

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, January 17, 2018 at 1 p.m. in C-2045.

AGENDA

1. **Regrets**
2. **Adoption of the Minutes of December 6, 2017**
3. **Business Arising from the Minutes:** None
4. **Correspondence:** None
5. **Reports of Standing Committees:**
 - A. **Undergraduate Studies Committee:** None
 - B. **Graduate Studies Committee:**
 - a. Department of Biochemistry, course proposal and calendar entry, BIOC 7000, Graduate Skills Course, paper 5.B.a (pages 2-15)
 - b. Department of Ocean Science, special topics course, OCSC 7500, Immunology and Diseases of Aquatic Organisms, approved by the committee and presented to Faculty Council for information only, paper 5.B.b (pages 16-20)
 - c. Department of Physics and Physical Oceanography, special topics course PHYS 6366, Analysis of Data From Autonomous Underwater Vehicles, approved by the committee and presented to Faculty Council for information only, paper 5.B.c (pages 21-24)
 - d. Department of Physics and Physical Oceanography, special topics course PHYS 6014, Understanding Nuclear Magnetic Resonance, approved by the committee and presented to Faculty Council for information only, paper 5.B.d (pages 25-29)
 - 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

Kenny, Gail

From: JC Loredo-Osti <jcloredoosti@mun.ca>
Sent: December-19-17 10:25 AM
To: Kenny, Gail; Len Zedel
Subject: Re: BIOC 7000 - calendar changes

Sorry, an eye was overlooked. Stephanie also support this course, so it has 8 votes in favour, none against.

On 12/19/2017 10:19 AM, MathStat Graduate Officer wrote:

> Hi Gail,
>
> this course has been approved and calendar changes have been approved
> with 7 votes in favour (Carolyn, Brian, Rob, Cyr, Ken, Luke and
> myself), to committee members requested clarification (Ron and Len)
> but, at the end, it is not clear if they support the motion. No
> explicit votes against.
>
>
> Please, check that in the form that goes for approval of the Faculty
> Council, the number of credit hours is 1.

> -j

>

>

>

> On 12/01/2017 09:14 AM, Kenny, Gail wrote:

>> Hi JC,

>>

>> Attached is a course proposal and calendar entry for BIOC 7000 for
>> discussion and approval by the Graduate Studies Committee.

>>

>> Gail

>>

>> Gail Kenny

>> Assistant to the Dean

>> Faculty of Science Office

>> Memorial University of Newfoundland

>> St. John's, NL A1B 3X7

>> gkenny@mun.ca

>>

>>

>

--

JC Loredo-Osti, Professor
Department of Mathematics and Statistics Memorial University
Phone: +(709) 864 8729

"Wisdom comes to us when it can no longer do any good."

--Gabriel García Márquez (Love in the time of cholera).



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.: Biochemistry 7000

Course Title: Graduate Skills

I. To be completed for all requests:

A. Course Type: Lecture course Laboratory course Directed readings Lecture course with laboratory Undergraduate course¹ Other (please specify)

B. Can this course be offered by existing faculty? Yes No

C. Will this course require new funding (including payment of instructor, labs, equipment, etc.)? Yes No
If yes, please specify:

D. Will additional library resources be required (if yes, please contact munul@mun.ca for a resource consultation)? Yes No

E. Credit hours for this course: 1

F. Course description (reading list required):
See attached.

G. Method of evaluation:	Percentage	
	Written	Oral
Class tests		
Assignments	50	50
Other (specify):		
Final examination:		

Total 100

¹ Must specify the additional work at the graduate level

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

Instructor's initials

- 1. duplication of thesis work _____
- 2. double credit _____
- 3. work that is a faculty research product _____
- 4. overlap with existing courses _____

Recommended for offering in the Fall Winter Spring 20 ____

Length of session if less than a semester:

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

Robert Bertolo

Course instructor

November 30, 2017

Date



Approval of the head of the academic unit

30/Nov/17

Date

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

Secretary, Faculty/School/Council

Date

Biochemistry 7000
Graduate Skills Course
Fall and Winter each year

Students

- **Mandatory for all graduate students in Department of Biochemistry in the first year of their first graduate program. We expect 5-8 students per semester.**

Rationale

- 1) **Provide a mandatory introductory course for new graduate students that teaches essential skills, cultivates success, and encourages collaboration and camaraderie among students.**
- 2) **Provide critical training on lab safety, good laboratory practices, and ethics in research.**
- 3) **Generate a foundation for: critical thinking skills which includes how to conduct primary literature searches and evaluation of research articles, improved scientific and lay writing skills, and oral presentation skills.**
- 4) **Feedback from current graduate students and advisory committees have identified these topics as areas of deficit in many new students.**

Format

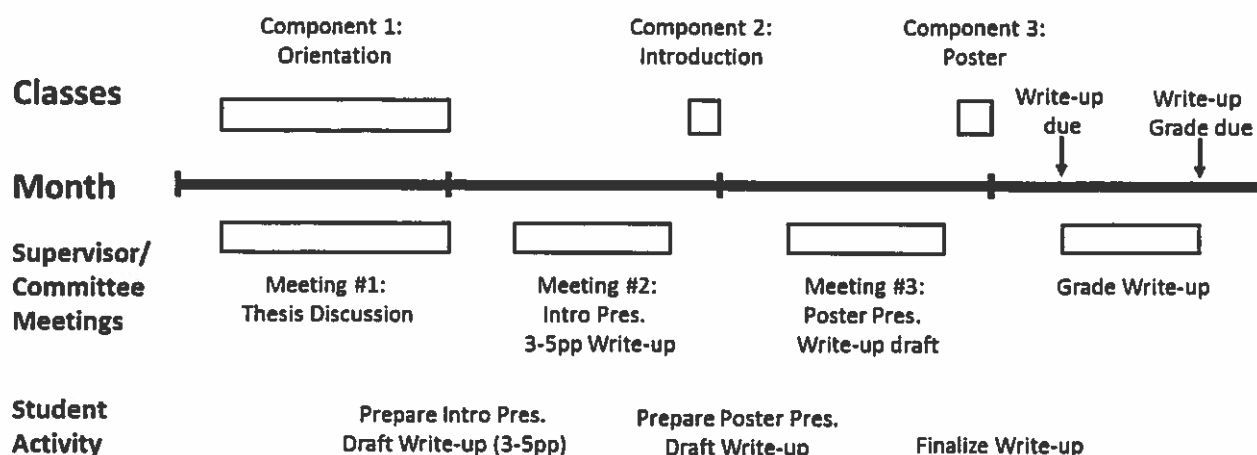
The course will be divided into three components (see Figure below):

- **Component 1: Orientation:** This component will include a series of invited lectures during the first month which are aimed at facilitating student orientation and teaching skills. Presentation topics would include: general orientation (e.g. Biochemistry Graduate Society, GSU, laboratory safety information, MUN wellness services, etc.); library services (to teach primary research skills), Writing Centre (to introduce program and teach thesis organization skills); research ethics (including plagiarism, authorship, etc.); and presentation skills (how to critique research papers, how to give good oral presentations and prepare scientific posters, etc.). Other topics may be included as needed. Students must attend each lecture. It is estimated that 3 hours per week in the first month will be needed for this Component.
- **Component 2: Thesis Introduction Presentations:** The second component (normally at end of second month) will include oral presentations by students on the background information and rationale for their thesis. This presentation should focus on basic information for non-experts, literature review of the field, and relevant background research from the laboratory. The presentation should end with a rationale and objectives for the student's proposed thesis research. The aim is to educate colleagues on the student's thesis research and to prompt dialogue among students. Presentations will normally be 15-20 minutes in length followed by 5-10 minutes of questions and discussion.

- **Component 3: Thesis Poster Presentations:** The third component (normally at end of third month) will be in a poster presentation format. Posters should summarize the Thesis Proposal Write-up (see below). Students will orally present a 5-minute summary of their poster and have 5 minutes to answer questions. We anticipate holding a student-faculty social mixer following the poster presentations.

Instructors

- **Graduate Officer:** The Graduate Officer (or delegate assigned by Head) will be the course Coordinator. Various lecturers will be identified by the Coordinator.
- **Supervisory Committee:** The Supervisor and Supervisory Committee of all students enrolled in the class will contribute to skill development and evaluation. During this course, the Supervisory Committee will meet with the student in Month 2; for Month 1 and Month 3 meetings, the Supervisor or Supervisory Committee can meet with the student, as preferred by the Supervisor.
 - **Month 1:** In the first month, the Supervisor (or Supervisory Committee) will meet with the student to discuss the proposed thesis project. After this meeting, the student will develop a draft presentation and write 3-5 pages of the Thesis Proposal Write-up in time for the next meeting with the Supervisory Committee.
 - **Month 2:** Before the Component 2 presentations (normally at the end of the second month), the Supervisory Committee will meet with the student to practise the presentation and provide feedback. The student should also provide at least 3-5 pages of the Thesis Proposal Write-up ahead of this meeting in the second month so the Supervisory Committee can provide feedback on writing skills. After this meeting, the student will incorporate the feedback and complete a draft of the Thesis Proposal Write-up and the Thesis Poster Presentation in time for the next Supervisory Committee meeting in the third month.
 - **Month 3:** Before the Thesis Poster Presentations at the end of the third month, the Supervisor (or Supervisory Committee) will meet with the student to practise the Thesis Poster Presentation. The Committee will also provide feedback on the draft of the Thesis Proposal Write-up. The final Write-up is due on the last day of classes in the semester and the Supervisory Committee will provide a grade for the Write-up (Pass/Fail) to the Graduate Officer before the end of the semester.

Figure**Evaluation**

Pass/Fail. Attendance is mandatory. Students will be evaluated on Thesis Introduction presentation, Thesis Poster presentation, and Thesis Proposal Write-up.

- **Attendance:** Students must attend all Orientation lectures and both presentation classes and must complete both presentations and the Thesis Proposal Write-up. A missed Orientation lecture in Component 1 will be completed by a 2-page summary of the material from that lecture, or the student can attend the same lecture in the next course offering, with permission of the Coordinator. If Component 2 or 3 is missed, then the student will be required to present separately, as organized by the Coordinator, or they can participate in the same Component in the next course offering, with permission of the Coordinator. The course Coordinator will administer attendance. If the incomplete Components for a given semester are to be completed in the next course offering, then the student will be assigned a grade of INC for that semester.
- **Thesis Introduction / Thesis Poster Presentations:** All presentations will be evaluated Pass/Fail by the Coordinator. All students and the Coordinator will complete a 'Constructive Feedback Form' for each presenter in both presentation classes.
- **Thesis Proposal Write-ups:** Write-ups will be graded Pass/Fail by the Supervisory Committee of each student who shall provide constructive feedback to the student. The Supervisor will send a short report summarizing the student's performance to the course Coordinator.

Thesis Proposal Write-up

The written thesis proposal (due to the Supervisory Committee on the last day of classes for the semester) will be 10 pages, double spaced, 12 font, with 2.5 cm margins (not including appendices and references). The write-up will include: 1) Lay summary (100 words); 2) Introduction with literature review; 3) Background research leading to project; 5) Specific objectives and hypotheses; 4)

Experimental approaches with anticipated outcomes and limitations. Students are encouraged to use figures which should be added as an appendix associated with the document.

PROPOSED CALENDAR CHANGES TO ACCOMPANY ADDITION OF BIOC7000

Highlighted text to be added due to addition of BIOC7000.

Note that these entries have also been reformatted for consistency. (Admission sections separated, bullets reorganized and numbered in 24.6.2)—Original entries appended below the changed version.

24.6 Biochemistry

- www.mun.ca/science
- www.mun.ca/biochem
- Professor and Head of the Department
- M.D. Berry

The Degree of Master of Science is offered in Biochemistry or Food Science to full-time and part-time students.

24.6.1 Admission

The admission requirements for the graduate programs in Biochemistry and Food Science are as given under Regulations Governing Master of Science Degrees.

24.6.2 Program of Study

- 1. The program of a candidate for the M.Sc. Degree shall be the responsibility of the supervisory committee, composed of the Supervisor and at least two other faculty members recommended with the concurrence of the Supervisor by the Head of the Department or delegate.**
- 2. All students must enrol in Biochemistry 6999 (Seminars in Biochemistry and Food Science), and must complete Biochemistry 7000 (Graduate Skills) plus a minimum of 6 credit hours of graduate courses with a minimum B grade. Depending on the background and/or area of specialization, a candidate's program may include additional courses taken for credit in Biochemistry, Food Science, or related subjects.**
- 3. It is the responsibility of the student to arrange regular meetings with his or her supervisory committee. A semi-annual report, prepared by the Supervisor and signed by all members of the supervisory committee, is required to be given to the Head of the Department or delegate.**

24.6.3 Courses

A series of advanced courses in the areas outlined below will be offered. Other than Biochemistry 6999 and Biochemistry 7000, normally only one course will be offered per semester.

- **6000 Advanced Topics in Lipid and Lipoprotein Metabolism**
- **6001-6009 Special Topics in Biochemistry**
- **6010-6019 Special Topics in Nutrition and Metabolism**
- **6020-6029 Special Topics in Food Science**
- **6400 Control of Intermediary Metabolism**
- **6460 Structural Biochemistry**
- **6520 Nutritional Biochemistry**
- **6530 Food Biochemistry**
- **6590 Cellular, Molecular and Developmental Biology (*credit restricted with Biology 6590 and Medicine 6590*)**
- **6630 Marine Biochemistry**
- **6680 Processing and Quality of Foods**
- **6999 Seminars in Biochemistry and Food Science**
- **7000 Graduate Skills**

33.3 Biochemistry

- www.mun.ca/science
- www.mun.ca/biochem
- Professor and Head of the Department
- M.D. Berry

The Degree of Doctor of Philosophy is offered in Biochemistry or Food Science to full-time and part-time students.

33.3.1 Admission

The admission requirements for the graduate programs in Biochemistry and Food Science are as given under General Regulations.

33.3.2 Program of Study

1. The program of a candidate for the Ph.D. Degree shall be the responsibility of the supervisory committee, composed of the Supervisor and at least two other faculty members recommended with the concurrence of the Supervisor by the Head.
2. All students must enrol in Biochemistry 6999 (Seminars in Biochemistry and Food Science), and must complete Biochemistry 7000 (Graduate Skills) if they have not already done so. Depending on the background and/or area of specialization, a candidate's program may include additional courses taken for credit in Biochemistry, Food Science or related subjects.
3. It is the responsibility of the student to arrange regular meetings with his or her graduate supervisory committee. A semi-annual report, prepared by the Supervisor and signed by all members of the supervisory committee, is required to be given to the Head of the Department or delegate.
4. A candidate for the Ph.D. degree shall normally take the Comprehensive Examination within the first seven semesters of his or her program. The examination will have two components: the preparation of a grant proposal on a topic related to the student's research specialization followed by an oral examination of the proposal. Failure of this examination will result in the termination of the candidate's program.

33.3.3 Courses

A series of advanced courses in the areas outlined below will be offered. Other than Biochemistry 6999 and Biochemistry 7000, normally only one course will be offered per semester.

- **6000 Advanced Topics in Lipid and Lipoprotein Metabolism**
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- **6020-6029 Special Topics in Food Science**
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- **6630 Marine Biochemistry**
- **6680 Processing and Quality of Foods**
- **6999 Seminars in Biochemistry and Food Science**
- **7000 Graduate Skills**

ORIGINAL FORMAT OF CALENDAR

24.6 Biochemistry

- www.mun.ca/science
- www.mun.ca/biochem
- **Professor and Head of the Department**
- M.D. Berry

24.6.1 Program of Study

The Degree of Master of Science is offered in Biochemistry or Food Science to full-time and part-time students.

The admission requirements for the graduate programs in Biochemistry and Food Science are as given under **Regulations Governing Master of Science Degrees**. All students must enrol in Biochemistry 6999 (Seminars in Biochemistry and Food Science). Depending on the background and/or area of specialization, a candidate's program may include additional courses taken for credit in Biochemistry, Food Science, or related subjects.

The program of a candidate for the M.Sc. Degree shall be the responsibility of the supervisory committee, composed of the Supervisor and at least two other faculty members recommended with the concurrence of the Supervisor by the Head of the Department or delegate.

It is the responsibility of the student to arrange regular meetings with his or her supervisory committee. A semi-annual report, prepared by the Supervisor and signed by all members of the supervisory committee, is required to be given to the Head of the Department or delegate.

24.6.2 Courses

A series of advanced courses in the areas outlined below will be offered. Normally only one course will be offered per semester.

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- 6999 Seminars in Biochemistry and Food Science

33.3 Biochemistry

- www.mun.ca/science
- www.mun.ca/biochem
- **Professor and Head of the Department**
- M.D. Berry

33.3.1 Program of Study

1. The Degree of Doctor of Philosophy is offered in Biochemistry or Food Science to full-time and part-time students.
2. The admission requirements for the graduate programs in Biochemistry and Food Science are as given under General Regulations. All students must enrol in Biochemistry 6999 (Seminars in Biochemistry and Food Science). Depending on the background and/or area of specialization, a candidate's program may include additional courses taken for credit in Biochemistry, Food Science or related subjects.
3. The program of a candidate for the Ph.D. Degree shall be the responsibility of the supervisory committee, composed of the Supervisor and at least two other faculty members recommended with the concurrence of the Supervisor by the Head.
4. It is the responsibility of the student to arrange regular meetings with his or her graduate supervisory committee. A semi-annual report, prepared by the Supervisor and signed by all members of the supervisory committee, is required to be given to the Head of the Department or delegate.
5. A candidate for the Ph.D. degree shall normally take the Comprehensive Examination within the first seven semesters of his or her program. The

examination will have two components: the preparation of a grant proposal on a topic related to the student's research specialization followed by an oral examination of the proposal. Failure of this examination will result in the termination of the candidate's program.

33.3.2 Courses

A series of advanced courses in the areas outlined below will be offered. Normally only one course will be offered per semester.

- 6000 Advanced Topics in Lipid and Lipoprotein Metabolism
- 6001-6009 Special Topics in Biochemistry
- 6010-6019 Special Topics in Nutrition and Metabolism
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- 6590 Cellular, Molecular and Developmental Biology (*credit restricted with Biology 6590 and Medicine 6590*)
- 6630 Marine Biochemistry
- 6680 Processing and Quality of Foods
- 6999 Seminars in Biochemistry and Food Science

Kenny, Gail

From: JC Loredo-Osti <jcloredoosti@mun.ca>
Sent: December-19-17 10:35 AM
To: Kenny, Gail; Len Zedel
Subject: Re: OCSC-7500 Special Topics course
Attachments: OCSC_7500_New_course_Diseases of Aquatic Organims-18April2017.doc

Hi Gail,

this course has been approved with 11 votes in favour (Ron, Carolyn, Cyr, Christina, Ken, Rob, Brian, Stephanie, Yuanzhu, Chris and myself), none against.

Attached is the amended description.

The Faculty Council can be informed of the approval of this special topics course.

Thanks,

-j

On 12/06/2017 09:44 PM, JC Loredo-Osti wrote:

> Dear all,

>

> for your consideration, attached is the request for approval of
> SCSC-7500 'Immunology and disease of aquatic organisms', a special
> topics course from Ocean Sciences. Please, let me know your opinion at
> your earliest convenience.

>

> Salud,

> -j

>

--

JC Loredo-Osti, Professor
Department of Mathematics and Statistics Memorial University
Phone: +(709) 864 8729

"Wisdom comes to us when it can no longer do any good."

--Gabriel García Márquez (Love in the time of cholera).



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 & 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.: OCSC 7500

Course Title: Immunology and Diseases of Aquatic Organisms

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. Will additional library resources be required (if yes, please contact munul@mun.ca for a resource consultation)? Yes No

E. Credit hours for this course: 3

F. Course description (reading list required):

Immunology and Diseases of Aquatic Organisms provide an overview of immunology and diseases of aquatic organisms. The focus is on comparative immunology, immune response to the infection, bacterial and virus diseases of fish, and vaccinology in commercially cultured fish species.

G. Method of evaluation:	Percentage	
	Written	Oral
Class tests	60	10
Assignments	10	
Other (specify):		
Final examination:	20	

Total 100

¹ Must specify the additional work at the graduate level

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

- | | |
|--|------------------------------|
| | Instructor's initials |
| 1. duplication of thesis work | <u>JS</u> |
| 2. double credit | <u>JS</u> |
| 3. work that is a faculty research product | <u>JS</u> |
| 4. overlap with existing courses | <u>JS</u> |

Recommended for offering in the Fall Winter 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

Javier Santander
Course instructor

24-10-2017
Date


Approval of the head of the academic unit

October 24, 2017
Date

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

Secretary, Faculty/School/Council

Date

New Special Topics Course Proposal OCSC 7500 Immunology and Diseases of Aquatic Organisms

Executive Summary

This is a proposal for a new course in Immunology and Diseases of Aquatic Organisms, which will focus on topics relevant to infectious diseases of marine organisms, comparative immunology and fish vaccinology. This course is an integral part of the programs in Ocean Sciences.

Resource Implications: Instructional Costs

Since this new course will be taught by existing faculty members at the Department of Ocean Sciences, no additional instructional costs are required.

Sample Course Outline and Method of Evaluation

Proposed Course Outline

I. Introduction to Comparative Immunology

Week 1: Immune Biology: innate immune response and antigen recognition

Week 2: Diversity and development of antigen receptors in mature lymphocytes

Week 3: The immune system in action during and after infection

Week 4: Immune system of other vertebrates (other mammals, birds, and reptiles) and origin of the adaptive immune system

Evaluation 1 (20%)

II. Immunology of Aquatic Organisms

Week 5: Teleost immune system

Week 6: Elasmobranches immune system

Week 7: Agnate immune system

Evaluation 2 (20%)

Assignment 1 (10%)

III. Infectious Diseases of Aquatic Organisms.

Week 8: Mechanisms of bacterial pathogenesis in marine organisms

Week 9: Mechanisms of viral pathogenesis in marine organisms

Evaluation 3 (20%)

Presentation (Lecture) - Group 1 (10%)

IV. Fish Vaccinology

Week 10: Introduction to vaccinology and mucosal immunity

Week 11: Fish vaccinology and vaccine design

Final examination (20%)

Presentation (Lecture) -Group 2 (10%)

Format

Two lectures of 1.5 h per week.

Evaluation

Evaluation 1 (20%)

Evaluation 2 (20%)

Evaluation 3 (20%)

New Special Topics Course – OCSC 7500 Immunology and Diseases of Aquatic Organisms (December 08, 2017)

Final Evaluation (20%)
Assignment (10%)
Presentation (10%)

Instructor

Dr. Javier Santander, Assistant Professor, Department of Ocean Sciences.

Email: jsantander@mun.ca

OCSC 7500. Immunology and Diseases of Aquatic Organisms provide an overview of immunology and diseases of aquatic organisms. The focus is on comparative immunology, immune response to the infection, bacterial and virus diseases of fish, and vaccinology in commercially cultured fish species. This course covers topics related to origin of the adaptive immunity, antigen recognition and antibody diversity, memory immune response, bacterial and viral pathogenesis, and vaccine development.

Rationale. The graduate program at the Department of Ocean Sciences would greatly benefit from a course in Immunology and Diseases of Aquatic Organisms. This course is novel and is not currently a course in Immunology and Diseases of Aquatic Organisms listed in the calendar. This course will be broader in scope and focus on topics that are directly relevant to aquatic organisms, evolution, and aquaculture. Due to the immune system in marine organism and aquaculture research, the proposed course will be a recommended higher-level elective in the graduate programs at the Department of Ocean Sciences. There is currently no other course at Memorial University that focuses on Immunology and Diseases of Aquatic Organisms, covering comparative immunology and infectious diseases of marine organisms and fish vaccinology applied to aquaculture.

Kenny, Gail

From: MathStat Graduate Officer <mathgrad@mun.ca>
Sent: December-19-17 9:35 PM
To: Kenny, Gail
Cc: Len Zedel
Subject: Re: PHYS 6366 - Special Topics course

Hi Gail,

this special topics course has been approved with 12 votes in favour (Cyr, Brian, Ron, Ken, Carolyn, Stephanie, Yuanzhu, Christina, Ivan, Len, Rob and myself); none against.

Salud,
-j

On 14/12/17 10:42 PM, JC Loredo-Osti wrote:

> Dear all,
>
>
> attached is the request for approval of a special topics course
> (Analysis of data from autonomus vehicles) to be offered as reading
> course from Physics and Physical Oceanography. Please, review the
> request and let me know your decision at your earliest convenience.
>

> Best,

>
> -j

>
>
>
>

> ----- Forwarded Message -----

> Subject: PHYS 6366 - Special Topics course
> Date: Thu, 14 Dec 2017 18:20:43 +0000
> From: Kenny, Gail <gkenny@mun.ca>
> To: MathStat Graduate Officer <mathgrad@mun.ca>

>
>
>

> Hi JC,

>
> Attached is the documentation for PHYS 6366 for discussion and review
> by the Graduate Studies Committee.

>

> Gail

>

> Gail Kenny

> Assistant to the Dean



Request for Approval of a Graduate Course

Dean of Science
Paper 5, B.c. (page 22 of 29)
DEC 14 2017

Received

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.: PHYS6366

Course Title: Analysis of Data from Autonomous Underwater Vehicles

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. Will additional library resources be required (if yes, please contact munul@mun.ca for a resource consultation)? Yes No

E. Credit hours for this course: 3

F. Course description (reading list required):

The course will cover the key techniques for spatial and temporal analysis of glider ocean data including EOF analysis, normal mode analysis, inverse methods, Fourier analysis, harmonic analysis, spectral analysis and cross-spectral analysis.

G. Method of evaluation:	Percentage	
	Written	Oral
Class tests	0	0
Assignments	70	0
Other (specify): PAPER -	30	0
Final examination:	0	0

Total 100

¹ Must specify the additional work at the graduate level

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

Instructor's initials

- 1. duplication of thesis work
- 2. double credit
- 3. work that is a faculty research product
- 4. overlap with existing courses

BD
BD
BD
BD

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

BD
 Course instructor

12. DEC. 2017
 Date

Planta Vapourin
 Approval of the head of the academic unit

Dec. 13, 2017
 Date

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

Secretary, Faculty/School/Council

Date

Physics 6366
Brad deYoung

The course will cover the key techniques for spatial and temporal analysis of glider ocean data including EOF analysis, normal mode analysis, inverse methods, Fourier analysis, harmonic analysis, spectral analysis and cross-spectral analysis.

**Text: Data Methods in Physical Oceanography - Emery and Thomson 2nd Edition
638 pp.**

Kenny, Gail

From: MathStat Graduate Officer <mathgrad@mun.ca>
Sent: December-20-17 7:25 PM
To: Kenny, Gail; Len Zedel
Subject: Re: PHYS 6014 Sp Topics Course

Hi Gail,

the special topics course Phys-6014 has been approved with 8 votes in favour (Ron, Carolyn, Rob, Len, Cyr, Ken, Yuanzhu and myself). None against.

The Faculty Council should be informed of this course approval.

Salud,
-j

On 06/12/17 08:57 AM, Kenny, Gail wrote:

> Hi JC,
>
> Attached is the documentation for a special topics course for the committee's discussion and approval. Thank you.
>
> Gail
>
> Gail Kenny
> Assistant to the Dean
> Faculty of Science Office
> Memorial University of Newfoundland
> St. John's, NL A1B 3X7
> gkenny@mun.ca
>
>

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JC Lored-Osti
Graduate Officer
Department of Mathematics and Statistics Memorial University
Phone: +(709) 864 8729

Request for Approval of a Graduate Course

Received

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.: Phys 6014

Course Title: Understanding Nuclear Magnetic Resonance

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. Will additional library resources be required (if yes, please contact munul@mun.ca for a resource consultation)? Yes No

E. Credit hours for this course: 3

F. Course description (reading list required):

This course introduces the basic principles of NMR spectroscopy, with a focus on both practical understanding as well as a theoretical foundation. This is designed as reading course, but there will also be an end-of-term project which will involve hands-on NMR experiments.

G. Method of evaluation:	Percentage	
	Written	Oral
Class tests	-	-
Assignments	-	-
Other (specify): (see attached course outline)	50%	50%
Final examination:	-	-

Total 100%

¹ Must specify the additional work at the graduate level

II. To be completed for special/selected topics course requests only

For special/selected topics courses, there is no evidence of:

Instructor's initials

1. duplication of thesis work

AY

2. double credit

AY

3. work that is a faculty research product

AY

4. overlap with existing courses

AY

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

Arund Yehhraj

Course instructor

Dec 4, 2017

Date

Polanto Lapourin

Approval of the head of the academic unit

Dec. 5, 2017

Date

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

Secretary, Faculty/School/Council

Date

Special Topics Reading Course Phys 6014 Understanding Nuclear Magnetic Resonance

1. Brief Description: This course introduces the basic principles of NMR spectroscopy, with a focus on both practical understanding as well as a theoretical foundation. This is designed as reading course where all students will read the material prior to class, and students will, in turn, actively participate in presenting course material. There will also be an end-of-term project which will involve hands-on NMR experiments.

Meeting: Once a week, 3 hours

Required Text: James Keeler, "Understanding NMR Spectroscopy", Wiley, 2010.

References:

1. P. T. Callaghan, "Principles of nuclear magnetic resonance microscopy", Oxford, 1993.
2. E. E. Burnell, C. A. de Lange (ed.), "NMR of Ordered Liquids", Springer, Netherlands, 2003. Particularly chapter 2 on density matrix methods in NMR.
3. M. R. Morrow, Notes, undated.

Course Methodology:

- Students and instructor (and guest faculty) will take turns presenting the week's reading from the course text or supplementary readings. Each student will have 4 – 6 such presentations.

Evaluation:

- Presentations of readings from the text (50%)
- Final Project which will include an experiment (50%)

Course Outline:

This course introduces some essential principles of NMR. The topics below will be covered:

1. **Module 1: NMR Basics**
 - (Keeler chapter 2)
 - Energy levels and NMR spectra (Keeler chapter 3)
 - The Vector Model, pulses, spin echoes (Keeler chapter 4)
 - Fourier transformation and data processing (Keeler chapter 5)
 - Carrying out a basic NMR experiment
2. **Module 2: Quantum mechanics of one and two spins**

- Superposition states, time evolution, RF pulses, the density operator, coherence (Keeler chapter 6, Bloom notes chapter 2 of ref. 2, Morrow notes)
- Product operators (Keeler chapter 7)
- Spin 1 (Morrow notes)

3. Module 3: Diffusion

- Influence of magnetic field gradients (Callaghan chapter 3)
- Measurement of motion using spin echoes (Callaghan chapter 6)

4. Module 4: 2D spectroscopy

5. Module 5: Relaxation (Keeler Chapter 9)

6. Experimental Aspects:

Early in the course: Each student will do an experiment on the 600 or 500 MHz spectrometer in C-CART, so that in Module 1 (NMR Basics) they are actually understanding data that they have acquired themselves. Any liquid-state sample would be fine, preferably something with peak splitting and degeneracies (e.g., 1D spectrum, T1, T2, diffusion measurements, on the standard TXI type probe).

The final project: This will involve a study of a more advanced NMR technique that allows more in-depth study of pulse programs, understanding phase cycling, and analysis of data.