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, February 20, 2019 at 1 p.m. in C-2045.

AGENDA

1. **Regrets**
2. **Adoption of the Minutes of January 16, 2019**
3. **Business Arising from the Minutes**
4. **Correspondence:** None
5. **Reports of Standing Committees**:
   - **A. Undergraduate Studies Committee**:
     Survey Regarding the Practice of Take-Home Examinations (Paper 5.A, pages 6-7)
   - **B. Graduate Studies Committee:**
     a. Department of Mathematics and Statistics, Special Topics Course: MATH 6423, Stochastic Differential Equations, for information only (Paper 5.B.a, pages 8-12)
   - **C. Nominating Committee:**
   - **D. Library Committee:** None
6. **Report of Teaching Consultant**
7. **Reports of Delegates from Other Councils**
8. **Report of the Dean**
9. **Question Period**
10. **Adjournment**

Mark Abrahams, Ph.D.
Dean of Science

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FACULTY OF SCIENCE
FACULTY COUNCIL OF SCIENCE
MINUTES OF MEETING OF JANUARY 16, 2019

A meeting of the Faculty Council of the Faculty of Science was held on Wednesday, January 16, 2019, at 1:00 p.m. in room C-2045.

FSC 2644 **Present**

Biochemistry
R. Bertolo, V. Booth, J. Brunton, S. Harding

Biology
T. Chapman, B. Staveley

Chemistry
S. Pansare

Computer Science
S. Bungay

Mathematics & Statistics
C. Cigsar, G. Cox, J. Craighead, D. Dyer, Z Fan, A. Hatefi, R. Haynes, H. Kunduri, J.C. Loredo-Osti, M. Merkli, C. Ou, D. Pike, Y. Sommerhauser, S. Sullivan, J. Suvak, H. Usefi, J. Xiao, Y. Yilmaz

Physics & Physical Oceanography
M. Morrow, J. Munroe, K. Poduska

Psychology
K. Fowler, C. Thorpe, C. Walsh

Dean of Science Office
M. Abrahams, T. Fridgen, G. Jackson, T. Mackenzie, L. Zedel

CITL
A. Todd

Marine Institute
S. Caines

FSC 2645 **Regrets**

M. Berry, G. Fletcher, J. Hanchar, S. Mantyka

FSC 2646 **Adoption of Minutes**

Moved: Minutes of the December 5, 2018, meeting be adopted (Sullivan/Bungay). **Four Abstentions. Carried.**

FSC 2647 **Business Arising:**

In response to the minutes of December 5, 2018, item FSC 2641 A.b.i., Tom Chapman, Head, Department of Biology presented the following statement:
The Biology Department supports Dr. Staveley's wish to have his opinion on the Department's curricular changes read into the Faculty Council minutes of Dec 5, 2018. However, we wish that one clarification be included: With the support of the Centre for Institutional Analysis and Planning, all Biology Majors (in program in March 2018, 257 students) and five years of alumni (457 students) were contacted and invited to provide commentary on our proposed program revisions.

The proposal for the changes to the PsyD program that did not make Faculty Council in December (FSC 2641 B.d.), were approved by the Executive Council of Faculty Council.

FSC 2648 **Correspondence:**

The Department of Mathematics and Statistics had submitted a building statement and motion to be presented at Faculty Council. The document contained an inaccuracy which stated that the Department of Mathematics and Statistics was originally slated to relocate to the Core Sciences Building. However, that was never part of the planning for the Core Sciences building.

Moved: That the Faculty of Science adopt the resolution submitted by the Department of Mathematics and Statistics concerning the Mathematics Building and the Department's physical infrastructure. (Pike/Haynes)

Amended Motion: Revise the resolution to replace the reference to the move to the Core Sciences Building with "despite it originally being planned that the Department would be relocated to the Chemistry-Physics Building".
Carried. Two Abstentions.

FSC 2649 **Reports of Standing Committees:**

A. Undergraduate Studies Committee:

All Calendar changes from the December 5, 2018 meeting have been approved by SCUGS. However, some departments still have to submit revised proposals. It's now time to start thinking about changes to the 2020/21 calendar.

Also, feedback is welcome regarding revisions to the overall Science regulations that was approved last year. There was one consequence that affected ESL students – the students had to complete additional English courses but could not get credit

for all the courses due to a restriction in HSS for the number of first year English courses for which they could get credit. Thanks to changes by HSS, this restriction will no longer exist.

B. Graduate Studies Committee:
Dean of the School of Graduate Studies sent an email regarding proposed calendar changes for graduate courses that require WHMIS and the registrar's office proposed options. This information is attached for Faculty Council's information only.

Members of council suggested that registration for WHMIS be tied to registrations of graduate courses such as the departmental 9000 level course.

C. Nominating Committee:
Moved: To accept proposed Faculty Council Constitution and By-Laws as presented. (Fridgen/Loredo-Osti) **Carried.**

D. Library Committee: None

FSC 2650 Report of Teaching Consultant

Reminder that nominations for the Dean's awards have started, and the call for President's awards goes out on February 4th. Also, please note that we are actively directing students to the General Office of their department for support in these nominations, so please ensure that staff are aware. The Faculty retreat is going ahead during midterm break, Friday, February 22 in the McCann Centre (Education Building).

FSC 2651 Report of the Dean

Presented by Mark Abrahams, Dean.

1. As most of you know, the university successfully concluded negotiations with both MUNFA and LUMUN. Both agreements require ratification from their membership but all are optimistic that there is little risk of a labour disruption.

2. I want to welcome new department heads in the Faculty of Science. Dr. Sunil Pansare is the new head of Chemistry, beginning Monday of this week. Dr. Greg Dunning will become the new head of Earth Sciences on February 1.

3. I do have sad news to report. Dr. Ashoke Deb in the Department of Computer Science passed away during the winter break. The university will be making an announcement of this on newsline.

4. I participated in an all-day meeting with Deans on December 17th to make their cases for replacement faculty associated with the Voluntary Retirement Program (VRP). As you know, the Faculty of Science has lost 14 positions to the VRP, with Earth Science losing 5 positions, and Computer Science and Chemistry each losing 3 positions. An additional two positions have been lost in Computer Science due to the resignation of their Department Head and the death of Dr. Deb. I have received no word yet on how many of these positions will be replaced, nor on the availability of start-up funds for new faculty.

FSC 2652 **Question Period**

The Dean was questioned about the Law School proposal and tuition costs of the students. The proposal is that the tuition will be approximately $30,000/year/student with 100 students per year, and they are expecting support from donors. At Senate it was made clear that this cannot impact the current funding of units. The Board of Regents will be looking at the financial proposal for the Law School. The new proposed building for the school will have classrooms, but it is not known if other Faculties can use the classrooms.

With regards to the proposed tear-down of the Science Building, preliminary work indicates that the University cannot make do without the large lecture theatre in that building. This may result in a partial tear-down.

FSC 2653 **Adjournment**

The meeting adjourned at 1:52p.m.

MEMORIAL UNIVERSITY

Office of the Registrar

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

February 11, 2019

TO: Deans and Department Heads (St. John's Campus); Vice-President (Grenfell Campus and Marine Institute); Chairpersons and Secretaries, Academic Councils (Faculties/Schools/Grenfell Campus/Marine Institute), the Blundon Centre, the Centre for Innovation, Teaching and Learning

FROM: Chair, SCUgS Sub-Committee on Take-Home Examinations

SUBJECT: Survey Regarding the Practice of Take-Home Examinations

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A sub-committee of the Senate Committee on Undergraduate Studies is currently reviewing the practice of take-home examinations. Memorial University's invigilation procedures state, in part, that "no student is permitted to write an examination without invigilation," which implies that take-home examinations are not permitted. In order for any take-home evaluation to be called an examination it would need to be exempt from Memorial University's invigilation procedures. However, it is known that take-home examinations are being utilized as a form of evaluation. As such, the sub-committee is seeking input from the University community as they consider the creation of new policies/regulations that would either govern or provide alternatives to the practice.

The sub-committee is considering issues such as:

- how prevalent is the practice of take-home examinations, and which units employ take-home examinations most frequently
- how should take-home examinations be defined; that is, if take-home examinations are most similar to take-home assignments, with expectations of more in-depth student answers and, following that, more extensive evaluative rubrics from instructors, is it reasonable to allow them to be assigned in the last two weeks of class or due during the examination period
- is the practice pedagogically sound, what for instance is the rationale behind the use of take-home examinations, what is the intended educational outcome from this practice
- are there any negative consequences that may outweigh the positive intents of using take-home examinations
- have there been any complaints from students, staff or faculty about the practice of administering take-home examinations and are those complaints pedagogical or administrative in their reasoning

- what type of course benefits most from this form of evaluation; for example, can the practice of take-home examinations stream-line the online education process by eliminating the need for students to be on campus or designated writing site, or to find an online invigilation option for one element of a larger course
- If used, how is academic integrity of the take home examination ensured.
- what impact would a change in practice have on students that are being academically accommodated through the Blundon Centre
- if it is permissible for a take-home examination to be due within the final examination period, could General University regulation 6.8.2.3 (Regulation 6.8.2 Exemptions from Final Examinations and Procedures for Applying to Write Deferred Final Examinations), which covers examination deferral due to a student having three scheduled examinations in a 24-hour period be applied
- the Office of the Registrar has the responsibility of scheduling final examinations; given that, should take-home examinations fall under the governance of the Office of the Registrar when they are developing the final examination schedule

Following discussions at a Senate meeting held on September 5th, 2015, two courses of action were suggested: either take-home examinations be exempted from the current invigilation procedures (Invigilation Procedures) and the practice of assigning them a due date that falls within the examination period continue, meaning regulations pertaining to three examinations falling within a 24-hour period should also apply to take-home examinations, or take-home examinations be disallowed because they conflict with current University procedures, and instructors will have to assign alternative forms of evaluation. There was, however, no consensus reached, and as such it is our intention to make recommendations to the Senate regarding how the University should proceed.

It is our hope that you may be able to provide insight into the issues listed above; or moreover, as we are in the preliminary stages of this investigation, alert us to potential issues that we have yet to consider, providing, if possible, illustrative scenarios that will help us to better understand the benefits of or hindrances cause by the practice of take-home examinations.

We would appreciate your feedback, and are kindly requesting that you submit any comments to scugs@mun.ca before March 8th, 2019

Thank you for your time,

Dr. Norm Catto
Head, Department of Geography and
Chair, SCUgS Sub-Committee on Take-Home Examinations

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February 14, 2019

TO: Registrar's Office

FROM: Secretary, Faculty of Science Faculty Council

SUBJECT: Special Topics Course

The special topics course, MATH 6423, Stochastic Differential Equations, 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
L. Morrissey, Department of Mathematics and Statistics

MEMORIAL UNIVERSITY

School of Graduate Studies

Request for Approval of a Graduate Course

FEB 11 2019
Received

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.: 6423

Course Title: Stochastic Differential Equations

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

F. Course description (reading list required):
attached

G. Method of evaluation:

	Percentage	
	Written	Oral
Class tests		
Assignments	40	
Other (specify): (mid-term test)	40	
Final examination:	20	or 20 (presentation of publications)
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	ch
2.	double credit	ch
3.	work that is a faculty research product	ch
4.	overlap with existing courses	ch

Recommended for offering in the Fall ✓ Winter Spring 20 19

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

Chunhua Ou — Jan 30, 2019

Course Instructor — Date

Approval of the head of the academic unit — February 14, 2019

Date

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

Secretary, Faculty/School/Council — February 14, 2019

Date

Updated June 2017

COURSE DESCRIPTION

MATH 6423 -(Special Topics course) Stochastic Differential Equations

1 Rationale

A stochastic differential equation (SDE) is a differential equation in which one or more of the terms is a stochastic process. This will result in a solution that is also a stochastic process. SDEs are used to model various phenomena such as unstable stock prices or physical systems subject to thermal fluctuations or population biology. Typically, SDEs contain a variable which represents random white noise calculated as the derivative of Brownian motion or the Wiener process. Recently, there have been great applications of this subject in science community. The study of this course is a great benefit to our graduate students.

This course is designed for those students who have completed the study of differential equations(ODE and PDE), with strong background on probability and stochastic process.

The instructor will lead student for a study of the materials in the outline listed below

2 Resource Implications

This course will use currently available teaching resources and will be taught by faculty members at the Department of Mathematics and Statistics.

3 Evaluation

Suggested evaluation can be given by

1. Assignments: 40%
2. Mid-term test: 40 %
3. Final exam or oral presentation: 20%

It can be changed, based on the need of different instructors.

4 Text

Oksendal, Bernt. Stochastic differential equations. An introduction with applications. Sixth edition. Universitext. Springer-Verlag, Berlin, 2003.

5 Other references

1. Panik, Michael J. Stochastic Differential Equations: An Introduction with Applications in Population Dynamics Modeling. 2017, Wiley.

2. Mao, Xuerong, Stochastic differential equations and applications. Second edition. Horwood Publishing Limited, Chichester, 2008. xviii+422 pp. ISBN: 978-1-904275-34-3

3. Evans, Lawrence C. An introduction to stochastic differential equations. American Mathematical Society, Providence, RI, 2013. viii+151 pp. ISBN: 978-1-4704-1054-4

6 Course Outline

Roughly, the course will include the following topics:

- Mathematical Preliminaries: Probability Spaces, Random Variables and Stochastic Processes
- Ito Integrals
- Ito's Formula and the Martingale Representation
- Stochastic Differential Equations
- The Filtering problem
- Difussion
- Application to population biology–stochastic differential equations and numerical solutions. If time allowed, lecturing or reading of applications to other subjects– mathematical finance or applications to science and engineering subjects.

7 Prerequisites

High level of undergraduate course Math3161 and Math4160 for differential equations and some 4000 level undergraduate course for probability and random processes, or permission of the instructor.