of selected topics of current interest in physical chemistry and chemical physics, given in lecture or seminar form. Representative topics are crystal structure and x-ray crystallography, data processing and modelling, microwave spectroscopy, quantum chemical calculations. Arrangements to take this course should be made during the previous academic year.

PR: CHEM 3303

## Special Topics Courses in

### Secondary Calendar Changes

There are no secondary calendar changes.

### Clean Version

**4150 Special Topics in Analytical Chemistry** is a course for senior level undergraduate students and covers one or a number of specialized topics of current interest in analytical chemistry.

PR: CHEM 3110

**4350 Special Topics in Physical Chemistry** is a course for senior level undergraduate students and covers one or a number of specialized topics of current interest in physical chemistry.

PR: CHEM 3303

### Rationale

In the past, special topics courses have been used to design new senior level courses or to deliver a one-off course of interest to faculty and/or students. This proposal simply modifies the already existing courses for analytical and physical chemistry so that all four special topics courses (separate proposal for 4250 Inorganic, and 4450 Organic) have similar descriptions.

Special Topics Courses in

Consultations Sought From	Comments Received
Grenfell	no
Marine Institute	yes
Mathematics and Statistics	no
Computer Science	no
Physics	no
Biochemistry	no
Biology	yes
Psychology	no
Ocean Sciences	yes
Earth Sciences	no
Pharmacy	yes
Engineering	yes
Faculty of Education	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:

Consultation email:

-----Original Message-----

From: Chris Flinn [mailto:cgflinn@mun.ca]

Sent: Thursday, February 16, 2017 3:17 PM

To: [associatevpoffice@grenfell.mun.ca](mailto:associatevpoffice@grenfell.mun.ca); MIUG Consultations <[MIUGconsultations@mi.mun.ca](mailto:MIUGconsultations@mi.mun.ca)>; [mathconsult@mun.ca](mailto:mathconsult@mun.ca); Mellor, Judith <[jmellor@mun.ca](mailto:jmellor@mun.ca)>; Biochemistry Head <[biohead@mun.ca](mailto:biohead@mun.ca)>; Annie Mercier <[amercier@mun.ca](mailto:amercier@mun.ca)>; [psychology.head@mun.ca](mailto:psychology.head@mun.ca); Engineering Consultations <[enrconsult@mun.ca](mailto:enrconsult@mun.ca)>; [pharminfo@mun.ca](mailto:pharminfo@mun.ca); [pmarino@mun.ca](mailto:pmarino@mun.ca); Alison Leitch <[aleitch@mun.ca](mailto:aleitch@mun.ca)>; 'Lagowski, Jolanta' <[jolantal@mun.ca](mailto:jolantal@mun.ca)>; [mgamsby@mun.ca](mailto:mgamsby@mun.ca)

Special Topics Courses in

Cc: Head of Chemistry <[chemhead@mun.ca](mailto:chemhead@mun.ca)>

Subject: consultations requests from chemistry

Hello Everyone,

Please review the attached proposals from chemistry and send me your comments. I understand that Megan Gamsby is taking place of Erin Alcock at the library this year for consultations. I look forward to hearing from Megan.

thanks,

Chris Flinn  
Chemistry

**Library Report:**

Collection Development Division  
Queen Elizabeth II Library  
St. John's, NL A1B 3Y1

**TO:** Chris Flinn, Department of Chemistry  
**FROM:** Meghan Gamsby, Head of Information Services,  
Temporary Collections Librarian for Chemistry  
**RE:** Proposed New Special Topics Courses in Chemistry  
and Some Edits to Existing Special Topics Courses  
**DATE:** March 18, 2017

I have reviewed the proposal for new Special Topics and edits to the existing Special Topics courses in Chemistry. A collection evaluation was completed for the two new courses and edits to the two existing courses.

We have access to the major databases and journals in these areas. For any materials not available at Memorial Libraries our Document Delivery Services is there to help obtain such resources in a timely fashion. Our Library Instruction program is available to help instructors teach their students about information literacy, including finding literature using specialized chemistry databases and scholarly communication practices in chemistry.

**Dr. Fridgen's response to criticisms of this proposal at the April 6, 2017 FoSCUGS meeting:**

Colleagues,

Please find attached our revised versions of the proposal (now two proposals) for two new special topics courses and the revision of two existing special topics courses.

To clarify, chemistry likes the model that we have proposed which is similar to the model that Psychology uses. Unlike Psychology, we do not plan to offer these courses on a yearly basis. For example, Chemistry 4350 has been taught three times in the past 12 years. We expect to offer 4450 next year, so we decided to have four courses, one in each sub-discipline.

If you have any major concerns, please let me know.

Special Topics Courses in

Dr. Flinn will add the results of the month-long consultations prior to providing it to Joan for your next SUGC meeting.

Thanks and take care,

Travis

**Previous Consultation emails from other departments and schools:**

**Engineering**

Dear Dr. Flinn,

Thank you for the opportunity to comment on the proposed new special topics courses and on the addition of tutorial hours to CHEM 2400 and 2401.

At this afternoon's meeting, the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science found that these changes will have no impact on our programs.

I wish you well in the development of these Calendar changes.

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

**Marine Institute:**

Chris,

Thank you for the opportunity to review and comment on the proposed new Special Topics courses in Chemistry and edits to existing Special Topics courses.

This proposal will have no impact on the programs at the Marine Institute. We are happy to support this.

One minor comment/question: You have not included the required format of submission for new courses as found on [https://www.mun.ca/regoff/home/course\\_prog\\_proposal\\_form.php](https://www.mun.ca/regoff/home/course_prog_proposal_form.php) . Is this due to these being Special Topics courses?

All the best.  
Derek

Derek Howse  
Chair, Undergraduate Studies Committee  
Marine Institute, Memorial University  
TEL: 709-778-0586  
FAX: 709-778-0394  
[Derek.Howse@mi.mun.ca](mailto:Derek.Howse@mi.mun.ca)



Special Topics Courses in

**Pharmacy:**

Hi Chris,

Thanks for the opportunity to review Chemistry's proposals regarding organic chemistry and some special topics courses.

**Re CHEM 2400/01 proposal:**

As you are aware Pharmacy will be replacing CHEM2440 with CHEM2400/01 effective Fall 2017 in conjunction with its new Entry-to-Practice Pharm. D program. We would appreciate the opportunity for our 40 pharmacy students to avail of the tutorial session on Wednesday afternoons. Their schedule is pretty tight and they are in class/labs, etc. daily from 8:30am-5:00pm with not a lot of free time in between. I'm not sure if you are planning on offering the tutorials more than once a week, or if the one session on Wednesday is sufficient to accommodate student needs (bearing in mind there will be 40 extra students taking this course)? We do have some flexibility in the schedule to move up their last class on Wednesdays in order to facilitate access to a 5 pm Chemistry tutorial. So this day/time will work for us.

**Re Special topics Courses:**

**Pharmacy has no concerns with this proposal.**

Thanks,

Leslie

DR LESLIE PHILLIPS

ASSOCIATE DEAN UNDERGRADUATE STUDIES

PROFESSOR | MUN SCHOOL of PHARMACY

Joint Appointment | FACULTY of MEDICINE/Psychiatry

Clinical Pharmacotherapy Specialist | EASTERN HEALTH

**Biology:**

Hi Chris,

**The Department of Biology supports the addition of the 2 hour weekly tutorial to CHEM 2400 and 2401 and the creation and editing of special topics courses in Chemistry.**

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](mailto:jodyb@mun.ca)

-----Original Message-----

From: Marino, Paul [<mailto:pmarino@mun.ca>]

Sent: February-16-17 3:36 PM

To: [jodyb@mun.ca](mailto:jodyb@mun.ca)

Subject: FW: consultations requests from chemistry

Special Topics Courses in

For BUGS Jody.  
Paul

**Ocean Sciences:**

Dear Chris:

Our undergraduate Studies committee has reviewed the proposed calendar changes. **We are supportive of formalization of the tutorial hours for CHEM 2400 and 2401, and of the addition of special topics courses for each of the subdisciplines of chemistry.**

As we are currently developing similar proposals for special topics courses, we were curious about the very succinct model for this proposal - is it typical?

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](mailto:amercier@mun.ca)  
[www.mun.ca/osc/amercier/bio.php](http://www.mun.ca/osc/amercier/bio.php)

**Education:**

Dear Chris:

My apologies for the delay. For the record, we are pleased to support your proposal.  
Judith

Judith Mellor  
Co-ordinator, Undergraduate Programs  
Faculty of Education  
Memorial University of Newfoundland  
T: 709.864.7554  
F: 709.864.2623

**Kenny, Gail**

---

**From:** JC Loredo-Osti <jcloredoosti@mun.ca>  
**Sent:** June-02-17 10:40 AM  
**To:** Kenny, Gail  
**Cc:** Len Zedel  
**Subject:** Re: AQUA 6202 Special topics course for approval

Hi Gail,  
the AQUA 6202 special topics course has been approved with 12 votes in favour (Alison, Cyr, Brian, Ron, Yuanzhu, Len, Kurt, Carolyn, Stephanie, Ivan, Bob and myself); none against.  
Council can now be informed of this decision.

-j

On 06/02/2017 08:45 AM, Kenny, Gail wrote:

> Hi JC,  
>  
> Have you received a majority yet? Just checking in. Thanks.

>  
> Gail

> -----Original Message-----

> From: JC Loredo-Osti [mailto:jcloredoosti@mun.ca]  
> Sent: May-25-17 7:40 PM  
> To: JC Loredo-Osti <jcloredoosti@mun.ca>; Kenny, Gail <gkenny@mun.ca>;  
> Len Zedel <zedel@mun.ca>; amalcom@mu.ca; bestave@mun.ca; Rob Bertolo  
> <rbertolo@mun.ca>; Kur Gamperl <kgamperl@mun.ca>; Stephanie H. Curnoe  
> <curnoe@mun.ca>; Carolyn Walsh <cwalsh@play.psych.mun.ca>;  
> Cyr.Couturier@mi.mun.ca; Ron Haynes <rhaynes@mun.ca>; Minglun Gong  
> <gong@mun.ca>; Ivan Booth <ibooth@mun.ca>; Yuanzhu Chen  
> <yzchen@mun.ca>; Ken Fowler <kenfowler@mun.ca>; Tom Chapman  
> <tomc@mun.ca>  
> Subject: Fwd: AQUA 6202 Special topics course for approval

>  
> Apologies. Attached is the correct documentation.

> -j

>  
>  
> -----Original Message-----

> From: JC Loredo-Osti [mailto:jcloredoosti@mun.ca] Sent: May-25-17  
> 12:09 PM  
> To: A. Kurt Gamperl <kgamperl@mun.ca>; JC Loredo-Osti  
> <jcloredoosti@mun.ca>; Kenny, Gail <gkenny@mun.ca>; Len Zedel  
> <zedel@mun.ca>; Ron Haynes <rhaynes@mun.ca>; Rob Bertolo  
> <rbertolo@mun.ca>; Ivan Booth <ibooth@mun.ca>; Stephanie H. Curnoe  
> <curnoe@mun.ca>; Cyr Couturier <Cyr.Couturier@mi.mun.ca>; Carolyn  
> Walsh <cwalsh@play.psych.mun.ca>; Tom Chapman <tomc@mun.ca>; Ken



**Dean of Science Office**

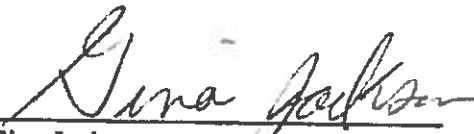
St. John's, NL Canada A1B 3X7  
Tel 709 864 8153 Fax 709 864 3316  
deansci@mun.ca www.mun.ca/science

June 2, 2017

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

---

The special topics course, AQUA 6202, Ploidy Manipulation in Aquaculture, has 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.

  
Gina Jackson  
Secretary, Faculty of Science Faculty Council

/gbk

cc: A. Williams, School of Graduate Studies  
G. Kenny, Dean of Science Office



## 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](mailto:sgs@mun.ca)

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

Course No.: AQUA 6202

Course Title: Ploidy Manipulation in Aquaculture

I. To be completed for all requests:

A. Course Type:  Lecture course  Lecture course with laboratory  
 Laboratory course  Undergraduate course<sup>1</sup>  
 Directed readings  Other (please specify) 2 term papers @ 35% each

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

F. Method of evaluation:	Written	Percentage	Oral
Class tests	0		
Assignments	30 (6 @ 5% each)		
Other (specify): 2 term papers @ 35% each	70		
Final examination:			
<b>Total</b>		<b>100</b>	

<sup>1</sup> 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 17

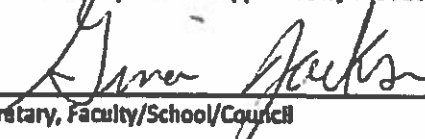
Length of session if less than a semester:

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

  
Approval of the head of the academic unit

18 May 2017  
Date

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

  
Secretary, Faculty/School/Council

June 2/17  
Date

## **AQUA 6202: Ploidy Manipulation in Aquaculture**

### **COURSE INSTRUCTOR(S):**

Dr. Jillian Westcott, an aquaculture instructor/researcher with the Fisheries and Marine Institute with 4 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 ploidy manipulation 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 (Weeks 1 and 2): Introduction to Ploidy Manipulation in Aquaculture***

##### ***1.1 Why Alter Ploidy? (Weeks 1 and 2)***

#### ***Module 2 (Weeks 3 and 4): Production of Polyploids in Aquaculture***

##### ***2.1 Methods of Inducing Polyploidy (Week 3)***

##### ***2.2 Methods of Confirming Polyploidy (Week 4)***

#### ***Module 3 (Weeks 5 and 6): Effects of Triploidy on Growth, Development and Reproduction***

##### ***3.1 Impact of Triploidy on Reproduction and Developmental (Week 5)***

##### ***3.2 Triploidy and Nutrition (Week 6)***

#### ***Module 4 (Weeks 7 and 8): The Generation of Monosex Populations***

##### ***4.1 Application of Uniparental Inheritance (Gynogenesis and Androgenesis) in Aquaculture (Week 7)***

##### ***4.2 Application of Endocrine Manipulations of Sex Ratio in Aquaculture (Week 8)***

**Module 5 (Weeks 9 and 10): Effects of Triploidy on Defense Responses**

5.1 Effects of Triploidy on Response to Environmental Stressors (Week 9)

5.2 Effects of Triploidy on Immune Response (Week 10)

**Module 6 (Weeks 11 and 12): Environmental and Ethical Considerations of Ploidy Manipulation in Aquaculture**

6.1 Environmental Considerations of Ploidy Manipulation of Aquaculture (Week 11)

6.2 The Ethics of Ploidy Manipulation in Aquaculture (Week 12)

**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](http://www.aquacultureassociation.ca)
- Aquaculture Association of Nova Scotia  
[www.aansonline.ca](http://www.aansonline.ca)
- Atlantic Canada Fish Farmers Association  
[www.atlanticfishfarmers.com](http://www.atlanticfishfarmers.com)
- BC Salmon Farmers Association  
[www.salmonfarmers.org](http://www.salmonfarmers.org)
- Canadian Aquaculture Industry Alliance  
[www.aquaculture.ca](http://www.aquaculture.ca)
- Canadian Food Inspection Agency  
[www.inspection.gc.ca](http://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](http://www.gaalliance.org)
- World Aquaculture Society  
[www.was.org](http://www.was.org)
- World Organisation for Animal Health  
[www.oie.int](http://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://naja.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](http://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% (6 @ 5% each). The student will be required to prepare a biweekly scientific article summary and critique related to each module of the course (two single-spaced typed pages per article).
  - **Term Papers:** 70% (2 @ 35% each). Term paper topics: (1) Triploidy in salmonids, (2) Polyploidy in shellfish.
-

## Committees

<b>COMMITTEES OF SCIENCE FACULTY COUNCIL</b>				
	<b>Undergraduate Studies</b>	<b>Graduate Studies</b>	<b>Nominating</b>	<b>Library</b>
DOS	Andy Foster	Len Zedel	Andy Foster	Len Zedel
BIOCHEMISTRY	Valerie Booth	Rob Bertolo		John Robinson
BIOLOGY	Ian Jones	Brian Staveley		Shawn Leroux
CHEMISTRY	Chris Flinn	Christina Bottaro		Graham Bodwell
COMP SCI	Sharene Bungay	Yuanzhu Chen		Todd Wareham
EARTH SCI				Joe Hodych
MATH & STATS	Shannon Sullivan	J.C. Loreda-Osti		Yorck Sommerhauser
OCEAN SCIENCES	Annie Mercier	Chris Parrish		Joe Wroblewski
PHYSICS & PO	Ivan Saika-Voivod	Stephanie Cumoe		Mykhalo Evstigneev (C)
PSYCHOLOGY	Christina Thorpe	Ken Fowler		
AQUACULTURE		Cyr Couturier		
COGNITIVE & BEHAVIOURAL ECOLOGY		Carolyn Walsh		
ENVIRONMENTAL SCIENCE		Tom Chapman		
SCIENTIFIC COMPUTING		Ron Haynes		
THEORETICAL PHYSICS		Ivan Booth		
ECONOMICS	Gubhinder Kundhi			Kam Chu
GEOGRAPHY	Norm Catto	Evan Edinger		
LIBRARY				
GSU				
MUNSU				
<b>FACULTY OF SCIENCE AWARDS COMMITTEE</b>				
Christina Bottaro (C), Alison Malcolm, Craig Purchase, Len Zedel				
<b>REPRESENTATIVES FROM OTHER COUNCILS</b>				
FACULTY OF BUSINESS	Tom Clift			
FACULTY OF EDUCATION				
FACULTY OF ENGINEERING				
FACULTY OF MEDICINE				
FACULTY OF HUMANITIES AND SOCIAL SCIENCES				
CENTRE FOR INNOVATION IN TEACHING & LEARNING				
MARINE INSTITUTE	Susan Caines			
OFFICE OF THE REGISTRAR				
QUEEN ELIZABETH II LIBRARY				
SCHOOL OF GRADUATE STUDIES				
SCHOOL OF MUSIC				
SCHOOL OF NURSING				
<b>STUDENT UNIONS REPRESENTATIVES TO FACULTY COUNCIL</b>				
GSU				
MUNSU	Carmen Fang, Meriel Fitzgerald, Laura Hillier			
<b>REPRESENTATIVES TO OTHER COUNCILS</b>				
FACULTY OF BUSINESS				
FACULTY OF EDUCATION				
FACULTY OF ENGINEERING				
FACULTY OF MEDICINE				
FACULTY OF HUMANITIES AND SOCIAL SCIENCES				
LIBRARIES				
MARINE INSTITUTE				
SCHOOL OF GRADUATE STUDIES				
SCHOOL OF MUSIC				
SCHOOL OF NURSING				