MEMORIAL UNIVERSITY

Faculty of Science

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

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, April 15, 2020 at 1:00 p.m. by Bluejeans.

AGENDA

1. **Regrets**
2. **Adoption of the Minutes of February 19, 2020**
3. **Business Arising from the Minutes**
4. **Correspondence:** None
5. **Reports of Standing Committees**:
   - **A. Undergraduate Studies Committee**:
     - **a.** Faculty of Science Dean's List criteria (Paper 5.A.a., page 6)
     - **b.** Departments of Ocean Sciences and Biology, OCSC 4922/BIOL 4922, Special Topics in Marine Diversity, approved by the committee and presented to Faculty Council for information only (Paper 5.A.b., pages 7-11)
   - **B. Graduate Studies Committee:**
     - **a.** Department of Physics and Physical Oceanography, special topics course PHYS 6818, Quantum Field Theory, approved by the committee and presented to Faculty Council for information only (Paper 5.B.a., pages 12-16)
   - **C. Library Committee:** No business
6. **Reports of Delegates from Other Councils**
7. **Report of the Dean**
8. **Question Period**
9. **Adjournment**

Mark Abrahams, Ph.D.
Dean of Science

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FACULTY OF SCIENCE
FACULTY COUNCIL OF SCIENCE
MINUTES OF MEETING OF FEBRUARY 19, 2020

A meeting of the Faculty Council of the Faculty of Science was held on Wednesday, February 19, 2020, at 1:00 p.m. in room C-2045.

FSC 2729 **Present**

Biochemistry
M. Berry, R. Bertolo, S. Harding

Biology
T. Chapman

Chemistry
E. Merschrod, S. Pansare,

Earth Sciences
G. Dunning, G. Layne

Mathematics & Statistics
R. Haynes, J.C. Loredo-Osti

Physics & Physical Oceanography
S. Curnoe, M. Morrow

Psychology
K. Fowler

Dean of Science Office
K. Foss, T. Fridgen, G. Jackson, R. Newhook

Marine Institute
S. Caines

Staff
C. Hyde
D. Stirling
A. Langille

Graduate Students
K. Hall

FSC 2730 **Regrets**
S. Mantyka, S. Sullivan

FSC 2731 **Adoption of Minutes**
Moved: Minutes of the December 4, 2019, meeting be adopted (Bertolo/Loredo-Osti).
Four Abstentions. Carried.

Clarification of Undergraduate Studies Committee item A.a: It is understood that the special topics course COMP 4820 is currently being taught by a Per-Course Instructor, but, if it was to become a regular course, it would become part of the normal load of a full-time ASM.

FSC 2732 **Business Arising:** None

FSC 2733 **Correspondence:** None

FSC 2734 **Reports of Standing Committees:**

A. **Undergraduate Studies Committee:** No business.

B. **Graduate Studies Committee:** No business.

C. **Nominating Committee:** No business.

D. **Library Committee:** No business.

FSC 2735 **Report of the Dean**
Presented by Mark Abrahams, Dean

1. Brown bag lunch with the Vice-President (Research) is scheduled for Friday, February 21 from 12:30 to 1:30 pm in SN-2064. No set agenda other than the opportunity to have an informal discussion with Dr. Bose.

2. Memorial is once again participating in the National Survey of Student Engagement. This survey is given to undergraduate students in the first year of study, and again during the final few months of their degree program. It is an important indicator that we use to understand the teaching and learning environment and support student success initiatives. CIAP is seeking assistance of faculty who teach first year and final year courses to make students aware of the survey and encourage them to take the

time to complete the survey. The survey will be available from February 11 to March 15.

3. The High School Advising Program will run again this year. The Academic Advising Centre will coordinate all visits and asks that they be notified by March 9 of those faculty and academic staff that will be participating. They will be holding a meeting at 12:30 pm on Wednesday. March 25 in A-1045 for those that will be involved.

4. I am continuing to work on the Postsecondary Education Review Submission that should be ready for input from other deans next week. I thank department Heads who provided me with additional information to clarify the impact of current budget cuts on academic programs. Public consultations with the review committee are scheduled at MUN for Thursday, February 27 from 10:00 to 11:30 a.m., 12:00 to 1:30 p.m., 2:00 to 3:30 pm in Junior Common Room of Gushue Hall, Thursday, March 5 from 7:00 to 9:00 p.m. in the Faculty of Medicine (IM102), and Wednesday, March 11 from 10:00 to 11:30 a.m. and 2:00 to 3:30 pm in the Junior Common Room of Gushue Hall. If you want to participate, you should register through Eventbrite.

FSC 2736 **Question Period**

It was queried if the meeting with the Vice-President (Research) (VPR) should be at Faculty Council rather than the current setup. The Dean informed council that he had this discussion with the Heads and they thought it would have been best to start with a meeting with the Heads and Associate Deans and then meetings with individual departments. This could be a recommendation at the meeting with the VPR.

With regards to the post-secondary review, the Dean does not have any concerns if individual groups would like to make submissions.

Ron Haynes asked whether the second half of the roof of the Henrietta Harvey building would be completed this summer. The Dean stated that the senior administration at FM indicated that the roof is their highest priority; however, the Dean will email Jason Daniels to determine if the tender has been issued for this work. The main server room for the Mathematics and Statistics department still has problems related to the air conditioning unit. The Dean will follow up with the appropriate person regarding this issue as well.

Issues regarding the order to shelter in place on Tuesday, February 18th were discussed including late or no notifications from the MUN safe app, conflicting communications form the RNC and CEP, as well as lack of use of the emergency speaker systems to alert people in labs and large lecture theatres. The Dean recommended that any concerns be directed to the Chief Risk Officer. In addition, the Dean was not aware of any previous incidents with the person involved, which may be a result of personal privacy issues.

The Dean was unable to provide any clarity on the approval process of senior administrative positions other than that any external positions would need to have a permanent position budget associated with it.

Mark Berry asked Travis Fridgen if any progress has been made with the issue associated with having to accommodate some Blundon-registered students' midterm exam dates.

Travis reported that he had met with Catherine Shortall, Donna Hardy-Cox, and Jennifer Browne to obtain clarity with this accommodation. The response is that the current practice of making up missed midterm marks on the final exam is within the umbrella of universal design, but ultimately it is up to the instructor whether to make the accommodation or to increase the percentage of the final exam. We are encouraged to think about other ways to accommodate any students who are ill for midterm exams.

FSC 2737 **Adjournment**

The meeting adjourned at 1:27p.m.

The following changes to the Dean's List criteria have been approved by FoSCUgS:

The Dean's List is selected in June of each year. The top 10 per cent of students in the Faculty of Science are admitted to the Dean's List, provided that they have met the following requirements:

- registered for the degree of B.Sc. or B.Sc. honours (undeclared first-year students are also eligible if they meet the remaining criteria);
- completed at least 9 courses (27 credit hours) over two of the previous three semesters, attained an average grade of at least 80% and a GPA of 3.5 in these courses~~, and attained a grade of A in at least seven of them~~;
- taken at least 6 of those courses (18 credit hours) from departments in the Faculty of Science, inclusive of the Departments of Economics and Geography;
- A student who completed a co-op work term during the nomination period is eligible if a Pass With Distinction was achieved in that work term. The work term will count as 5 courses (15 credit hours);
- Other nominations may be made at the discretion of the Dean of Science in recognition of academic performance of exceptional merit.

NOTES: Typically, the top 10 per cent of students in the Faculty of Science satisfying the criteria above have average grades greater than 83 per cent.

MEMORIAL UNIVERSITY

Office of the Registrar

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

April 9, 2020

TO: All Members of Faculty Council, Faculty of Science

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

SUBJECT: **Proposals for Calendar Changes**

An email poll meeting held on March 21, 2020 the Faculty of Science Committee on Undergraduate Studies approved a proposal for a New Special Topics Course from the Department of Ocean Sciences, and agreed that the following items should be forwarded to Faculty Council for information:

1. Department of Ocean Sciences

(a) Proposal for a New Special Topics Course: OCSC/BIOL 4922: Special Topics in Marine Animal Diversity

Tracey Edmunds

_____
Tracey Edmunds

Memorial University of Newfoundland
Undergraduate Calendar Change Proposal Form
Cover Page

LIST OF CHANGES

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

- X New course(s): OCSC 4922 and BIOL 4922 Special Topics in Marine Animal Diversity
- ☐ Amended or deleted course(s):
- ☐ New program(s):
- ☐ Amended or deleted program(s):
- ☐ New, amended or deleted Glossary of Terms Used in the Calendar entries
- ☐ New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- ☐ New, amended or deleted General Academic Regulations (Undergraduate)
- ☐ New, amended or deleted Faculty, School or Departmental regulations
- ☐ Other:

ADMINISTRATIVE AUTHORIZATION

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

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

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

COURSE NUMBER AND TITLE

OCSC 4922 Special Topics in Marine Animal Diversity
BIOL 4922 Special Topics in Marine Animal Diversity

ABBREVIATED TITTLE

OCSC 4922 Spec Top Mar Animal Divers
BIOL 4922 Spec Top Mar Animal Divers

RATIONALE

The proposed course is designed to replace OCSC / BIOL 4122 Advanced Topics in Marine Animal Diversity (2-week intensive practical course) in response to the COVID-19 related suspension of face-to-face course deliveries. The new course keeps some of the features of OCSC / BIOL 4122 while transitioning to remote delivery, and it replaces the research projects and reports with written research proposals. The course objectives remain similar except for the absence of practical work.

CALENDAR CHANGES

NA

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

Sample Course Outline and Method of Evaluation

Format

Remote delivery over a 2-week period (April 20 to May 1 2020).

Proposed Course Outline

Morning: lectures and discussions (see OCSC / BIOL 4122 syllabus for topics).
Afternoon: students will work on assignments

Evaluation

Readings 20%
Students will be expected to read assigned papers and participate in the group discussion around each paper. Each student will also be required to provide a half-page critique ahead of the discussion.

Oral presentation 20%
Presentation skills will be evaluated as each student submits a 10-min presentation on a species/topic of their choice.

Research proposals (2 x 30%) 60%
Students will be required to submit a research proposal following a predetermined template at the end of week 1 and week 2.

News reports (extra credits)
Students will be given the opportunity to submit up to two summaries (2 pp; single-spaced; worth max. 2.5%) of scientific news or events related to marine science (e.g. from conference, blog, news site, newspaper, journal). Summaries should include a clear overview of major ideas/findings presented and a critical assessment of their strengths, limitations, etc. These are essentially free bonus points.

Bibliography

No specific textbook required. Assigned readings from peer-reviewed journals will be identified prior to the start of the course and accessed through Brightspace.

Instructor

Dr. Annie Mercier, Professor, Department of Ocean Sciences.

Collection Development Division
Queen Elizabeth II Library

20 March 2020

To: Garth Fletcher, Department of Ocean Sciences

From: Erin Alcock, Science Research Liaison Librarian

Subject: New Course Proposal, OCSC 4922/BIOL 4922

I have reviewed the new course proposal for OCSC 4922/BIOL 4922 – Special Topics in Marine Animal Diversity. I have determined that the Memorial University Library system has adequate resources to support the objectives of this course.

As the content of the course mirrors the content of OCSC/BIOL 4122 (an intensive practical existing course), there is no reason that MUN Libraries can't provide anything needed for an online equivalent. During the COVID19 period, MUN Libraries will not be able to obtain articles outside of our existing subscriptions via Document Delivery but we may be able to purchase what is necessary for teaching or research. Please don't hesitate to reach out to me at any time when seeking resources for this course.

MEMORIAL UNIVERSITY

School of Graduate Studies

Request for Approval of a Graduate Course

Adobe Reader, minimum version 8, is required to complete this form. Download the latest version: http://get.adobe.com/reader. (1) Save the form by clicking on the diskette icon on the upper left side of the screen; (2) Ensure that you are saving the file in PDF format; (3) Specify where you would like to save the file, e.g. Desktop; (4) 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 6818

Course Title: Quantum Field Theory

I. To be completed for all requests:

A. Course Type:

☑ Lecture course
☐ Laboratory course
☐ Directed readings
☐ Lecture course with laboratory
☐ Undergraduate course[1]
☐ Other (please specify)

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

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

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

E. Credit hours for this course: 3.0

F. Course description (reading list required):

This course explores topics such as spontaneous symmetry breaking mechanism, non-abelian gauge theories, introduction to quantum chromodynamics and electroweak theory, on-shell and minimal subtraction renormalization schemes, effective field theories and beyond Standard Model scenarios.

G. Method of evaluation:

	Percentage	
	Written	Oral
Class tests	30%	
Assignments	40%	
Other (specify):		
Final examination:	30%	
Total	100%	

[1] Must specify the additional work at the graduate level

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

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

		Instructor's initials
1.	duplication of thesis work	A. A.
2.	double credit	A. A.
3.	work that is a faculty research product	A. A.
4.	overlap with existing courses	A. A.

Recommended for offering in the (Fall) Winter Spring 20 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

A. Aleksejevs — Course instructor — 07/02/2020 — Date

Approval of the head of the academic unit — 14 FEB 2020 — Date

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

Secretary, Faculty/School/Council — March 6, 2020 — Date

Physics ~~6820~~ 6818: Quantum Field Theory

Classes: Lectures, schedule: TBD

Instructor: Dr. Aleksandrs Aleksejevs, Ph. 639-2701, AS 3027
email: aaleksejevs@grenfell.mun.ca

Textbook:

An Introduction to Quantum Field Theory, M. Peskin and D. Schroeder, (Perseus Books Publishing)

Description: The course is focused on applications of the Quantum Field Theory in nuclear and high energy particle physics. After the completion, the students will be able to construct models based on the various extensions of the Standard Model, calculate observables for the processes in electroweak and strong sector of particle physics and determine impact of beyond Standard Model extensions on the experimental outcomes.

Evaluation:

Assignments: 40% (assignments are given on bi-weakly basis, no late submission of the assignment will be accepted)
Mid-term Test: 30% (in class 2-hour term test, problem based)
Final Take Home Exam: 30%.

Part I: Renormalization

1. **Systematics of Renormalization**
   - 1.1. Examples of Divergencies
   - 1.2. Counting Ultraviolet Divergencies
   - 1.3. Renormalized Perturbation Theory
   - 1.4. Renormalization of QED
   - 1.5. Renormalization beyond the Leading Order: Two-Loop Example

2. Renormalization and Symmetry
- 2.1. Spontaneous Symmetry Breaking
- 2.2. Renormalization and Symmetry

3. The Renormalization Group
- 3.1. Wilson's Approach to Renormalization
- 3.2. The Gallan-Symanzik Equation
- 3.3. Evolution of Coupling Constants
- 3.4. Evolution of Mass Parameters

Part II: Non-Abelian Gauge Theories

1. Invitation: The Parton Model of Hadron Structure

2. Non-Abelian Gauge Invariance
- 2.1. The Geometry and Gauge Invariance
- 2.2. The Yang-Mills Lagrangian

3. Quantization of Non-Abelian Gauge Theories
- 3.1. Interactions of Non-Abelian Gauge Theory
- 3.2. The Fadeev-Popov Lagrangian
- 3.3. Ghosts and Unitarity
- 3.4. One-Loop Divergences of Non-Abelian Gauge Theory

4. Quantum Chromodynamics (QCD)
- 4.1. From Quarks to QCD
- 4.2. e^+e^- Annihilation into Hadrons
- 4.3. Deep Inelastic Scattering
- 4.4. Hard-Scattering Processes in Hadron Collisions
- 4.5. Parton Evolution
- 4.6. Measurements of $Alfa_s$

5. Operator Products and Effective Vertices
- 5.1. Renormalization of the Quark Mass Parameters
- 5.2. QCD Renormalization of the Weak Interactions
- 5.3. The Operator Product Expansion
- 5.4. Operator Analysis of e^+e^- Annihilation

6. Gauge Theories with Spontaneous Symmetry Breaking
- 6.1. The Higgs Mechanism
- 6.2. The Glashow-Weinberg-Salam Theory of Weak Interactions

Part III: Physics Beyond Standard Model

7. **Extensions of Standard Model**
   - 7.1. U(1)' Extension of Standard Model
   - 7.2. Dark Photon: Kinetic Mixing
   - 7.3. Z': Mass Mixing
   - 7.4. Scalar and Pseudo-scalar Extensions
   - 7.5. SU(2)' Extensions and Strong CP Violation

Important general University Policies:

It is the student's responsibility to familiarize themselves with University guidelines.

You can find them at University Calendar, School of Graduate Studies, Section 2

Student Code of Conduct.
http://www.mun.ca/student/conduct/
Accommodations for Students with Disabilities
http://www.mun.ca/blundon/accommodations/