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, December 7, 2016, at 1 p.m. in C-2004.

AGENDA

1. Regrets
2. Adoption of the Minutes of November 16, 2016
3. Business Arising from the Minutes
   a. Department of Chemistry, calendar changes, change in prerequisite for CHEM 2400 and house-keeping in CHEM 2400, 2401, and 2440, tabled at last meeting, paper 3.a (12 pages).
   b. Department of Computer Science, calendar change, cross-listing of COMP 6931 and CMSC 6910, tabled at last meeting. Changes noted on the calendar entry for Scientific Computing, which accompanied the paperwork for the cross-listing of the courses, incorporated changes made in 2015 to the Computer Science course names and numbers, paper 3.b (21 pages).
4. Correspondence: None
5. Reports of Standing Committees:
   A. Undergraduate Studies Committee:
   a. Department of Physics and Physical Oceanography, calendar change, PHYS 3800, paper 5.A.a (7 pages).
   b. Department of Earth Sciences, calendar changes, paper 5.A.b (81 pages).
   c. Department of Mathematics and Statistics, calendar changes, MATH 3000, paper 5.A.c (11 pages).
   e. Faculty of Science, proposal for joint Bachelor of Science and Bachelor of Arts degree program, paper 5.A.e (30 pages).
   f. Department of Computer Science, proposals for thirteen new courses and proposal for two new majors, paper 5.A.f (127 pages).
   g. Department of Biology, calendar changes, paper 5.A.g (20 pages).
   h. Department of Ocean Sciences, calendar changes, amendment to the prerequisite for OCSC 2000, paper 5.A.h (12 pages).
   i. Department of Ocean Sciences, calendar changes, amendment to the minor program in Sustainable Aquaculture and Fisheries Ecology, paper 5.A.i (11 pages).
   j. Department of Ocean Sciences, proposal for new joint major program in Marine Biology, paper 5.A.j (18 pages).
B. Graduate Studies Committee:
   b. Department of Earth Sciences, special topics course, EASC 6917, Methods for Locating and Re-Locating Microseismic Events, presented to Council for information only, paper 5.B.b (4 pages).

C. Nominating Committee: None
D. Library Committee: None

6. Response to the Committee on Elections and Committees Regarding Composition of Senate, paper 6 (5 pages).
7. Reports of Chair in Teaching & Learning and Teaching Consultant
8. Reports of Delegates from Other Councils
10. Question Period
11. Adjournment

Mark Abrahams, Professor
Dean of Science
FACULTY OF SCIENCE
FACULTY COUNCIL OF SCIENCE
MINUTES OF MEETING OF NOVEMBER 16, 2016

A meeting of the Faculty Council of the Faculty of Science was held on Wednesday, November 16, 2016, at 1:00 p.m. in room C-2045.

FSC 2466

Present

Biochemistry
Booth, V.

Biology
Leroux, S. Staveley, B.

Chemistry
Bottaro, C. Flinn, C. Fridgen, T. Katz, M. Kerton, F.
Kozak, C.

Computer Science
Brown, E. Bungay, S. Gong, M. Miminis, G.

Mathematics & Statistics
Dyer, D. Loredo-Osti, J.C. Sullivan, S. Radford, C.

Ocean Sciences
Fletcher, G.

Physics & Physical Oceanography
Lagowski, J. Morrow, M.

Psychology
Neath, I.

Dean of Science Office
Abrahams, M. Foss, K. Foster, A. Harding, S.
Newhook, R. Rideout, J. Zedel, L.

Economics
Chu, Kam Hon
Geography
Edinger, E.

CITL
Todd, A.

Registrar’s Office
Burry, J.

Marine Institute
Onodenalore, Collins

FSC 2467 Regrets
Karen Dobbin-Williams  Mark Berry
Norm Catto  Mary Stordy
Tom Clift  Mohamed Ismail

FSC 2468 Adoption of Minutes
Moved: Minutes of the October 19, 2016, meeting be adopted (Sullivan/Kozak).
Carried.

FSC 2469 Business Arising:  None

FSC 2470 Correspondence:  None

FSC 2471 Reports of Standing Committees:
A. Undergraduate Studies Committee:
   Report presented by Shannon Sullivan, Chair, Undergraduate Studies Committee
   a. Moved: Department of Chemistry, calendar changes
      (Sullivan/Fridgen). Calendar changes related to the fourth item,
      change in prerequisite for CHEM 2400 and house-keeping in CHEM
      2400, 2401, and 2440 was tabled until the next meeting since there
      was a wording change that Biology had not yet approved. Carried.
      One abstention.
   b. Moved: Department of Chemistry, proposal for new major program,
      general and honours BSc in Chemistry (Biological) (Sullivan/Fridgen).
      Carried. One abstention.
   c. Moved: Department of Chemistry, calendar change
      (Sullivan/Fridgen). Carried.
   d. Moved: Department of Ocean Sciences, proposal for new course,
      OCSC 2500, Practical Introduction to Ocean Sciences
      (Sullivan/Fletcher). This item was originally item e on the agenda but
      council wanted to approve this course before approving the majors
      program. It was asked whether there would be resource implications
      for this course, and the Dean confirmed that the cost will be
approximately $3,700 per course offering but that this will come from the teaching budget already allocated to the Department of Ocean Sciences. Carried.

e. Moved: Department of Ocean Sciences, proposal for new majors in Ocean Sciences and Ocean Sciences (Environmental Systems) (Sullivan/Fletcher). Carried.

B. Graduate Studies Committee:
Report presented by J.C. Loredo-Osti, Chair, Graduate Studies Committee
a. Moved: Department of Mathematics and Statistics, first part of calendar change (Loredo-Osti/Radford). An additional motion was made for the second calendar change (Loredo-Osti/Radford). Carried.

b. Moved: Department of Computer Science, calendar change. This item was tabled until the next meeting since the papers included with the agenda were not the most recent version.


d. Moved: Department of Psychology, proposal for Special Topics course (Loredo-Osti/Neath). Carried.

e. Moved: Approval of the Graduate Studies Committee response to the School of Graduate Studies’ Degree Outcomes proposal (Zedel/Loredo-Osti). Discussion was held about whether student competencies should be included in the calendar and the consensus was that it should not be. Faculty Council specifically noted that feedback received from departments that was included with the Graduate Studies Committee response should be provided in the feedback to the School of Graduate Studies. Carried.

C. Nominating Committee: None
D. Library Committee: None

FSC 2472 Reports of Chair in Teaching & Learning and Embedded DELTS Teaching Consultant:
Report presented by Amy Todd, Embedded Teaching Consultant, and Danny Dyer, Chair, Teaching & Learning

This week is the last call for needs assessment. There have been about 70 responses thus far. There has been a relatively low response from the Departments of Biochemistry and Ocean Sciences. A departmental trends overview should be distributed as early as next week with the intention to present departmental plans. Faculty trends so far include discovery-based learning, large classes, motivation, assessing deep learning, and preventing cheating and plagiarism.
Cheating and Plagiarism in the Sciences is the topic for next week’s Brown Bag Lunch. It will be hosted by Dr. George Miminis from Computer Science and held in EN 2022, Wednesday, November 23, 2016, from 1-2 p.m.

It is requested that departments reach out to mentor the teaching efforts of any new faculty who might be starting new courses in January.

The Chairs in Teaching and Learning will soon be meeting to plan a university-wide event. An event will also be planned specifically for the Faculty of Science.

FSC 2473 Reports of Delegates from Other Councils: None

FSC 2474 Report of the Dean
Presented by Mark Abrahams, Dean.

The Dean would like to thank those individuals that agreed to serve as Science senators for this academic year. Their voices and those of other Science senators will be very important as senate considers its final report on senate reform and, specifically, the composition of senate. As a reminder, the Faculty of Science currently has 8 of 50 seats within Senate. Under the three future scenarios, representation will drop to seven or six seats.

The annual deadline for receipt of NSERC Discovery and RTI grants has passed and, by most accounts, proceeded smoothly. This does not happen by itself and the Dean would like to thank Dr. Len Zedel, Dr. Scott Harding, and Ms. Jan Hopkins for their extraordinary efforts on our behalf.

The Dean would also like to acknowledge Ms. Mary Wall from the Dean of Science office who is a recipient of the President’s Award for Exemplary Service this year. Those of you who work with Mary will know this award is very well deserved.

Most of you should now know that Dr. Mary Courage will be taking over as interim Dean of Science beginning on January 1, 2017. This is because the Dean has been asked to be the interim Associate Vice President Research while Dr. Gosine is serving as the Acting VPR, and also as his replacement when he takes a 12-month administrative leave. His leave will begin once a permanent VPR is in place. The Dean’s term will be suspended while he is in this role. He is expected to complete the remaining 16 months of his second term when he returns. Dr. Courage has extensive experience with the Faculty of Science and has served two terms as Associate Dean (Research). She is more than capable of taking on this role effectively, and we are very fortunate that she has agreed to provide this service to the Faculty of Science.

FSC 2475 Adjournment
The meeting adjourned at 1:43 p.m.
Proposal:
Change to prerequisite for
Chemistry 2400 and house-keeping in 2400, 2401, and 2440

Executive Summary

This is a proposal for a minor change in the prerequisites for CHEM 2400. Students wishing to do these courses coming from CHEM 1051 (SJ campus) will be required to have a minimum mark of 60% in this course. There are also some minor housekeeping changes.

Resource Implications: Instructional Costs

There are no costs associated with this calendar change.

Library Holdings and/or Other Resources Required

There are no new library or other resources required.

Signature of Unit Head (if appropriate):

Date:

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

Date:
SUMMARY PAGE FOR SENATE
Approval Form

Calendar Changes

Under 10.3 Chemistry (St. John's)

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, and 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 1051
CR: CHEM 2440
LH: 3
PR: Science 1807; a minimum 60% in CHEM 1050 and 1051; or the former 1031; 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, $^1$H and $^{13}$C-13 NMR spectra; properties, syntheses and reactions of ethers, 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: the former CHEM 2420, 2440, and the former 240A/B
LH: 3
PR: Science 1807; CHEM 2400

2440 Organic Chemistry for Biologists is an introduction to the principles of organic chemistry with an emphasis on material relevant to biological molecules. The laboratory will introduce techniques and illustrate concepts covered in the course. This course is designed primarily for Biology Majors.
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 2400, the former 2420, the former 240A/B
LH: 3
PR: Science 1807; a minimum 60% in CHEM 1011 (or 1001 or 1051)
UL: may not be used for credit by Chemistry or Biochemistry Majors and is will not serve as a prerequisite for any other Chemistry course.
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, and 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: the former CHEM 2420, CHEM 2440, the former CHEM 240A/B

LH: 3

PR: A minimum 60% in CHEM 1051 or the former 1031, or CHEM 1010 and CHEM 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, $^1$H and $^{13}$C-13 NMR spectroscopy; properties, syntheses and reactions of ethers, 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: the former CHEM 2420, CHEM 2440, the former CHEM 240A/B

LH: 3

PR: CHEM 2400

2440 Organic Chemistry for Biologists is an introduction to the principles of organic chemistry with an emphasis on material relevant to biological molecules. The laboratory will introduce techniques and illustrate concepts covered in the course. This course is designed primarily for Biology Majors.

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 2400, the former CHEM 2420, the former CHEM 240A/B.

LH: 3

PR: A minimum 60% in CHEM 1011 (or CHEM 1001 or CHEM 1051)

UL: is designed primarily for Biology Majors and may not be used for credit by Chemistry or Biochemistry Majors and may not serve as a prerequisite for any other Chemistry course.
Under 10.3 Chemistry (St. John's)

2400 Introductory Organic Chemistry I is a course on bonding involving carbon; conformation 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
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, $^1$H and $^{13}$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
PR: CHEM 2400

2440 Organic Chemistry for Biologists is an introduction to the principles of organic chemistry with an emphasis on material relevant to biological molecules. The laboratory will introduce techniques and illustrate concepts covered in the course. This course is designed primarily for Biology Majors.
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 2400
LH: 3
PR: Science 1807; a minimum 60% in CHEM 1011 (or 1001 or 1051)
UL: may not be used for credit by Chemistry or Biochemistry Majors and will not serve as a prerequisite for any other Chemistry course.
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
PR: A minimum 60% in CHEM 1051; or CHEM 1010 and CHEM 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, $^1$H and $^{13}$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
PR: CHEM 2400

2440 Organic Chemistry for Biologists is an introduction to the principles of organic chemistry with an emphasis on material relevant to biological molecules. The laboratory will introduce techniques and illustrate concepts covered in the course. This course is designed primarily for Biology Majors.
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 2400
LH: 3
PR: A minimum 60% in CHEM 1011 (or CHEM 1001 or CHEM 1051)
UL: may not be used for credit by Chemistry or Biochemistry Majors and will not serve as a prerequisite for any other Chemistry course.
Secondary Calendar Changes

There are no secondary calendar changes.

Rationale

The different requirements for entrance into CHEM 2400, CHEM 1051 (St. John's campus) and CHEM 1001 (Grenfell) reflect the difference in the content of the two first year programs. Students who wish to take CHEM 2400 on either campus will be required to have a minimum 60% in CHEM 1051 or 65% in CHEM 1001. The other modifications to 2400, 2401, and 2440 are housekeeping measures and/or to ensure consistency between the two calendar entries.
RE: changes to chem courses  
Consultations Sought From

Grenfell  
Marine Institute  
Mathematics and Statistics  
Computer Science  
Physics  
Biochemistry  
Biology  
Psychology  
Ocean Sciences  
Earth Sciences  
Pharmacy  
Engineering  
Faculty of Education  

Comments Received  

yes  
yes  
yes/no  
yes/no  
yes  
yes  
yes/no  
yes  
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 letter

Original Message------  
From: Chris Flinn [mailto:cgflinn@mun.ca]  
Sent: Monday, April 25, 2016 4:41 PM  
To: associatevpo@mun.ca; MIUG Consultations <MIUGconsultations@mi.mun.ca>; Mellor, Judith <jmellor@mun.ca>; mathconsult@mun.ca; cs-chair@mun.ca; Biochemistry Head <biohead@mun.ca>; Karen Morris <morrisk@mun.ca>; Annie Mercier <amercier@mun.ca>; psychology.head@mun.ca; Engineering Consultations <engrconsult@mun.ca>; pharminfo@mun.ca; Alison Leitch <aleitch@mun.ca>; 'Lagowski, Jolanta' <jolantal@mun.ca>; Alcock, Erin <ekalcock@mun.ca>  
Cc: Head of Chemistry <chemhead@mun.ca>  
Subject: chemistry proposals for consultation, library review

Hello everyone,
We have six chemistry proposals for review mostly involving changes to course prerequisites which are more appropriate to the courses in question and course descriptions which should better reflect course content as they are being in recent years. A number of course prerequisite changes involve Grenfell campus courses which have resulted from direct discussions.

cheers,

Chris Flinn
Deputy Head, Undergraduate Studies
Chemistry Department
MUN St. John's campus
This email is governed by the Terms and Conditions found in our Disclaimer<http://www.mi.mun.ca/ict/disclaimer>.

Replies received

Library report

15 August 2016

To: Chris Flinn, Department of Chemistry
From: Erin Alcock, Science Research Liaison Librarian
Subject: Change to prerequisite for Chemistry 2400 and house-keeping in 2400, 2401, and 2440

I have reviewed the proposal to change the prerequisites and minimum grade requirement for Chemistry 2400 and the corresponding house-keeping changes for Chemistry 2401 and 2440. This change will have no impact on the Library system.

Biology

Hi Chris,

The Biology Undergraduate Studies Committee reviewed the proposed calendar changes for Chemistry 2100, 2210, 2301, 2302, 2400, 2401, 2440, 3410 and 3411.

Biology supports the proposed minimum grade requirement that is required prior to admittance into the second year Chemistry courses but we would ask that students taking the course(s) be reminded of this minimum grade requirement as it could affect their timely progress through a science degree program.

We have no issues or concerns with the other minor wording changes.

Thanks

Karen

Marine Institute:

Chris
Thank you for the opportunity to review and comment on the changes to Chemistry 2400, 2401 and 2440.

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

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

Physics

Hello Chris,

Physics and Physical Oceanography Department looked over these chemistry proposals and, since they primarily deal with prerequisites for chemistry courses offered at Grenfell and St John’s campus, this does not affect our course offerings. We are fine with the proposals.

Jolanta

Jolanta B. Lagowski, Professor and Head
Physics and Physical Oceanography
Memorial University
St. John’s, NL, Canada A1B 3X7
Email: jolantal@mun.ca
Phone: (709) 864-8738

Education

Hello Chris:

We are pleased to support your calendar changes as outlined.

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

Engineering

Dear Dr. Flinn,

Thank you for the opportunity to comment on the proposed set of minor Calendar changes to nine Chemistry courses.

At this afternoon’s meeting, the Committee on Undergraduate
Studies of the Faculty of Engineering and Applied Science found these changes will have no impact on our programs. The suggested changes are consistent with the new minors in Chemistry for Process Engineering Majors and in Applied Science-Process Engineering for Chemistry Majors and Honours.

However I note a recurring minor typographical error: "minimum" should be "minimum" in the prerequisite lists for CHEM 2301 and CHEM 2302 (both St. John's and Grenfell versions and both markup and clean versions, eight instances in all).

Yours sincerely,

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science
Memorial University of Newfoundland
St. John's, NL Canada A1B 3X5

Ocean Sciences

Dear Chris:

The proposed calendar changes were considered by our undergrad studies committee. While changes to these Chemistry courses, in particular Chemistry 2400, 2401 and 2440 (minimum grades), have implications for the programs we are currently developing, there were no major concerns expressed.

All the best,

Annie

Annie Mercier, PhD
Associate Professor
Department of Ocean Sciences
Memorial University (Ocean Sciences Centre)
St. John's, NL, Canada, A1C 5S7
Tel: (709) 864-2011
Email: amerrier@mun.ca
www.mun.ca/osc/amerrier/bio.php

Grenfell

Subject: changes to chem courses.
From: "Parkinson, Don-Roger" <dparkins@grenfell.mun.ca> Date: 29/04/2016 2:02 PM
To: Travis Fridgen <chemhead@mun.ca>
CC: "Gallant, Robert" <rgallant@grenfell.mun.ca>

Dear Travis,

I was looking through the package with changes to the chemistry courses sent around by Dr. C. Flinn.
We, Environmental Science Chemistry (ENVC), are willing to support those changes agreed upon in the January 2016 meeting at Grenfell regarding the courses: Chem 2301, Chem 2302, Chem 2210, Chem 2400, and Chem 2401. Further, we are willing to support the changes to Chem 2100 which we did not talk about.

The changes to Chem 2440 were not discussed at the January meeting. The view at Grenfell is that Chem 2440 by its very name ‘organic Chemistry for Biologists’ is no: a Chemistry course in a true sense as it is offered to the Biology/Biologists to conform to their program. Further the course is credit restricted and usage limited; it can not be used as a Chemistry credit for a Chemistry or a Biochemistry program of study. The current MUN Calendar prerequisite requires Chem 1911, or Chem 1959 (or Chem 1001 at Grenfell) all with a pass. These are the only chemistry courses needed to enter into Chem 2440. If changes in prerequisites are to be made then there needs to be a wider discussion involving the Biology Dept. in St. John’s and the Environmental Biologists at Grenfell. Changes to the Chem 2440 entry requirements have the most direct ramifications to their programs. As of yet, I have seen no discussion or email trail with those faculty involved.

After preliminary discussion with some ENVB colleagues, we suggest that you pull the course (Chem 2440) from the list of changes until Biology (St. John’s), Environmental Biology (ENVB) Grenfell, Chemistry (St. John’s), and Environmental Chemistry Grenfell (ENVC) can all agree; so that we can move ahead with the other changes to the chemistry courses.

Regards, D-

R.P.

Or. Don-Roger Parkinson,
Associate Professor in Analytical Chemistry,
Environmental Chemistry and Chemistry, AS237

Chair of Environmental Science,

Grenfell Campus,
Memorial University of Newfoundland,
P.O. Box 2900
Corner Brook, NL A2H 6P9

Subject: RE: changes to chem courses
From: Parkinson, Don-Roger <dparkins@grenfell.mun.ca>
Date: 05/05/2016 1054 AM
To: Travis Fridgen <chemhead@mun.ca>
CC: Gallant, Robert <rpgallant@grenfell.mun.ca>

Dear Travis,

I have circulated the change you have suggested to the ENVS faculty (chemistry and Biology) and it seems that we would be agreeable to your change for Chem 2440 as indicated in the email below. Could also write the PR as: Science 1807; Chem 1051 or Chem 1001 or Chem 1011 with a 60%.

Also for the Grenfell section for all chem courses: Science 1807 should be added to all courses as a PR, as now all of MUN must have this Safety course completed for all students who enter a course with a lab.

Regards, D-

R.P.

-----Original Message-----
From: Travis Fridgen [mailto:chemhead@mun.ca]
Sent: Friday, April 29, 2016 3:25 PM
To: Parkinson, Don-Roger
Cc: Gallant, Robert; Chris Flinn; Karen Hattenhauer; Marino, Paul; Karen Morris Subject: Re: changes to chem
courses.

Dear Don-Roger,

Thank you for your e-mail.

With respect to not talking about CHEM 2100 I have to disagree; we certainly did. It was one of the courses that was listed in the table (along with 2210 and 2301) as having differential marks for students coming from 1051 or 1001. We had agreed that all 2nd year courses would have the change to the prerequisites.

As for 2440, you are absolutely correct that this should have first been discussed with Chemistry at Grenfell before we made this proposal since you also teach the course. The current calendar requires CHEM 1011 or CHEM 1051 (not lase as you stated in your e-mail) or 1aa1. All we are proposing is that if students come from the 1911 route, which is not taught at Grenfell, then they must have a 60% average. I think the problem you are having with it is that the way it is worded, it looks like they have to have 60% in 1051 and 1aa1 also, but that is not the intention, the 60% minimum is only for CHEM 1911.

So, I suggest that I change the wording to state, for St. John's:

PR: Science 1807; a minimum 60% in CHEM 1011 or a passing grade in either CHEM 1001 or 1051.

and for the Grenfell Calendar:

PR: a minimum 60% in CHEM 1011 or a passing grade in either CHEM 1001 or 1051.

I hope this clarifies things and that this is acceptable.

Our desire for the 60% in CHEM 1011 is because we teach almost 300 (for example last year 278) students per year and the instructor (and I) have looked at the grades and people coming from 1011 who have less than 60% are very unlikely to pass. Teaching this many students and having a group of students who are unlikely to pass the course is a drain on the instructor and doesn't do the students any good.

I would like to have these changes go through at the same time as the 2400 and 2401 changes. This consultation process is the perfect avenue for Biology (who I am cc'ing) as well as ENVB and ENVC to comment on the changes.

Take care, Travis
Hi Gail,

the three items have received six votes in favour (Ron, Yuanzhu, Alison, Stephanie, Ivan and myself), none against.
These proposals can be submitted for the approval of the Faculty Council.

Regards,
-J

On 11/07/2016 02:06 PM, Kenny, Gail wrote:
> Thanks JC. Any news on this request? The agenda for Faculty Council will be put together on Wednesday and we should get these items on that agenda so that we meet the deadlines in other offices for these items. Thank you.
>
> Gail
>
> -----Original Message-----
> From: JC Loredo-Osti [mailto:jcloredoosti@mun.ca]
> Sent: November-04-16 9:14 AM
> To: Brian E. Staveley <bstave@mun.ca>; Christina Bottaro
> <cbottaro@mun.ca>; JC Loredo-Osti <jcloredoosti@mun.ca>; Kenny, Gail
> <kgkenny@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@ml.mun.ca>; Carolyn Walsh <cwalsh@play.psych.mun.ca>;
> Tom Chapman <tomc@mun.ca>; Courage, Mary <mcourage@mun.ca>; Yuanzhu
> Chen <yzchen@mun.ca>; Alison Malcolm <amalcolm@mun.ca>; Matthew Rise
> <mrisle@mun.ca>
> Subject: Fwd: GS Committee business
>
> Dear committee members,
>
> we have three proposals whose decision is yet to be made. If you have not answered my email related to these proposal, please, do so at your earliest convenience.
>
> -j
>
> ----- Forwarded Message -----
> Subject: GS Committee business
> Date: Wed, 2 Nov 2016 17:32:40 +0000
> From: Kenny, Gail <kgkenny@mun.ca>
> To: JC Loredo-Osti <jcloredoosti@mun.ca>, MathStat Graduate Officer
October 17, 2016

TO: M. Abrahams, Dean, Faculty of Science

FROM: R. Haynes, Chair, Scientific Computing Program

SUBJECT: Calendar Changes and updates

I am requesting, with the support of the Department of Computer Science, that COMP 6931 and CMSC 6910 be cross-listed. These courses have been co-taught over the last number of years, as noted in the attached email from Dr. George Miminis, the course instructor.

As well, while going through the exercise of preparing the calendar entry as it should look if these courses are cross-listed, I noticed that a number of the Computer Science courses listed as part of our calendar entry had not been updated when that department made changes in the previous year. I am requesting these updates be approved as well so that Scientific Computing’s entry matches that of Computer Science.

Ron Haynes
Gail,

The Department of Computer Science consulted with members via email on the cross-listing of COMP-6931 and CMSC-6910 and no objections were raised.
The Department is in agreement with this proposal.

Regards,
Regina Edwards
for
Minglun Gong, Department Head

Contact Person: Regina Edwards  |  Secretary to Department Head
Email:       redwards@mun.ca  |  Department of Computer Science
Phone:       (709) 864-8652  |  Memorial University of Newfoundland
Fax:         (709) 864-2009  |  St. John's, NL Canada  A1B 3X5

Confidentiality Notice: This communication is intended for the use of the recipient to whom it is addressed, and may contain confidential, personal, and/or privileged information. Please contact us immediately if you are not the intended recipient of this communication, and do not copy, distribute, or take action relying on it. Any communication received in error should be deleted or destroyed.

On Mon, 26 Sep 2016, Kenny, Gail wrote:

> Date: Mon, 26 Sep 2016 13:08:32 +0000
> From: "Kenny, Gail" <gkenny@mun.ca>
> To: "redwards@mun.ca" <redwards@cs.mun.ca>
> Subject: FW: cross listing COMP 6931 with CMSC 6910
> 
> Hi Regina,
>
> > Scientific Computing has proposed that COMP 6931 and CMSC 6910 be
cross-listed in the calendar. I need confirmation from the Department of Computer Science that the department agrees
with this proposal. Thanks much.
>
> > Gail
> From: George Miminis [mailto:george@mun.ca]
> Sent: May-04-16 1:32 PM
> To: Kenny, Gail <gkenny@mun.ca>; Ronald Haynes <rhaynes74@gmail.com>
> Subject: Re: cross listing COMP 6931 with CMSC 6910
Hi folks,

I am attaching the latest course outline, as I handed it on to students that took CMSC6910 or COMP6931 last semester (Winter 2016). Also, I am attaching the course report as I submitted it a few days ago to the CS department. Gall please let me know if you need anything else.

For the history, COMP6931 changed number this year, it was COMP6732. COMP6732 was first given in 1994. My e-records don’t go any further back and that’s what I have here with me. After 1994, COMP6732 was given yearly staring on 2011 until 2016 along with CMSC6910. The latter had started on 2004, given on its own and then it was given linked with COMP6732.

Cheers

George

George Milinis, Ph.D.

Professor, Dept. of Computer Science

Memorial University of Newfoundland

St. John’s, NL, Canada, A1B 3X5

Tel. (709) 864-8635

Fax. (709) 864-2009

P If you decide to print this...

then you’ll need to find a place to file it...I

From: Gall Kenny <gkenny@mun.ca><mailto:gkenny@mun.ca>>
Date: Wednesday, May4,2016 at 4:32 PM
To: Ronald Haynes <rhaynes74@gmail.com><mailto:rhaynes74@gmail.com>>
Cc: Memorial University of Newfoundland
<george@mun.ca><mailto:george@mun.ca>>
Subject: RE: cross listing COMP 6931 with CMSC 6910

Hi Ron,

I don’t have an up-to-date course outline for CMSC 6910 and I’ll need that as part of the paperwork as we move this forward. George is copied on this email, so hopefully he can provide that paperwork. As well, I’ll need a course outline of COMP 6931. Is George teaching both courses?

Gall

From: Ronald Haynes [mailto:rhaynes74@gmail.com]
Sent: April-26-16 11:25 AM
Hi folks,

I am attaching the latest course outline, as I handed it on to students that took CMSC6910 or COMP6931 last semester (Winter 2016). Also, I am attaching the course report as I submitted it a few days ago to the CS department. Gail please let me know if you need anything else.

For the history, COMP6931 changed number this year, it was COMP6732. COMP6732 was first given in 1994. My e-records don’t go any farther back and that’s what I have here with me. After 1994, COMP6732 was given yearly staring on 2011 until 2016 along with CMSC6910. The latter had started on 2004, given on its own and then it was given linked with COMP6732.

Cheers

George

George Miminis, Ph.D.
Professor, Dept. of Computer Science
Memorial University of Newfoundland
St. John's, NL, Canada, A1B 3X5
Tel. (709) 864-8635
Fax. (709) 864-2009

If you decide to print this...

then you’ll need to find a place to file it...!

From: Gail Kenny <gkenny@mun.ca>
Date: Wednesday, May 4, 2016 at 4:32 PM
To: Ronald Haynes <rhaynes74@gmail.com>
Cc: Memorial University of Newfoundland <george@mun.ca>
Subject: RE: cross listing COMP 6931 with CMSC 6910

Hi Ron,

I don’t have an up-to-date course outline for CMSC 6910 and I’ll need that as part of the paperwork as we move this forward. George is copied on this email, so hopefully he can provide that paperwork. As well, I’ll need a course outline of COMP 6931. Is George teaching both courses?

Gail

From: Ronald Haynes [mailto:rhaynes74@gmail.com]
Sent: April 26, 16 11:25 AM
Matrix Computations and Applications
COMP 6931 and CMSC 6910

1. GENERAL INFORMATION
INSTRUCTOR: George Mininis
E-MAIL: george@mun.ca
OFFICE: EN2030

2. STUDENTS INTERESTED
Students who are doing research that includes developing efficient numerical solutions of problems that originate in Linear Algebra and are applicable in areas such as Control Engineering, Signal Processing, Statistics, Linear and nonlinear Optimization, as well as in most of the areas of Computational Sciences and Engineering, should find this course interesting as well as enabling.

3. OBJECTIVES OF THE COURSE
An introduction to the techniques of Numerical Linear Algebra. Emphasis is placed upon developing the most recent and reliable numerical algorithms. The Numerical Stability of selected algorithms as well as the Sensitivity (Conditioning) of selected problems will be studied.

4. IMMEDIATE PREREQUISITE(S)
Students that have taken COMP 3731 or equivalent are well prepared for this course. Although an Introduction to some essential topics of Linear Algebra may be given here, good knowledge of the subject will be very helpful.

5. IMMEDIATE SUCCESSOR(S)
Special Topics in Numerical Computations

6. WORK LOAD
Assignments 40%
Project proposal 10%
Project* write-up 20%
Project presentation and "mini" test 10% +15%
In-class participation 5%

*Students are encouraged, but not limited, to present part of their thesis topic if there is some relation to the course material.

There will be about 7 assignments given throughout the semester. Programming assignments will be chosen to illustrate the effects of finite precision arithmetic as well as develop expertise for efficient algorithmic design. Programming assignments will be written mainly in MATLAB. Non-programming problems may also be assigned.
7. REPRESENTATIVE COURSE OUTLINE

- An introduction to essential topics of Linear Algebra and to Floating Point Arithmetic (If necessary).
- Systems of Linear Equations
- The QR Decomposition and the Linear Least Squares Problem
- The Eigenvalue Problem
- The Singular Value Decomposition
- Applications of Matrix Computations in Control Theory (If time permits)
- Introduction to Parallel Matrix Computations (If time permits)

8. TEXT(S)

- Class Notes
- MATLAB primer (will be provided).

9. REFERENCES

- Lloyd N. Trefethen, David Bau III, “Numerical Linear Algebra”, SIAM
- Demmel James, "Applied Numerical Linear Algebra", SIAM.
Assignment on Complete Pivoting

You are asked to solve the system of equations

\[ Ax = b, \ A \in \mathbb{R}^{n \times n}, \ \text{rank}(A) = n, \ b \in \mathbb{R}^{n} \]

using complete pivoting. Give a brief, maximum a page, but rigorous enough mathematical explanation of your algorithm. Write two matlab functions that will implement your algorithm.

1. The function \[ x = \text{VirtUTC}(U, d, r, c) \] computes the solution \( x \) of a system \( Ux = d \), where \( U \) is virtually upper triangular. For this it uses two permutations \( r \) and \( c \), where \( (r(i), c(i)) \), with \( i = 1 : n \) are the indices of the \( i \)th diagonal element of \( U \), therefore \( U(r, c) \) is upper triangular.

2. The function \[ x = \text{Gauss_Complete_Piv}(A, b) \] transforms \( (A, b) \), using complete pivoting and elementary matrices, into an equivalent system \( (U, d) \) where \( U \) is virtually upper triangular. The function also computes permutations \( r \) and \( c \) such that \( U(r, c) \) is upper triangular. Finally the function calls \( \text{VirtUTC}(U, d, r, c) \) for the computation of \( x \).

Guidelines: Your program should not swap rows or columns and should use vectorization when possible. Function \( \text{VirtUTC} \) can access \( U \) by row or column, the choice is yours. You are welcome to use recursion if you find it useful. Apply your code to a couple of random instances \( (7 \leq n \leq 10) \) and present the numerical results.
Assignment on Profile Storage

You are given a large and sparse symmetric positive definite matrix $A \in \mathbb{R}^{n \times n}$ in profile storage scheme, e.g.

$$A = \begin{pmatrix}
25 & 3 & & & \\
3 & 21 & 2 & 4 & \\
2 & 23 & 0 & & \\
4 & 0 & 22 & 1 & \\
& & & & 1 & 20
\end{pmatrix}$$

stored row by row, in terms of two one-dimensional arrays. A one-dimensional array $s$ in which the nontrivial elements of $A$ are stored; along with another one-dimensional array $m$ of indices pointing to the diagonal elements of $A$ in $s$ ( $s(m(i)) = A(i,i)$ ) as described in the class. For example the above matrix would be stored as

$s = (25, 3, 21, 2, 23, 4, 0, 22, 1, 20)$

$m = (1, 3, 5, 8, 10)$

Using MATLAB do the following:

1. Write a function `chol_profile.m` that computes the Cholesky Factor $L$ of $A$ and stores it using the same profile storage scheme as with $A$, that is, overwriting $s$.

2. Given the above $A$ as well as $b^T = (1, 1, 1, 1)$ solve the system $Ax = b$, in an efficient way using the profile storage scheme of $A$. In doing so you should take into consideration the zeros at the beginning of each row. Also your algorithm should be in harmony with your data structure, for example, if you matrix is stored by row, your algorithm should use it by row.

Remark 1 Do NOT store $A$ and then compute $s$ and $m$, store directly $s$ and $m$. 

1
Assignment on the Computation of the QR Decomposition and Solution of the LLS

Write two efficient MATLAB functions, qrhouse.m and qrgivens.m, that compute the QR decomposition of a matrix using Householder transformations and Givens rotations respectively. Your code is expected to be efficient, that is, it should use vectorization, manage memory wisely and not waste time. Your functions should produce only the upper triangular matrices of the corresponding QR decompositions and not the orthogonal matrices. You may consider creating two functions house.m and givens.m such that when given an n-dimensional vector or a 2-dimensional vector x, respectively, these functions compute the corresponding Householder transformation or Givens rotation respectively, for the reduction of the given vector. These functions may now be used by your qrhouse.m and qrgivens.m accordingly.

Use your qrhouse.m and/or qrgivens.m to do the following:

1. Compute the QR decomposition of a random 7 x 4 matrix and give a trace of your computation. Your trace should display the reduction column by column when Householder transformations are used, and element by element when Givens rotations are used. Compare your results with MATLAB's build in function qr.m.

2. Write a MATLAB function lls_rd.m (rd stands for rank deficient) to solve the LLS problem

\[ \min_{x \in \mathbb{R}^n} \| b - Ax \|_2 \]

were \( A \in \mathbb{R}^{m \times n} \), with rank \( (A) = r \), where \( r < n < m \). Use lls_rd.m on a random problem with \( m = 7, n = 4, r = 2 \). Note that here you will need to keep track of the orthogonal matrix of one of the QR decompositions.
Assignment on The Power Algorithm

Consider the following $n \times n$ matrix

$$A_\alpha = \begin{pmatrix}
    n & n-1 & & \\
    \alpha & n-1 & \ddots & \\
    & \ddots & \ddots & \alpha \\
    & & \alpha & 2
\end{pmatrix}$$

Obviously $\lambda(A_\alpha) = \{1, 2, \ldots, n\}$, for any $\alpha$.

1. Generate the single precision matrices $A_1$ and $A_{40}$ for $n = 10$, insert the machine epsilon $\varepsilon = 10^{-7}$ at position $(1, n)$ of both matrices and compute the eigenvalues of the perturbed matrices $\tilde{A}_1$ and $\tilde{A}_{40}$ using matlab's `eig` built-in function. Explain why the eigenvalues of $\tilde{A}_{40}$ have been perturbed so much, whereas the eigenvalues of $\tilde{A}_1$ have not. Your explanation should have two phases, a theoretical phase where the justification is based on the characteristic equation of the perturbed matrices, and a numerical phase where the justification is based on the overall condition number of the eigenvalue problem of a matrix.

2. Using MATLAB, write a function `Power_Algorithm` that implements the Power Algorithm for the computation of the maximum eigenvalue of a matrix $A$. Your function should take as input $A$, $q$ (the initial approximation of the eigenvector) and a `scale` (it was given as $\sigma$ in the lectures). Your function should stop when the relative difference between two consecutive approximations of the eigenvector is less than $10^{-5}$ or if the iterations exceed 100. [Hint: Take $q = e_1$ and $\sigma = 1$]. Run in single precision `Power_Algorithm` on $\tilde{A}_1$ and $\tilde{A}_{40}$ and present the results.
COMP6931 Midterm Test
Winter 2016

Question 1 (2+5 = 7): Linear Equations

1. Consider the linear system $Ax = b$, where

$$
A = \begin{pmatrix} 2 & 2 \\ 2 & 4 \end{pmatrix}, \quad b = \begin{pmatrix} 6 \\ 8 \end{pmatrix}
$$

Make two Gauss-Seidel iterations on this system with a zero initial guess. That is starting with $x_0 = 0$ compute $x_2$. Recall that the Gauss-Seidel method is defined by the iteration

$$
x_{k+1} = (L + D)^{-1}(-Ux_k + b)
$$

where $D$ is the diagonal of $A$ and $L$, $U$ the strictly lower and upper triangles of $A$, respectively.

2. Show how to compute a nonzero solution $x$ to the upper triangular system $Ux = 0$ when $v_{ii} = 0$.

Question 2 (10+3 = 13): Linear Least Squares, QR

1. Show how you would use the QR decomposition to solve, as efficiently as possible, the LLSP $\min_x \|b - Ax\|_2$ when $A \in \mathbb{R}^{m \times n}$ has full column rank.

2. How would you store a Householder transformation $H = I - \pi^{-1}uu^T \in \mathbb{R}^{n \times n}$ efficiently on a computer and using your method of storing $H$ how would you compute $HA$ in $O(n^2)$ flops, with $A \in \mathbb{R}^{n \times n}$.
COMP68931 Final Exam
Winter 2016

Question 1 (30 minutes): You are given matrix $A \in \mathbb{R}^{n \times n}$, vectors $b \in \mathbb{R}^n$, $c \in \mathbb{R}^n$, $d \in \mathbb{R}^n$ and scalars $\alpha \in \mathbb{R}$, $\beta \in \mathbb{R}$. You are also given the LU decomposition of $A = LU$. Show how you would compute effectively the solution of

$$
\begin{pmatrix}
A & d \\
\begin{pmatrix} c \\
\alpha
\end{pmatrix}
\end{pmatrix}
\begin{pmatrix}
x \\
\xi
\end{pmatrix}
=
\begin{pmatrix}
b \\
\beta
\end{pmatrix}
$$

You should justify your answer mathematically and when needed you may use a $4 \times 4$ system for illustration as

$$
\begin{pmatrix}
x & x & x & x \\
x & x & x & x \\
x & x & x & x \\
x & x & x & x
\end{pmatrix}
\begin{pmatrix}
x \\
x \\
x \\
x
\end{pmatrix}
=
\begin{pmatrix}
x \\
x \\
x \\
x
\end{pmatrix}
$$

Question 2 (30 minutes): Compute the solution $x \in \mathbb{R}^n$ to the Constraint Linear Least Squares Problem

$$
\min_{x \in \mathbb{R}^n} \|Ax - b\|_2
$$

where $A \in \mathbb{R}^{m \times n}$, $C \in \mathbb{R}^{\ell \times n}$, $b \in \mathbb{R}^m$, $d \in \mathbb{R}^\ell$, with $m \geq n \geq \ell$, and $\text{rank}(A) = \text{rank}(C)$. Hint: Use either the QR or the SVD decomposition of $A$.

Question 3 (10 minutes): Assume $A \in \mathbb{R}^{n \times n}$ and that $z$ is an approximate eigenvector of $A$. Find the "best" approximate eigenvalue $\lambda$ of $A$ corresponding to $z$. Justify your answer and explain your choice of "best".

Question 4 (10 minutes): Solve the eigenproblem of Jordan block $J^{(k)}_\lambda$ and justify your answer.

Question 5 (15 minutes): If $J^{(k)}_\lambda$ is a Jordan block of $A$, find full column rank $X_k$ such that

$$AX_k = X_k J^{(k)}_\lambda$$

Question 6 (25 minutes): Given a full column rank matrix $Z \in \mathbb{R}^{n \times (n-1)}$, a symmetric positive definite matrix $A \in \mathbb{R}^{n \times n}$, and positive scalar $\alpha \in \mathbb{R}^+$, show how to compute $x \in \mathbb{R}^n$ such that

$$x^T A x = \alpha \land x^T Z = 0$$
Course Project Guidelines, Winter 2016

• Proposal:
Your proposal should be no more than two pages long plus references and graphs (if any) and should address the following points (template):
  1. **Problem Statement:** State the problem clearly.
  2. **Introduction:** General information about the background theory of the problem as well as the motivation that prompted you to solve it.
  3. **Previous work:** What have others done on this problem?
  4. **Your contribution:** What aspect of the problem you will be working on?
  5. **References**

A word of caution: The above template could be applied even to a Ph.D. thesis. Therefore, you should use good judgment as to what you should include in your *course project* and how much of it.

Your proposal will be judged on:
  - How relevant the proposed problem is to **Computational Linear Algebra.**
  - How interesting, from a scientific point of view, the proposed problem is.
  - How well it has been presented.

• Project:
Your project should be of the same format as your proposal but clearly more detailed. It should not exceed 10 pages, plus references and graphs if necessary.

• Presentation:
Your presentation should be in **pdf** form (strictly), should not exceed 15 minutes (strictly) and should follow the above template (at least). A question period of about 5 minutes will follow your presentation. Therefore, each one of you will have a total of 20 minutes to present their project and answer possible questions on their project.

• Proposal submission and Deadlines:
Your proposal should be submitted as a **pdf** file by midnight **Wednesday, March 9th.** Please keep in mind that your proposal needs to be approved by me. It may take a few days, between me suggesting changes and you responding to my suggestions, until you get an acceptable proposal. Then you will need enough time to work on it and meet the project submission deadline. Therefore, a suggested date for an initial submission is a week earlier on **Wednesday, March 2nd.**

• Other Submissions and Deadlines:
Your project must be submitted as a **pdf** file by midnight, **Wednesday, April 6th.** Your presentation should be sent to me, in **pdf** form, by email no later than midnight **Friday, April the 8th.** Your presentations will take place next day on **Saturday, April the 9th** starting at 10:00am until 12:00pm, lunch break 12:00pm - 1:00pm; the 30-minute test will start at 1:00pm.

• Place and Participation:
The presentations will take place at the Computer Science seminar room (EN-222). Everybody is expected to be present throughout the entire session and participate actively in the discussions. This will actually count towards your 5% for the "in class participation" portion of your grade.
Computer Science:
24.10.4 Courses
A selection of the following graduate courses will be offered to meet the requirements of candidates, as far as the resources of the Department will allow. Normally, students will be expected to complete their course work during the fall and winter semesters. Courses might not be offered in the spring semester.
601W Work Term
6758-6769 Special Topics in Computer Applications
6770-6790 Special Topics in Computer Science
690A/B Research Methods in Computer Science
6901 Applied Algorithms (credit may be obtained for only one of 6901 and 6783)
6902 Computational Complexity (credit may be obtained for only one of 6902 and 6743)
6903 Concurrent Computing
6904 Advanced Computer Architecture (credit may be obtained for only one of 6904 and 6722)
6905 Software Engineering (credit may only be obtained for one of 6905 or 6713)
6906 Numerical Methods (credit may only be obtained for one of 6906 or 6731)
6907 Introduction to Data Mining (credit may be obtained for only one of 6907 and 6762)
6908 Database Technology and Applications (credit may be obtained for only one of 6908 and 6751)
6909 Fundamentals of Computer Graphics (credit may be obtained for only one of 6909 or 6752)
6910 Services Computing, Semantic Web and Cloud Computing
6911 Bio-inspired Computing
6912 Autonomous Robotics (credit may be obtained for only one of 6912 and 6778)
6913 Bioinformatics
6914 3D Modelling and Rendering
6915 Machine Learning
6916 Security and Privacy
6918 Digital Image Processing (credit may be obtained for only one of 6918 or 6756)
6921 Syntax and Semantics of Programming Languages (credit may be obtained for only one of 6921 or 6711)
6922 Compiling Methods (credit may be obtained for only one of 6922 and 6712)
6924 Formal Grammars, Automata and Languages
6925 Advanced Operating Systems
6926 Performance Evaluation of Computer Systems
6928 Knowledge-Based Systems (credit may be obtained for only one of 6928 or 6755)
6929 Advanced Computational Geometry (credit may be obtained for only one of 6929 or 6745)
6930 Theory of Databases (credit may be obtained for only one of 6930 or 6742)
6931 Matrix Computations and Applications (credit may only be obtained for one of 6931, or 6732, and CMSC 6910) (cross-listed with CMSC 6910)
6932 Matrix Computations in Control (credit may only be obtained for one of 6932 or 6738)
6999 Master's Project

Scientific Computing:
24.21.6 Courses
Core Courses
Computer Science 6731 Topics in Numerical Methods
Mathematics 6201 Numerical Methods for Partial Differential Equations
Mathematics 6210 Numerical Solutions of Differential Equations
Scientific Computing 6009 Master's Project
Scientific Computing 6910 Matrix Computations and Applications or Computer Science 6732
6931 Matrix Computations and applications (credit may be obtained for only one of the CMSC 6910 and, COMP 6732 and COMP 6931)
Scientific Computing 6920 Applied Scientific Programming
Scientific Computing 6930 Algorithms for Distributed and Shared Memory Computers
Scientific Computing 6950 Computer Based Tools and Applications (credit may be obtained for only one of CMSC 6950 and the former CMSC 6940)

Additional Courses
The following courses are identified as suitable for students in this program. Other courses may be permitted with the approval of the Program Chair.

Biochemistry
6000-6009 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

Chemistry
6201 Bioinorganic Chemistry
6204 Mechanisms in Catalysis
6205 Photochemistry of Transition Metal Complexes
6210 Organometallic Chemistry
6300 Quantum Chemistry I
6301 Quantum Chemistry II
6302 Molecular Spectroscopy
6304 Computational Chemistry I
6310 Electronic Structure Theory
6323 Chemical Thermodynamics I
6324 Chemical Thermodynamics II
6340 Biophysical Chemistry
6350 Electrochemical Kinetics
6360 Solid State Chemistry
6380 Adsorption on Surfaces
6381 Surface and Interface Science
6382-6389 Selected Topics in Physical Chemistry
6390-6398 Selected Topics in Physical Chemistry
6399 Chemical Kinetics and Dynamics
6401 Organic Spectroscopic Analysis I
6402 Organic Spectroscopic Analysis II
6470 Physical Organic Chemistry
6590-6599 Selected Topics in Theoretical and Computational Chemistry
6600 Applications of Inorganic and Organometallic Chemistry to Toxicology

Computer Science
6722 6904 Advanced Computer Architectures (credit may be obtained for only one of 6904 and 6722)
6713 6905 Software Engineering (credit may be obtained for only one of 6905 and 6713)
6728-6730 Special Topics in Computer Systems – Computer Networks
6731 Topics in 6906 Numerical Methods (credit may be obtained for only one of 6906 and 6731)
6738-6739 Special Topics in Numerical Methods
6752 Applications 6909 Fundamentals of Computer Graphics (credit may be obtained for only one of 6909 and 6752)
6766 6918 Digital Image Processing (credit may be obtained for only one of 6918 and 6756)
6732-6931 Matrix Computations and Applications (credit may be obtained for only one of 6732, 6931 and CMSC 6910)

Earth Sciences
6141 Rotation of the Earth
6142 Theory of Global Geodynamics
6171 Advanced Exploration Seismology
6172 Borehole Seismic
6175 Gravity and Magnetic Methods
6177 Mathematical Formulations of Seismic Wave Phenomena
6918 Airborne and Borehole Electromagnetic Methods
6994 Special Topics in Earth Sciences - Geophysical Inversion and Applications
7110 Physics of the Solid Earth
7120 Crustal Geophysics

Engineering and Applied Science
9015 Ocean Engineering Hydrodynamics
9052 Ice Properties and Mechanics
9501 Finite Element Analysis with Engineering Applications
9713 Stochastic Hydrology
9815 Electromagnetic Propagation
9821 Digital Signal Processing
9826 Advanced Control Systems
9861 High-Performance Computer Architecture
9865 Advanced Digital Systems
9869 Advanced Concurrent Programming
9871 Information Theory and Coding

Mathematics and Statistics
6112-6119 Special Topics in Applied Mathematics
6201 Numerical Methods for Partial Differential Equations
6210 Numerical Solution of Differential Equations (required course for Scientific Computing)
6212 Numerical Methods for Initial Value Problems
6588 Selected Topics in Statistics and Probability - Generalized Additive Models with Applications in Scientific Visualization

Physics and Physical Oceanography
6000 Condensed Matter Physics I
6200 Nonlinear Dynamics
6308 Ocean Dynamics I
6309 Ocean Dynamics II
6310 Physical Oceanography
6316 Ocean Measurements and Data Analysis
6317 Ocean Acoustics
6318 Numerical Modelling
6320 Turbulence
6321 Coastal Oceanography
6323 Stability Theory
6400 Statistical Mechanics
6402 Theory of Phase Transitions
6800 Group Theory
6850 Quantum Mechanics I

**Scientific Computing**
601W Work Term 1
602W Work Term 2
6910 Matrix Computations and Applications *(credit may be obtained for only one of CMSC 6910 and COMP 6732 and 6931) (cross-listed with COMP 6931)*
6920 Applied Scientific Programming
6925 Tools of the Trade for Programming High Performance Computers (2 credit hours)
6930 Algorithms for Distributed and Shared Memory Computers
6950 Computer Based Tools and Applications *(credit may be obtained for only one of CMSC 6950 and the former CMSC 6940)*

**Computer Science (PhD section):**

**32.7.2 Courses**
A selection of the following graduate courses will be offered to meet the requirements of candidates, as far as the resources of the Department will allow.

6758-6769 Special Topics in Computer Applications
6770-6790 Special Topics in Computer Science
690A/B Research Methods in Computer Science
6901 Applied Algorithms *(credit may be obtained for only one of 6901 and 6783)*
6902 Computational Complexity *(credit may be obtained for only one of 6902 and 6743)*
6903 Concurrent Computing
6904 Advanced Computer Architecture *(credit may be obtained for only one of 6904 and 6722)*
6905 Software Engineering *(credit may be only obtained for one of 6905 or 6713)*
6906 Numerical Methods *(credit may be only obtained for one of 6906 or 6731)*
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6909 Fundamentals of Computer Graphics *(credit may be obtained for only one of 6909 or 6752)*
6910 Services Computing, Semantic Web and Cloud Computing
6911 Bio-inspired Computing
6912 Autonomous Robotics *(credit may be obtained for only one of 6912 and 6778)*
6913 Bioinformatics
6914 3D Modelling and Rendering
6915 Machine Learning
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6924 Formal Grammars, Automata and Languages
6925 Advanced Operating Systems
6926 Performance Evaluation of Computer Systems
6928 Knowledge-Based Systems *(credit may be obtained for only one of 6928 or 6755)*
6929 Advanced Computational Geometry *(credit may be obtained for only one of 6929 or 6745)*
6930 Theory of Databases *(credit may be obtained for only one of 6930 or 6742)*
6931 Matrix Computations and Applications *(credit may only be obtained for one of 6931 or 6732 and CMSC 6910)* *(cross-listed with CMSC 6910)*
6932 Matrix Computations in Control *(credit may only be obtained for one of 6932 or 6738)*
'DEPARTMENT OF COMPUTER SCIENCE

Revisions are noted in strikeout text, and changes and additions noted in underlined-bold text.

24.10.4 Courses
A selection of the following graduate courses will be offered to meet the requirements of candidates, as far as the resources of the Department will allow. Normally, students will be expected to complete their course work during the fall and winter semesters. Courses might not be offered in the spring semester.

601W Work Term
6758-6769 Special Topics in Computer Applications
6770-6790 Special Topics in Computer Science
690A/B Research Methods in Computer Science
6901 Applied Algorithms (credit may be obtained for only one of 6901 and 6783)
6902 Computational Complexity (credit may be obtained for only one of 6902 and 6743)
6903 Concurrent Computing
6904 Advanced Computer Architecture (credit may be obtained for only one of 6904 and 6722)
6905 Software Engineering (credit may only be obtained for one of 6905 or 6713)
6906 Numerical Methods (credit may only be obtained for one of 6906 or 6731)
6907 Introduction to Data Mining (credit may be obtained for only one of 6907 and 6762)
6908 Database Technology and Applications (credit may be obtained for only one of 6908 and 6751)
6909 Fundamentals of Computer Graphics (credit may be obtained for only one of 6909 or 6752)
6910 Services Computing, Semantic Web and Cloud Computing 6911 Bio-inspired Computing
6912 Autonomous Robotics (credit may be obtained for only one of 6912 and 6778)
6913 Bioinformatics
6914 3D Modelling and Rendering
6915 Machine Learning
6916 Security and Privacy
6918 Digital Image Processing (credit may be obtained for only one of 6918 or 6756)
6921 Syntax and Semantics of Programming Languages (credit may be obtained for only one of 6921 or 6711)
6922 Compiling Methods (credit may be obtained for only one of 6922 and 6712)
6924 Formal Grammars, Automata and Languages
6925 Advanced Operating Systems
6926 Performance Evaluation of Computer Systems
6928 Knowledge-Based Systems (credit may be obtained for only one of 6928 or 6755)
6929 Advanced Computational Geometry (credit may be obtained for only one of 6929 or 6745)
6930 Theory of Databases (credit may be obtained for only one of 6930 or 6742)
6931 Matrix Computations and Applications (credit may only be obtained for one of 6931 or 6732) (cross-listed with CMSC-6910)
6932 Matrix Computations in Control (credit may only be obtained for one of 6932 or 6738)
6999 Master's Project

32.7.2 Courses
A selection of the following graduate courses will be offered to meet the requirements of candidates, as far as the resources of the Department will allow.
6758-6769 Special Topics in Computer Applications
6770-6790 Special Topics in Computer Science
690A/B Research Methods in Computer Science
6901 Applied Algorithms (credit may be obtained for only one of 6901 and 6783)
6902 Computational Complexity (credit may be obtained for only one of 6902 and 6743)
6903 Concurrent Computing
6904 Advanced Computer Architecture (credit may be obtained for only one of 6904 and 6722)
6905 Software Engineering (credit may only be obtained for one of 6905 or 6713)
6906 Numerical Methods (credit may only be obtained for one of 6906 or 6731)
6907 Introduction to Data Mining (credit may be obtained for only one of 6907 and 6762)
6908 Database Technology and Applications (credit may be obtained for only one of 6908 and 6751)
6909 Fundamentals of Computer Graphics (credit may be obtained for only one of 6909 or 6752)
6910 Services Computing, Semantic Web and Cloud Computing
6911 Bio-inspired Computing
6912 Autonomous Robotics (credit may be obtained for only one of 6912 and 6778)
6913 Bioinformatics
6914 3D Modelling and Rendering
6915 Machine Learning
6916 Security and Privacy
6918 Digital Image Processing (credit may be obtained for only one of 6918 or 6756)
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6924 Formal Grammars, Automata and Languages
6925 Advanced Operating Systems
6926 Performance Evaluation of Computer Systems
6928 Knowledge-Based Systems (credit may be obtained for only one of 6928 or 6755)
6929 Advanced Computational Geometry (credit may be obtained for only one of 6929 or 6745)
6930 Theory of Databases (credit may be obtained for only one of 6930 or 6742)
6931 Matrix Computations and Applications (credit may only be obtained for one of 6931 or 6732) (cross-listed with CMSC-6910)
6932 Matrix Computations in Control (credit may only be obtained for one of 6932 or 6738)
November 25, 2016

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

At meetings held on November 15 and November 22, 2016, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Physics and Physical Oceanography
   - Changes to course description of Physics 3800

2. Department of Earth Sciences
   (i) Calendar changes to amend the course descriptions for seven Earth Sciences courses, including prerequisite changes
   (ii) Calendar changes to the Earth Sciences major programs with respect to the required first year Chemistry courses

3. Department of Mathematics and Statistics
   (i) Calendar change to the course description of Mathematics 3000
   (ii) Proposal for new course: Mathematics 109A/B

4. Faculty of Science
   - Proposal for joint Bachelor of Science and Bachelor of Arts degree program

[Signature]
Joan Burry
Associate Registrar and
Secretary: Committee
on Undergraduate Studies,
Faculty of Science
Proposal
Amend Calendar Entry PHYS 3800

Executive Summary
Proposal contains minor housekeeping revisions to the course LC, LH and PR.

Resource Implications: Instructional Costs
- None.

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

Library Holdings and/or Other Resources Required
- No new Library resources required.

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
Physics 3800 Computational Physics

Abbreviated Course Title
Computational Physics

Calendar Change(s)

3800 Computational Physics is a project-based course that trains students to become functional in computational methods by writing and compiling computer code (C/Fortran) in a Unix environment to solve problems from different areas of physics. Students complete one or more projects that introduce students to a particular class of numerical methods. Lectures and tutorials cover the theory that underlies the computational methods and background for code development and the application of the required numerical methods.

LC: 5
LH: 52

PR: Computer Science 1510, or 1001, or Engineering 1020 (or other computer programming course), PHYS 2820, Mathematics 2260 (or the former Mathematics 3260), and Mathematics 3202

Rationale
Computer Science 1510 can be substituted with another programming course. Prior to the introduction of the LC and LH notations to the Calendar several years ago, the entry for Physics 3800 indicated a combination of five lecture and laboratory hours per week. This was erroneously replaced with a notation which indicated that it had both five lecture hours and five laboratory hours per week; in fact, the course has three lecture hours, as per default, and 2.0 laboratory hours per week.
### Consultations Sought From

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

### Comments Received

<table>
<thead>
<tr>
<th>Consultation</th>
<th>Comment</th>
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<tr>
<td>1. Grenfell Campus</td>
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</tr>
<tr>
<td>2. Marine Institute</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Department of Biochemistry</td>
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<td>10. Department of Mathematics and Statistics</td>
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<tr>
<td>11. Engineering</td>
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</tr>
</tbody>
</table>

### Library Report Received

- Yes

### Signature

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

Name

---

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
From: Engineering Consult [engrconsult@mun.ca]
Sent: October-19-16 5:07 PM
To: Martin Plumer
Cc: Andrew Fisher; Theodore Norvell; Barrington, Kaela
Subject: Re: Consultation: Minor Calendar changes to Physics 3800

Dear Dr. Plumer,

Thank you for the opportunity to comment on the proposed Calendar changes to PHYS 3800.

At its meeting this afternoon, the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science expressed no objections to this proposal.

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: Fletcher, Garth [fletcher@mun.ca]
Sent: October-06-16 11:29 AM
To: plumer@mun.ca
Cc: amerclier@mun.ca
Subject: FW: FW: Consultation: Minor Calendar changes to Physics 3800

Hi Martin: As you can see from the following Ocean Sciences has no concerns with the proposed changes.

Best regards

Garth

From: Annie Mercier [mailto:amerclier@mun.ca]
Sent: October-06-16 10:33 AM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: Re: FW: Consultation: Minor Calendar changes to Physics 3800

Hi Garth:
We have reviewed the proposed changes; they do not have any impact on us, and we have no particular concerns.
Cheers,
Annie

On 04/10/2016 10:33 AM, Fletcher, Garth wrote:
Hi Annie: Can you check this out please.
 Regards
Garth
From: Dawn King [Dawn.King@mi.mun.ca] on behalf of MIUG Consultations
[MIUGconsultations@mi.mun.ca]
Sent: October-06-16 10:06 AM
To: Martin Plumer
Subject: RE: Consultation: Minor Calendar changes to Physics 3800

Martin,

Thank you for the opportunity to review and comment on the proposed Calendar changes for PHYS 3800: Computational Physics.

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

All the best,

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

Collection Development Division
Queen Elizabeth II Library
St. John’s, NL A1B 3Y1
Alison Ambi, Collections Division, QEII Library, St. John’s, Newfoundland, Canada A1B 3Y1
Phone: 709 864-7125 Email: aambi@mun.ca Fax: 709 864 2153
TO: Martin Plumer, Chair, Undergraduate Studies Committee
Jolanta Lagowski, Head, Physics & Physical Oceanography
FROM: Alison Ambi, Science Research Liaison Librarian
DATE: 4 October 2016

RE: Library evaluation for calendar changes Computational Physics

I have reviewed the proposed edits to the calendar entries for PHYS 3800 and have determined that the changes will have no impact on library resources.
From: Michelle Miskell [mailto:mmiskell@mun.ca]
Sent: November-03-16 3:53 PM
To: plumer@mun.ca
Cc: "Penny Morrill" (pmorrill@mun.ca)
Subject: RE: Physics 3800 consult

Good day Martin,

Earth Sciences has no issue with the proposed changes to Phys 3800.

Best wishes,
Michelle

Ms. Michelle Miskell
Manager of Academic Programs
Department of Earth Sciences
Memorial University of Newfoundland
St. John's, NL  A1B 3X5
(709) 864-4464
mmiskell@mun.ca
www.mun.ca/earthsciences

---

From: Sharene Bungay [mailto:sharene@mun.ca]
Sent: November-04-16 11:17 AM
To: plumer@mun.ca
Subject: Minor Calendar changes to Physics 3800

Hi Martin,
The Computer Science undergraduate studies committee has reviewed the proposed changes to Physics 3800. We suggest that the Physics department consider specifying the programming courses that would be suitable as prerequisite courses rather than leaving it open to any "computer programming course".

Cheers,
Sharene.
November 25, 2016

TO: All Members, Faculty Council of Science

FROM: Joan Burry, Secretary
Committee on Undergraduate Studies, Faculty of Science

SUBJECT: Calendar Changes, New Course and New Program Proposals

At meetings held on November 15 and November 22, 2016, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Physics and Physical Oceanography
   - Changes to course description of Physics 3800

2. Department of Earth Sciences
   (i) Calendar changes to amend the course descriptions for seven Earth Sciences courses, including prerequisite changes
   (ii) Calendar changes to the Earth Sciences major programs with respect to the required first year Chemistry courses

3. Department of Mathematics and Statistics
   (i) Calendar change to the course description of Mathematics 3000
   (ii) Proposal for new course: Mathematics 109A/B

4. Faculty of Science
   - Proposal for joint Bachelor of Science and Bachelor of Arts degree program

Joan Burry
Associate Registrar and
Secretary: Committee on Undergraduate Studies,
Faculty of Science
Changes to EASC 2030 Mineralogy

Proposal
Calendar Change to Existing Course
EASC 2030 Mineralogy

Executive Summary

The Earth Sciences Department wishes to raise the entry standards into the Earth Sciences majors and minor programs, by requiring a minimum grade of 55% in EASC 1000 and EASC 1002 for all courses that have these courses as prerequisites.

Resource Implications

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

Consultations

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

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

Signature of Unit Head (if appropriate):

Date:

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

Date:
Changes to EASC 2030 Mineralogy

SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title

EASC 2030 Mineralogy

Abbreviated Course Title

Mineralogy

Proposed Changes to Calendar Description

2030 Mineralogy provides an introduction to crystallography and the structure of minerals; introduction to crystal optics; study of the rock forming minerals and minerals of economic significance. Laboratory work comprises study of the structures and symmetries of minerals, chemistry of rock forming minerals, introduction to transmitted light microscopy of rocks, hand specimen recognition of common rocks and minerals.

  CO: EASC 2502
  CR: the former EASC 203A/B
  LH: 3
  PR: EASC 1000 and 1002 with a grade of at least 55% in each, Chemistry 1051 (or 1011 or 1001), Physics 1051 (or 1021 or 1054), and Mathematics 1000

Rationale for Changes

EASC 1000 Earth Systems is an overview course that is suitable for university students from any discipline, while at the same time introduces some concepts – such as tectonics and mineral and rock identification – that underpin more advanced courses in Earth Sciences, and other concepts – such as atmospheric circulation – that are important for our majors to know yet are not developed further in our curriculum. Thus, we want our majors to engage sufficiently in this course to obtain at least a C grade before advancing in our program.

EASC 1002 is the ‘entry’ course for Earth Sciences majors and introduces students to concepts and methods that are developed in the core 2000 level courses. Students find the 2000 level courses challenging, so it is important that incoming students have taken in sufficient material in EASC 1002 to obtain at least a C grade.
Consultations Sought From | Comments Received
--- | ---
Arts | No
Business Administration | No
Co-operative Education | No
Education | No
Engineering | Yes
Grenfell Campus | Yes
Human Kinetics and Recreation | No
Marine Institute | Yes
Medicine | No
Music | Yes
Nursing | Yes
Pharmacy | Yes
Science (Math&Stat; Biology; Physics) | Yes
Social Work | No
Library | Yes

Library Report Received | Yes
Approved by Dean, Associate Vice-President (Academic) or Vice-President | Yes/No

Name

====================================================================================================

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
Changes to EASC 2502 Intro to Geochemistry

Proposal
Calendar Change to Existing Course
EASC 2502 Introduction to Geochemistry

Executive Summary

The Earth Sciences Department wishes to raise the entry standards into the Earth Sciences major and minor programs, by requiring a minimum grade of 55% in EASC 1000 and EASC 1002 for all courses that have these courses as prerequisites.

Resource Implications

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

Consultations

This proposal was sent to the distribution list for Consultation on Calendar Changes 26 May 2016.

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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 2502 Introduction to Geochemistry

Abbreviated Course Title
Intro to Geochemistry

Proposed Changes to Calendar Description

2502 Introduction to Geochemistry provides an overview of both low- and high-temperature geochemistry. Topics include: origin and classification of the elements; chemical differentiation of the solar system and solid Earth; aqueous geochemistry and the stability of minerals; radiogenic and stable isotopes. Geochemical concepts are illustrated using data and processes drawn from Earth systems. The laboratory component emphasizes the development of numerical skills needed in geochemistry.

CO: Mathematics 1001
LH: 3
PR: EASC 1000 and 1002 with a grade of at least 55% in each, Chemistry 1051 (or 1011 or 1001)

Rationale for Changes

EASC 1000 Earth Systems is an overview course that is suitable for university students from any discipline, while at the same time introduces some concepts – such as tectonics and mineral and rock identification – that underpin more advanced courses in Earth Sciences, and other concepts – such as atmospheric circulation – that are important for our majors to know yet are not developed further in our curriculum. Thus, we want our majors to engage sufficiently in this course to obtain at least a C grade before advancing in our program.

EASC 1002 is the ‘entry’ course for Earth Sciences majors and introduces students to concepts and methods that are developed in the core 2000 level courses. Students find the 2000 level courses challenging, so it is important that incoming students have taken in sufficient material in EASC 1002 to obtain at least a C grade.
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</table>

Library Report Received

Approved by Dean, Associate Vice-President (Academic) or Vice-President

Yes/No

Name

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
Changes to EASC 2702 Sedimentology & Stratigraphy

Proposal
Calendar Change to Existing Course
EASC 2702 Sedimentology and Stratigraphy

Executive Summary

The Earth Sciences Department wishes to raise the entry standards into the Earth Sciences majors and minor programs, by requiring a minimum grade of 55% in EASC 1000 and EASC 1002 for all courses that have these courses as prerequisites.

Resource Implications

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

Consultations

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

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

Signature of Unit Head (if appropriate):

Date:

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

Date:
Changes to EASC 2702 Sedimentology & Stratigraphy

SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title

EASC 2702 Sedimentology and Stratigraphy

Abbreviated Course Title

Sedimentology & Stratigraphy

Proposed Changes to Calendar Description

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.

- CR: the former Geology 3070 or the former EASC 3070 or the former EASC 3701
- LH: 3
- PR: EASC 1000 and 1002 with a grade of at least 55% in each

Rationale for Changes

EASC 1000 Earth Systems is an overview course that is suitable for university students from any discipline, while at the same time introduces some concepts – such as tectonics and mineral and rock identification – that underpin more advanced courses in Earth Sciences, and other concepts – such as atmospheric circulation – that are important for our majors to know yet are not developed further in our curriculum. Thus, we want our majors to engage sufficiently in this course to obtain at least a C grade before advancing in our program.

EASC 1002 is the ‘entry’ course for Earth Sciences majors and introduces students to concepts and methods that are developed in the core 2000 level courses. Students find the 2000 level courses challenging, so it is important that incoming students have taken in sufficient material in EASC 1002 to obtain at least a C grade.

EASC 1000 was added as a prerequisite, although this was always required because it is a prerequisite for EASC 1002; however, this was added here because students now need a 55% in this course to continue into EASC 2702 Sedimentology and Stratigraphy.
Consultations Sought From | Comments Received
--- | ---
Arts | No
Business Administration | No
Co-operative Education | No
Education | No
Engineering | Yes
Grenfell Campus | Yes
Human Kinetics and Recreation | No
Marine Institute | Yes
Medicine | No
Music | Yes
Nursing | Yes
Pharmacy | Yes
Science (Math&Stat; Biology; Physics) | Yes
Social Work | No
Library | Yes

Library Report Received | Yes

Approved by Dean, Associate Vice-President (Academic) or Vice-President | Yes/No

Name

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
Proposal

Calendar Change to Existing Course

EASC 2905 Introduction to Geological Mapping

Executive Summary

The Earth Sciences Department wishes to raise the entry standards into the Earth Sciences majors and minor programs, by requiring a minimum grade of 55% in EASC 1000 and EASC 1002 for all courses that have these courses as prerequisites.

Resource Implications

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

Consultations

This proposal was sent to the distribution list for Consultation on Calendar Changes on 26 May 2016.

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

Signature of Unit Head (if appropriate): ______________________________________

Date: ______________________________________________________________________

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

Date: ______________________________________________________________________
Changes to EASC 2905 Intro to Geological Mapping

SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title
EASC 2905 Introduction to Geological Mapping

Abbreviated Course Title
Intro to Geological Mapping

Proposed Changes to Calendar Description

2905 Introduction to Geological Mapping is based on approximately six days of geological mapping in Precambrian rocks near St. John's, and two days of in-class work preparing a digital map and written report. Emphasis is placed on the recognition and description of sedimentary and igneous rocks in the field, and techniques of geological mapping and the taking of field notes. This course will be given during a special session immediately preceding the fall semester.

AR: attendance is required
CH: 2
CR: the former EASC 2310 or the former EASC 2300
OR: field based course
PR: EASC 1000 and 1002 with a grade of at least 55% in each, and an application to the Head of the Department

Rationale for Changes

EASC 1000 Earth Systems is an overview course that is suitable for university students from any discipline, while at the same time introduces some concepts - such as tectonics and mineral and rock identification - that underpin more advanced courses in Earth Sciences, and other concepts - such as atmospheric circulation - that are important for our majors to know yet are not developed further in our curriculum. Thus, we want our majors to engage sufficiently in this course to obtain at least a C grade before advancing in our program.

EASC 1002 is the 'entry' course for Earth Sciences majors and introduces students to concepts and methods that are developed in the core 2000 level courses. Students find the 2000 level courses challenging, so it is important that incoming students have taken in sufficient material in EASC 1002 to obtain at least a C grade.

EASC 1000 was added as a prerequisite, although this was always required because it is a prerequisite for EASC1002; however, this was added here because students now need a 55%
Changes to EASC 2905 Intro to Geological Mapping

in this course to continue into EASC 2905 Introduction to Geological Mapping.

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<td>Library</td>
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</tbody>
</table>

Library Report Received: Yes

Approved by Dean, Associate Vice-President (Academic) or Vice-President: Yes/No

Name: ____________________________________________

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair: 
Secretary: 
Date: 

3
Changes to EASC 2919 Intro to Marine Geology

Proposal
Calendar Change to Existing Course
EASC 2919 Introduction to Marine Geology

Executive Summary

The Earth Sciences Department wishes to raise the entry standards into the Earth Sciences major, minor and joint programs, by requiring a minimum grade of 55% in EASC 1000 and EASC 1002 for all courses that have these courses as prerequisites. EASC 2919 is cross-listed as OCSC 2200 and so this change will be required for OCSC 2200 as well.

Resource Implications

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

Consultations

This proposal was sent to the distribution list for Consultation on Calendar Changes on 26 May 2016.

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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 2919 Introduction to Marine Geology

Abbreviated Course Title

Intro to Marine Geology

Proposed Changes to Calendar Description

2919 Introduction to Marine Geology (same as Ocean Sciences 2200) is a study of the formation and evolution of oceans, including plate tectonics, mid-ocean ridges (birth place of oceans), subduction zones (where oceans are consumed), sedimentary environments such as estuaries, deltas, beaches and barrier islands, continental shelves, slopes and deep abyssal plains and special topics, including anoxic events, evolution of tides, atmosphere-ocean interactions, formation of banded iron formations, snowball Earth, black and white smokers, and how Earth modulates its climate through atmosphere, hydrosphere, biosphere and lithosphere interactions.

CR: Ocean Sciences 2200
PR: EASC 1000 with a grade of at least 55%

Secondary Calendar Changes

10.9 Ocean Sciences

2200 Introductory Geological Oceanography (same as Earth Sciences 2919) is a study of the formation and evolution of oceans, including plate tectonics, mid-ocean ridges (birth place of oceans), subduction zones (where oceans are consumed), sedimentary environments such as estuaries, deltas, beaches and barrier islands, continental shelves, slopes and deep abyssal plains and special topics, including anoxic events, evolution of tides, atmosphere-ocean interactions, formation of banded iron formations, snowball Earth, black and white smokers, and how Earth modulates its climate through atmosphere, hydrosphere, biosphere and lithosphere interactions.

CR: Earth Sciences 2919
PR: Earth Sciences 1000 with a grade of at least 55%

Rationale for Changes

EASC 1000 Earth Systems is an overview course that is suitable for university students from any discipline, while at the same time introduces concepts – such as tectonics and atmospheric and ocean circulation – that are important for both Earth and Ocean Sciences students. Thus,
we want such students to engage sufficiently in this course to obtain at least a C grade before advancing.

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Library Report Received                        Yes

Approved by Dean, Associate Vice-President (Academic) or Vice-President

Yes/No

Name

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
Proposal
Calendar Change to Existing Course
EASC 4179 Digital Signal Processing

Executive Summary
We propose to add PHYS 2820 to the prerequisite list for EASC 4179 in the calendar. It is already an implied prerequisite for the course.

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

Consultations
This proposal was sent to the distribution list for Consultation on Calendar Changes, 26 May 2016.

Library Holdings and/or Other Resources Required
The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

Signature of Unit Head (if appropriate): ____________________________

Date: __________________________________________________________________

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

Date: __________________________________________________________________
Changes to EASC 4179 Digital Signal Processing

SUMMARY PAGE FOR SENATE
Approval Form

Course Number and Title
EASC 4179 Digital Signal Processing

Proposed Changes to Calendar Description

4179 Digital Signal Processing is an introduction to the theory and basic computational techniques of digital signal processing in geophysics. Topics covered include: sampling, Fourier transformation, design and application of digital filters, deconvolution, spectral analysis, two dimensional signal processing, with emphasis on geophysical applications.
LH: 3
PR: EASC 3170, 3172, and 3179 and Physics 2820

Rationale for Change

EASC 4179 involves computer modelling concepts that are introduced in PHYS 2820 (Computational Mechanics), therefore PHYS 2820 is a prerequisite for this course. Up until now, it has not been specifically listed as a prerequisite, because it is a listed prerequisite for EASC 3179, which is a listed prerequisite for EASC 4179. However, it is possible that a student might be signed into EASC 3179 without the prerequisite PHYS 2820, and this student would not realize that PHYS 2820 is important for a successful outcome in EASC 4179. Therefore, we would like to list PHYS 2820 specifically as a prerequisite for EASC 4179.

PHYS 2820 is a required course for a BSc in the geophysics stream in Earth Science and fulfils a requirement for registration as a geophysicist with PEGNL (Professional Engineers and Geoscientists of Newfoundland and Labrador): it is important that students are encouraged to take the course at the appropriate time in their education.
Consultations Sought From | Comments Received
--- | ---
Arts | No
Business Administration | No
Co-operative Education | No
Education | No
Engineering | Yes
Grenfell Campus | Yes
Human Kinetics and Recreation | No
Marine Institute | Yes
Medicine | No
Music | Yes
Nursing | Yes
Pharmacy | Yes
Science (Math&Stat; Biology; Physics) | Yes
Social Work | No
Library | Yes

Library Report Received | Yes

Approved by Dean, Associate Vice-President (Academic) or Vice-President | Yes/No

Name

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
Proposal
Calendar Change to Existing Degree Requirements
EASC Common Block of Required Courses

Executive Summary

The Department of Earth Sciences would like to remove CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II as potential required courses for an EASC degree in favour of the more rigorous CHEM1050 General Chemistry I and CHEM1051 General Chemistry II.

Resource Implications: Instructional Costs

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

Consultations

This proposal will be sent to the distribution list for Consultation on Calendar Changes.

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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 Common Block of Required Courses

Abbreviated Course Title
none

Proposed Changes to Calendar Description

9.5.4.1 Common Block of Required Courses

All majors in Earth Sciences must complete those courses specified in Clauses 1. through 4. Students should examine prerequisites of 3000 level courses in order to decide which course to select under Clauses 3. and 4.

1. English 1080 and 1110 (or equivalent), Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 or 1040 or 1200 and one of Chemistry 1051 or 1041 or 1004, Chemistry 1050 and 1051 or Chemistry 1200 and 1001. Physics 1050 and 1051 or Physics 1020 and 1021. Students are advised to consult the Department of Physics Course Descriptions section for credit restrictions.

Secondary Calendar Changes

none

Calendar Entry After Changes
1. English 1080 and 1110 (or equivalent), Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 or Chemistry 1200 and 1001, Physics 1050 and 1051 or Physics 1020 and 1021. Students are advised to consult the Department of Physics Course Descriptions section for credit restrictions.

Rationale

Recent changes in CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II such as reduction in laboratory hours and course content make these courses no longer suitable as required courses for an EASC degree.

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Human Kinetics and Recreation: Yes
Marine Institute: Yes
Medicine: No
Music: No
Nursing: No
Pharmacy: Yes
Science (Math&Stat; Biology; Physics): Yes
Social Work: Yes
Library: Yes

Library Report Received: Yes

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

Name: ________________________________

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Chair: ________________________________
Secretary: ________________________________
Date: ________________________________
Proposal
Calendar Change to Existing Course
EASC 2030 Mineralogy

Executive Summary

The Department of Earth Sciences would like to remove CHEM1011 Introductory Chemistry II as potential prerequisite for EASC 2030 Mineralogy in favour of the more rigorous CHEM1051 General Chemistry II.

Resource Implications: Instructional Costs

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

Consultations

This proposal will be sent to the distribution list for Consultation on Calendar Changes.

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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 2030 Mineralogy

Proposed Changes to Calendar Description

2030 Mineralogy provides an introduction to crystallography and the structure of minerals; introduction to crystal optics; study of the rock forming minerals and minerals of economic significance. Laboratory work comprises study of the structures and symmetries of minerals, chemistry of rock forming minerals, introduction to transmitted light microscopy of rocks, hand specimen recognition of common rocks and minerals.
CO: EASC 2502
CR: the former EASC 203A/B
LH: 3
PR: EASC 1000 and 1002, Chemistry 1051 (or 4044 or 1001), Physics 1051 (or 1021 or 1054), and Mathematics 1000

Secondary Calendar Changes

none

Calendar Entry After Changes

2030 Mineralogy provides an introduction to crystallography and the structure of minerals; introduction to crystal optics; study of the rock forming minerals and minerals of economic significance. Laboratory work comprises study of the structures and symmetries of minerals, chemistry of rock forming minerals, introduction to transmitted light microscopy of rocks, hand specimen recognition of common rocks and minerals.
CO: EASC 2502
CR: the former EASC 203A/B
LH: 3
PR: EASC 1000 and 1002, Chemistry 1051 (or 1001), Physics 1051 (or 1021 or 1054), and Mathematics 1000

Rationale

Recent changes in CHEM1011 Introductory Chemistry II such as reduction in laboratory hours and content make this course no longer suitable as a prerequisite for EASC 2030 Mineralogy.

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**Library Report Received**

Yes

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

Name: ____________________________________________

__________________________________________________________________________________________

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Chair: ____________________________________________

Secretary: ________________________________________

Date: ____________________________________________
Proposal
Calendar Change to Existing Course
EASC 2502 Introduction to Geochemistry

Executive Summary
The Department of Earth Sciences would like to remove CHEM1011 Introductory Chemistry II as potential prerequisite for EASC2502 Introduction to Geochemistry in favour of the more rigorous CHEM1051 General Chemistry II.

Resource Implications: Instructional Costs
No new resources are required. There are no changes to the course content.

Consultations
This proposal will be sent to the distribution list for Consultation on Calendar Changes.

Library Holdings and/or Other Resources Required
The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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 2502 Introduction to Geochemistry

Proposed Changes to Calendar Description

2502 Introduction to Geochemistry provides an overview of both low- and high-temperature geochemistry. Topics include: origin and classification of the elements; chemical differentiation of the solar system and solid Earth; aqueous geochemistry and the stability of minerals; radiogenic and stable isotopes. Geochemical concepts are illustrated using data and processes drawn from Earth systems. The laboratory component emphasizes the development of numerical skills needed in geochemistry.
CO: Mathematics 1001
LH: 3
PR: EASC 1000 and 1002, Chemistry 1051 (er-4044 or 1001)

Secondary Calendar Changes

none

Calendar Entry After Changes

2502 Introduction to Geochemistry provides an overview of both low- and high-temperature geochemistry. Topics include: origin and classification of the elements; chemical differentiation of the solar system and solid Earth; aqueous geochemistry and the stability of minerals; radiogenic and stable isotopes. Geochemical concepts are illustrated using data and processes drawn from Earth systems. The laboratory component emphasizes the development of numerical skills needed in geochemistry.
CO: Mathematics 1001
LH: 3
PR: EASC 1000 and 1002, Chemistry 1051 (or 1001)

Rationale

Recent changes in CHEM1011 Introductory Chemistry II such as reduction in laboratory hours and content make this course no longer suitable as a prerequisite for EASC2502 Introduction to Geochemistry.

Consultations Sought From | Comments Received
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Arts | No
Business Administration | No
Co-operative Education | No
Education | Yes
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Library Report Received: Yes

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

Name: ____________________________________________

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair: __________________________________________

Secretary: _______________________________________

Date: ___________________________________________
Proposal
Calendar Change to Existing Degree Requirements
Biology and Earth Sciences Joint Honours

Executive Summary

The Department of Earth Sciences would like to remove CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II as potential required courses for the Biology and Earth Sciences Joint Honours in favour of the more rigorous CHEM1050 General Chemistry I and CHEM1051 General Chemistry II. However, the chemistry courses offered at Grenfell, Chemistry 1200 and 1001, are also suitable prerequisites.

Resource Implications: Instructional Costs

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

Consultations

This proposal will be sent to the distribution list for Consultation on Calendar Changes.

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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

Biology and Earth Sciences Joint Honours

Proposed Changes to Calendar Description

5.1.8 Biology and Earth Sciences Joint Honours

The following courses, including prerequisites where applicable, will be required:

1. English 1080 and 1110 (or equivalent), Mathematics 1000 and 1001, Biology 1001 and 1002, Earth Sciences 1000 and 1002, Chemistry 1010 and 1011 (or 1050 and 1051) (or 1200 and 1001), Physics 1020 and 1021 (or 1050 and 1051).

Secondary Calendar Changes

none

Calendar Entry After Changes

5.1.8 Biology and Earth Sciences Joint Honours

The following courses, including prerequisites where applicable, will be required:

1. English 1080 and 1110 (or equivalent), Mathematics 1000 and 1001, Biology 1001 and 1002, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or 1200 and 1001), Physics 1020 and 1021 (or 1050 and 1051).

Rationale

Recent changes in CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II such as reduction in laboratory hours and course content make these courses no longer suitable as required courses for a Biology and Earth Sciences Joint Honours. However, the chemistry courses offered at Grenfell, Chemistry 1200 and 1001, are also suitable prerequisites.

Consultations Sought From | Comments Received
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Arts | No
Business Administration | No
Co-operative Education | No
Education | No
Engineering | No
Grenfell Campus | No
Human Kinetics and Recreation | Yes
Marine Institute | No
Medicine | Yes
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**Library Report Received**  Yes

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

**Name**  
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**APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES**

**Chair:**  
__________________________________________________________________________________________

**Secretary:**  
__________________________________________________________________________________________

**Date:**  
__________________________________________________________________________________________
Proposal
Calendar Change to Existing Degree Requirements
Earth Sciences and Geography Joint Honours

Executive Summary
The Department of Earth Sciences would like to remove CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II as potential required courses for the Earth Sciences and Geography Joint Honours in favour of the more rigorous CHEM1050 General Chemistry I and CHEM1051 General Chemistry II.

Resource Implications: Instructional Costs
No new resources are required. There are no changes to the course content.

Consultations
This proposal will be sent to the distribution list for Consultation on Calendar Changes.

Library Holdings and/or Other Resources Required
The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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

Earth Sciences and Geography Joint Honours

Proposed Changes to Calendar Description

5.1.18 Earth Sciences and Geography Joint Honours (B.Sc. Only)

The following courses will be required. A few prerequisites are not met by this list of courses, and students are advised to obtain advice from instructors in such cases to be sure that they are prepared for course material. Both departmental Heads can advise students on a workable sequencing of courses to complete the degree in a timely manner, and students should view a student handbook that describes thematic streams within the program and offers specific guidance about course selection.

1. English 1080 or equivalent, English 1110 or equivalent, Geography 1050, Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, one of Chemistry 4040 or 1050 (or equivalent) and one of Chemistry 4041 or 1051 (or equivalent), Physics 1050 and 1051, or Physics 1020 and 1021.

Secondary Calendar Changes

none

Calendar Entry After Changes

5.1.18 Earth Sciences and Geography Joint Honours (B.Sc. Only)

The following courses will be required. A few prerequisites are not met by this list of courses, and students are advised to obtain advice from instructors in such cases to be sure that they are prepared for course material. Both departmental Heads can advise students on a workable sequencing of courses to complete the degree in a timely manner, and students should view a student handbook that describes thematic streams within the program and offers specific guidance about course selection.

1. English 1080 or equivalent, English 1110 or equivalent, Geography 1050, Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 (or equivalent) and 1051 (or equivalent), Physics 1050 and 1051, or Physics 1020 and 1021.

Rationale

Recent changes in CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II such as reduction in laboratory hours and course content make these courses no longer suitable as required courses for an Earth Sciences and Geography Joint Honours.

Consultations Sought From

Arts

Comments Received

No
Business Administration: No
Co-operative Education: No
Education: No
Engineering: No
Grenfell Campus: No
Human Kinetics and Recreation: Yes
Marine Institute: No
Medicine: Yes
Music: No
Nursing: No
Pharmacy: Yes
Science (Math&Stat; Biology; Physics): Yes
Social Work: Yes
Library: Yes

Library Report Received: Yes

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

Name: 

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair: 

Secretary: 

Date: 
Proposal
Calendar Change to Existing Degree Requirements
Earth Sciences and Physics Joint Honours

Executive Summary

The Department of Earth Sciences would like to remove CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II as potential required courses for the Earth Sciences and Physics Joint Honours in favour of the more rigorous CHEM1050 General Chemistry I and CHEM1051 General Chemistry II.

Resource Implications: Instructional Costs

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

Consultations

This proposal will be sent to the distribution list for Consultation on Calendar Changes.

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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

Earth Sciences and Physics Joint Honours

Proposed Changes to Calendar Description

5.1.19 Earth Sciences and Physics Joint Honours

This program was formerly in the Earth Sciences section of the calendar as an Honours B.Sc. Degree in Geophysics. The following courses will be required:

1. English 1080 and 1110 (or equivalent), Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or Chemistry 1010 and 1011) (or 1200 and 1001), Physics 1050 (or 1020) and 1051.

Secondary Calendar Changes

none

Calendar Entry After Changes

5.1.19 Earth Sciences and Physics Joint Honours

This program was formerly in the Earth Sciences section of the calendar as an Honours B.Sc. Degree in Geophysics. The following courses will be required:

1. English 1080 and 1110 (or equivalent), Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or 1200 and 1001), Physics 1050 (or 1020) and 1051.

Rationale

Recent changes in CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II such as reduction in laboratory hours and course content make these courses no longer suitable as required courses for an Earth Sciences and Physics Joint Honours.

Consultations Sought From | Comments Received
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Arts | No
Business Administration | No
Co-operative Education | No
Education | No
Engineering | No
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<td>Yes</td>
</tr>
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<td>Library</td>
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**Library Report Received** Yes

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

**Name:**

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**APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES**

<table>
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<th>Role</th>
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<tr>
<td>Chair</td>
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<td>Secretary</td>
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</table>
Proposal
Calendar Change to Existing Degree Requirements
Geophysics and Physical Oceanography Joint Honours

Executive Summary
The Department of Earth Sciences would like to remove CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II as potential required courses for the Geophysics and Physical Oceanography Joint Honours in favour of the more rigorous CHEM1050 General Chemistry I and CHEM1051 General Chemistry II. In addition, Chemistry 1031 is no longer offered. However, the chemistry courses offered at Grenfell, Chemistry 1200 and 1001, are suitable prerequisites.

Resource Implications: Instructional Costs
No new resources are required. There are no changes to the course content.

Consultations
This proposal will be sent to the distribution list for Consultation on Calendar Changes.

Library Holdings and/or Other Resources Required
The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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

Geophysics and Physical Oceanography Joint Honours

Proposed Changes to Calendar Description

5.1.20 Geophysics and Physical Oceanography Joint Honours

The program requires the following courses:

1. English 1080 and 1110 (or equivalent), Chemistry 1050 and 1051 (or Chemistry 1200 and 1001), Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Physics 1050 (or 1020) and 1051.

Secondary Calendar Changes

none

Calendar Entry After Changes

5.1.20 Geophysics and Physical Oceanography Joint Honours

The program requires the following courses:

1. English 1080 and 1110 (or equivalent), Chemistry 1050 and 1051 (or Chemistry 1200 and 1001), Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Physics 1050 (or 1020) and 1051.

Rationale

Recent changes in CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II such as reduction in laboratory hours and course content make these courses no longer suitable as required courses for a Geophysics and Physical Oceanography Joint Honours. In addition, Chemistry 1031 is no longer offered. However, the chemistry courses offered at Grenfell, Chemistry 1200 and 1001, are suitable prerequisites.

Consultations Sought From

<table>
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<td>Grenfell Campus</td>
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<tr>
<td>Human Kinetics and Recreation</td>
<td>Yes</td>
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</table>
Marine Institute  No
Medicine  Yes
Music  No
Nursing  No
Pharmacy  Yes
Science (Math&Stat; Biology; Physics)  Yes
Social Work  Yes
Library  Yes

Library Report Received  Yes

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

Name

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
Proposal
Calendar Change to Existing Degree Requirements
Earth Sciences and Physics Joint Major

Executive Summary

The Department of Earth Sciences would like to remove CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II as potential required courses for the Earth Sciences and Physics Joint Major in favour of the more rigorous CHEM1050 General Chemistry I and CHEM1051 General Chemistry II.

Resource Implications: Instructional Costs

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

Consultations

This proposal will be sent to the distribution list for Consultation on Calendar Changes.

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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
Earth Sciences and Physics Joint Major

Proposed Changes to Calendar Description
5.2.9 Earth Sciences and Physics Joint Major

This program was formerly in the Earth Sciences section of the calendar as a General B.Sc. Degree in Geophysics. The following courses will be required:

1. English 1080 and 1110 (or equivalent), Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or Chemistry 1010 and 1011), (or 1200 and 1001), Physics 1050 (or 1020) and 1051.

Secondary Calendar Changes
none

Calendar Entry After Changes
5.2.9 Earth Sciences and Physics Joint Major

This program was formerly in the Earth Sciences section of the calendar as a General B.Sc. Degree in Geophysics. The following courses will be required:

1. English 1080 and 1110 (or equivalent), Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or 1200 and 1001), Physics 1050 (or 1020) and 1051.

Rationale

Recent changes in CHEM1010 Introductory Chemistry I and CHEM1011 Introductory Chemistry II such as reduction in laboratory hours and course content make these courses no longer suitable as required courses for an Earth Sciences and Physics Joint Major.

Consultations Sought From

Comments Received
Arts No
Business Administration No
Co-operative Education No
Education No
Engineering No
Grenfell Campus No
Human Kinetics and Recreation Yes
Marine Institute No
Medicine Yes
Music No
Nursing No
Pharmacy Yes
Science (Math&Stat; Biology; Physics) Yes
Social Work Yes
Library Yes

Library Report Received Yes

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

Name

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair: 

Secretary: 

Date: 
Proposal
Calendar Change to Existing Course
EASC 2916 Natural Hazards on a Dynamic Earth

Executive Summary

EASC 2916 Natural Hazards on a Dynamic Earth has considerable overlap in contents with ENVS 2360 Geological Hazards and Natural Disasters. The two courses use the same textbook. We propose that the courses be credit restricted. We also propose to alter the calendar description slightly in order to stress the introductory nature of the course.

Resource Implications: Instructional Costs

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

Consultations

This proposal will be sent to the distribution list for Consultation on Calendar Changes.

Library Holdings and/or Other Resources Required

The proposed changes will not require augmentation of any information sources of the University including library holdings and the sources on the internet.

There are no additional funding requirements associated with the proposed change.

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 2916 Natural Hazards on a Dynamic Earth

Abbreviated Course Title

Nat Hazards Dynamic Earth

Proposed Changes to Calendar Description

2916 Natural Hazards on a Dynamic Earth describes the surface of the Earth being in a constant state of change, thereby posing risks and challenges for society. A basic understanding of geological processes in the past and present provides some context for evaluating the risks related to earthquakes, volcanic activity and mass movements, challenges related to water resources, land-use planning and waste disposal, and the background to interpret sources and consequences of climate change. The course will provide a broad perspective on contemporary issues facing society. This course is designed for students taking Earth Sciences as an elective subject. This course complements traditional disciplines such as history, economics, and political science and should be of particular interest to prospective teachers.

CR: ENVS 2360
UL: not acceptable as one of the required courses for the Minor, Major or Honours programs in Earth Sciences.

Secondary Calendar Changes

In section 12.12.3 of the Grenfell Campus chapter of the Calendar, EASC 2916 is similarly credit restricted with ENVS 2360.

2360 Geological Hazards and Natural Disasters will introduce students to the geological aspects of the natural environment and the impacts that natural geological processes and phenomena may have on humanity. The impact of geological hazards and natural disasters on human society and behaviour will be examined through case studies.

CR: EASC 2916
PR: 15 credit hours or more

Calendar Entry After Changes

2916 Natural Hazards on a Dynamic Earth describes the surface of the Earth being in a constant state of change, thereby posing risks and challenges for society. A basic understanding of geological processes in the past and present provides some context for appreciating the risks related to earthquakes, volcanic activity and mass movements, challenges related to water resources, land-use planning and waste disposal, and some background to interpret sources and consequences of climate change. The course will provide a broad perspective on contemporary issues facing society. This course is designed for students taking Earth Sciences as an elective subject. This course complements traditional disciplines such as history, economics, and political science and should be of particular interest.
to prospective teachers.
CR: ENVS 2360
UL: not acceptable as one of the required courses for the Minor, Major or Honours programs in Earth Sciences.

2360 Geological Hazards and Natural Disasters will introduce students to the geological aspects of the natural environment and the impacts that natural geological processes and phenomena may have on humanity. The impact of geological hazards and natural disasters on human society and behaviour will be examined through case studies.
CR: EASC 2916
PR: 15 credit hours or more

Rationale

As can be seen from the calendar descriptions, these two service courses cover much the same material and at the same level. Presently, they share the same on-line text book. Therefore it is appropriate that they be credit restricted. The existing calendar description of EASC 2916 might lead students to think it is a higher level course than it is, so we propose changing the wording to stress its introductory nature. It is not part of our professional degree programme.

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Library Report Received                        Yes

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

Name

============================================================================================================

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES
DATE: 27 May 2016

TO: Alison Leitch, Co-chair, UGMC, Earth Sciences

FROM: Alison Ambi, Science Research Liaison Librarian

RE: Calendar changes proposed by the Department of Earth Sciences

I have reviewed the following proposed calendar changes for Earth Science courses and determined that these will have no impact on library resources:

- Introducing a minimum grade of 55% for the 1000 level prerequisites for EASC 2030, 2502, 2702, 2905, and 2919
- Adding Ocean Sciences 3000 and 4000 level courses to the list of acceptable prerequisites to multi-discipline-based courses EASC 4302 and 4903
- Removing the inactive course, EASC 1001, from the list of acceptable prerequisites
- Introducing a minimum grade of 55% for the EASC 1000 level prerequisite(s)
- Adding Phys 2820 to the prerequisite list for EASC 4179
- Introducing additional information regarding transfer credits to the program regulations for Major and Honours degrees in Earth Sciences
Responses from:

1. Nursing (26 May 2016)
2. Grenfell (31 May 2016)
3. Geography (31 May 2016)
4. Pharmacy (2 June 2016)
5. Music (2 June 2016)
6. Engineering (3 June 2016)
7. Physics (9 June 2016)
8. Marine Institute (14 June 2016)
10. Ocean Sciences (30 June 2016)

1.

Date: Thu, 26 May 2016 20:34:52 +0000

From: "Gaudine, Alice" <agaudine@mun.ca>
To: "aleitch@mun.ca" <aleitch@mun.ca>

Subject: Fwd: Proposed calendar changes from Earth Sciences for consultation

Part(s):
- Change_Existing_Course_EASC2030_16-0428.pdf
  - application/pdf
  - 7573 KB
- Change_Existing_Course_EASC2502_16-0428.pdf
  - application/pdf
  - 7651 KB
- Change_Existing_Course_EASC2702_16-0428.pdf
  - application/pdf
  - 7541 KB
- Change_Existing_Course_EASC2905_16-0428.pdf
  - application/pdf
  - 7718 KB
- Change_Existing_Course_EASC2919_16-0428.docx
  - application/vnd.openxmlformats-officedocument.wordprocessingml.document
  - 2184 KB
- Change_Existing_Course_EASC4302_16-0428.pdf
  - application/pdf
  - 7539 KB
- Change_Existing_Course_EASC4903-160526.pdf
  - application/pdf
  - 1374 KB
- Change_Existing_Course_EASC4179_16-0526.pdf
  - application/pdf
  - 1323 KB
- Changes_Exist_Program_EASC-9.5-160526.pdf
  - application/pdf
  - 1015 KB

Hello Allison,

I have no comments. Thanks,

Alice

Alice Gaudine
Dean, School of Nursing

Begin forwarded message:
From: DeanNurse <DeanNurse@mun.ca>

Subject: FW: Proposed calendar changes from Earth Sciences for consultation

Date: May 26, 2016 at 3:12:14 PM NDT

To: "Gaudine, Alice" <agaudine@mun.ca>

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

From: Dr Alison Leitch [mailto:aleitch@mun.ca]
Sent: May-26-16 3:06 PM
To: DeanNurse; Library Correspondence; Mercer, Stacey; Volk, Maureen; Consultation, Grenfell; Consultation, Medicine; Consultation, Pharmacy; Hicks, Sue; Consultation, Business; adeanugradswk; Consultation, Engineering; Hickey, Marie; Dean of Science; Marine Institute Consultation
Cc: Tao Cheng
Subject: Proposed calendar changes from Earth Sciences for consultation

Please find attached proposed calendar changes from Earth Sciences.

a) The first 5 proposals are to introduce a minimum grade of 55% for the 1000 level prerequisites to our 2000 level core courses EASC 2030, 2502, 2702, 2905, and to the course EASC 2919 (cross listed with OCSC 2200).

b) The next two proposals are to add Ocean Sciences 3000 and 4000 level courses to the list of acceptable prerequisites to multidiscipline based courses EASC 4302 and 4903; to remove inactive course EASC 1001 from the list of acceptable prerequisites; and to introduce a minimum grade of 55% for the EASC 1000 level prerequisite(s).

c) The 8th proposal is to add Phys 2820 to the prerequisite list for EASC 4179.

d) The final proposal is to add points regarding the use of transfer credits to the program regulations for Major and Honours degrees in Earth Sciences.

Please send any comments or concerns to us at aleitch@mun.ca and tcheng@mun.ca and cc the dean's office at deanssci@mun.ca

Regards,

Alison
(co-chair, UGMC, Earth Sciences)
Date: Tue, 31 May 2016 12:10:28 +0000
From: Gallant, Robert <rgallant@mun.ca>
To: aleitch@mun.ca, tcheng@mun.ca
Cc: Abrahams, Mark <deansci@mun.ca>
Subject: Fw: Proposed calendar changes from Earth Sciences for consultation (comment: J. Dust)

This message was written in a character set other than your own. If it is not displayed correctly, click here to open it in a new window.

Dr. Leitch, I have received the following comments regarding the proposed changes which I am forwarding webatis.

I also received a comment to the effect that perhaps EASC 4302 should not be called 'Advanced' due to the lack of Earth Science course prerequisites other than the first year EASC 1002.

Thank you.

Dr. R. Gallant
Head of Division of Science, Grenfell Campus, Memorial University

From: Dust, Julian M
Sent: Friday, May 27, 2016 11:15 AM
To: Gallant, Robert
Cc: Paxkinson, Don-Roger
Subject: FW: Proposed calendar changes from Earth Sciences for consultation (comment: J. Dust)

Dear Dr. Gallant,

I would support the changes suggested. My experience, over the years, has been that students with "flat 50" final grades in a pre-requisite course often fail one or more subsequent courses; such students, in my opinion, have not taken "ownership" of essential knowledge/skills so as to succeed. The 55% from the first year Earth Sciences courses, 1000 and 1002, may be sufficient to give a student a reasonable chance of success in subsequent Earth Science courses—likely with more concentrated effort on the student's part. Only time will tell if the 55% threshold is a high enough one. A number of other programs have recently established higher pre-requisite entry marks to 2nd year course offerings (e.g. Chemistry).

The program regulation changes appear to be needed to protect the
integrity of the Earth Science degree in light of increasing transfers from other Universities. I am willing to be guided by the experience of the Earth Science Department in this regard, though my experience in Environmental Science (Chemistry) is that transfer students are generally well-prepared for Memorial courses and that their choice of completing their degrees at MUN is generally advantageous to MUN. Thank you for soliciting my opinion.

Julian Dust, Ph.D.
Associate Professor, Chemistry and Environmental Science

From: Daniels, Karen
Sent: May 27, 2016 9:04 AM
To: Division of Science Faculty
Cc: Gallant, Robert
Subject: FW: Proposed calendar changes from Earth Sciences for consultation

Good Morning,

Please see attached for consultation and forward any comments to Dr. Robert Gallant.

Regards,

Karen
Karen Daniels
Division of Science
Grenfell Campus

From: Dr. Alison Leitch <aleitch@mun.ca>
Sent: May 26, 2016 3:04 PM
To: Consultation: Nursing; Consultation: Library; Consultation: Arts; Consultation: Music; Acting Associate VP = Academic; Consultation: Medicine; Consultation: Pharmacy; Consultation: Education; Consultation: Business; Consultation: Social Work; Consultation: Engineering; Consultation: HKR; Abraham; Mark; Marine Institute Consultation
Cc: Tao Cheng
Subject: Proposed calendar changes from Earth Sciences for consultation

Please find attached proposed calendar changes from Earth Sciences.

a) The first 5 proposals are to introduce a minimum grade of 55% for the 1000 level prerequisites to our 2000 level core courses BESC 2030, 2502, 2702, 2905, and to the course BESC 2910 (cross-listed with OCSC 2200).

b) The next two proposals are to add Ocean Sciences 3000 and 4000 level courses to the list of acceptable prerequisites to multi-discipline-based courses BESC 4302 and 4903; to remove inactive course BESC 1001 from the list of acceptable prerequisites; and to introduce a minimum grade of 55% for the BESC 1000 level prerequisite(s).
2017 Calendar Earth Sciences Calendar Changes: Consultation Responses

a) The 8th proposal is to add Phys 2820 to the prerequisite list for EASC 4179.

d) The final proposal is to add points regarding the use of transfer credits to the program regulations for Major and Honours degrees in Earth Sciences.

Please send any comments or concerns to us at aleitch@mun.ca<mailto:aleitch@mun.ca> and tcheng@mun.ca<mailto:tcheng@mun.ca> and to the dean's office at deansci@mun.ca<mailto:deansci@mun.ca>.

Regards,
Alison
(co-chair, UGMCR Earth Sciences)

~Date: Tue, 31 May 2016 17:59:08 +0000

From: "Mercer, Stacey" <stacey@mun.ca>

To: "aleitch@mun.ca" <aleitch@mun.ca>, "tcheng@mun.ca" <tcheng@mun.ca>

Cc: Dean of Science <deansci@mun.ca>

Subject: FW: Proposed calendar changes from Earth Sciences for consultation

Good afternoon,
A comment from the Head of Geography.

Stacey Griffiths
Faculty of Humanities and Social Sciences
Memorial University of Newfoundland
St. John's, NL A1C 5S7
709-864-8255

----Original Message-----
From: Catto, Norm
Sent: May 27, 2016 3:27 PM
To: Mercer, Stacey
Subject: RE: Proposed calendar changes from Earth Sciences for consultation

Dear Stacey:
I have no issues with these. I will be interested in any discussion surrounding the transfer credit issue.

Best wishes
Norm

Norm Catto
Head, Department of Geography
Memorial University
St. John's NL A1B 3X9
Canada
1-709-864-7463
Fax 1-709-864-3119

-----Original Message-----
From: Mercer, Stacey
Sent: May-27-16 2:07 PM
To: Catto, Norm
Subject: FW: Proposed calendar changes from Earth Sciences for consultation

Good afternoon,
You are invited to give feedback on the attached proposals.
Thank you.

Stacey Griffiths
Faculty of Humanities and Social Sciences Memorial University of Newfoundland St. John's, NL A1C 5S7
709-864-8255

4.

Date: Thu, 2 Jun 2016 12:00:32 +0000

From: "Glew, Csop" <cglew@mun.ca>
To: "aleitch@mun.ca" <aleitch@mun.ca>
Cc: "Dillon, Carla" <cmdillon@mun.ca>

Subject: RE: Proposed calendar changes from Earth Sciences for consultation

Hello Dr. Leitch
Dr. Dillon, Associate Dean [Undergraduate] has reviewed the proposed calendar changes and she has no comments on the proposed changes.

Csop Glew
5.

Date: Thu, 2 Jun 2016 15:35:31 +0000

From: "Volk, Maureen" <mvolk@mun.ca>

To: Dr Alison Leitch <aleitch@mun.ca>

Subject: RE: Proposed calendar changes from Earth Sciences for consultation

Music has no objections to these proposals.

Maureen Volk

6.

Date: Fri, 3 Jun 2016 10:41:47 -0230

From: Engineering Consultations <engrconsult@mun.ca>

To: Dr Alison Leitch <aleitch@mun.ca>

Cc: Tao Cheng <tcheng@mun.ca>, Andrew Fisher <adfisher@mun.ca>, "Barrington, Kaela" <kbarrington@mun.ca>, Dean of Science <deansci@mun.ca>

Subject: Re: Proposed calendar changes from Earth Sciences for consultation

Dear Dr. Leitch,

Thank you for the opportunity to comment on the set of proposed changes to several courses in Earth Sciences.

After e-mail consultations with the members of the Committee on
Undergraduate Studies of the Faculty of Engineering and Applied Science, I have the following comments.

1. We support the restrictions on transfer credit. We will have similar restrictions in place for our capstone design / project courses in terms 7 and 8, starting with the 2016-17 Calendar.

2. We support the minimum grade of 55 in first year courses. A minimum of 55% for promotion purposes has existed for nine courses in Engineering One since 2010.

3. The proposed changes have no impact on our programs.

Yours sincerely,

7.

Date: Thu, 9 Jun 2016 11:24:06 -0230

From: Martin Plumer <plumer@mun.ca>

To: "Dr. Alison Leitch" <aleitch@mun.ca>, "Dr. Tao Cheng" <tcheng@mun.ca>

Cc: deansci@mun.ca, 'Physics Head' <physicshead@mun.ca>

Subject: RE: Proposed calendar changes from Earth Sciences for consultation

Hi Alison,

Physics sees no issues with these proposed changes.

Martin
Dr. Leitch and Dr. Cheng,

Thank you for the opportunity to review and comment on the proposed changes to the minimum grade for the 1000 level prerequisites for the courses EASC 2030, 2502, 2702, 2905 and 2919.

These changes will have no impact on the programs at the Marine Institute and we are happy to support this proposal as presented.

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

Dr. Leitch and Dr. Cheng,

Thank you for the opportunity to review and comment on the proposed changes to the courses EASC 4302 and 4903.

These changes will have no impact on the programs at the Marine Institute and we are happy to support these changes.

A very minor typographical error was noted in both proposals. On page one of each proposal in the Executive Summary the prerequisite course is listed as "EASC 1000." It should read "EASC 1002."
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

Date: Tue, 14 Jun 2016 11:21:00 +0000  
From: MIUG Consultations <MIUGconsultations@mi.mun.ca>  
To: Dr Alison Lelitch <aleitch@mun.ca>, "tcheng@mun.ca" <tcheng@mun.ca>  
Cc: "deansci@mun.ca" <deansci@mun.ca>  
Subject: RE: Proposed calendar changes from Earth Sciences for consultation EASC 4179

Dr. Leitch and Dr. Cheng,

Thank you for the opportunity to review and comment on the proposed changes to the prerequisite list of EASC 4179. While normally it would be redundant to have the implied prerequisite included in the list, the rationale provided is clear and in the student's best interest.

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

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

Date: Tue, 14 Jun 2016 11:22:35 +0000  
From: MIUG Consultations <MIUGconsultations@mi.mun.ca>  
To: Dr-Alison-Lelitch <aleitch@mun.ca>, "tcheng@mun.ca" <tcheng@mun.ca>  
Cc: "deansci@mun.ca" <deansci@mun.ca>  
Subject: RE: Proposed calendar changes from Earth Sciences for consultation EASC 9.5.5 ard 9.5.6
Dr. Leitch and Dr. Cheng,

Thank you for the opportunity to review and comment on the proposed changes to the Earth Sciences Calendar entry sections 9.5.5 and 9.5.6.

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

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

9.

Date: Thu, 16 Jun 2016 14:23:19 -0230
From: Karen Morris <morrisk@mun.ca>
To: aleitch@mun.ca
Subject: Re: FW: Proposed calendar changes from Earth Sciences for consultation

This message was written in a character set other than your own. If it is not displayed correctly, click here to open it in a new window.

Hi Alison,

The Biology Undergraduate Studies Committee reviewed the proposed calendar changes for Earth Science 2030, 2502, 2702, 2905, 2919, 4302, and 4903, the prerequisite change for EASC 4179 and the change in program regulations for an honours or general B.Sc. degree in Earth Science. We have no issues or concerns with the proposed changes.

Thanks

Karen

*Karen Morris
Undergraduate Officer
Department of Biology
Memorial University of Newfoundland
St. John's, NL A1B 3X9
709-864-8021*
10.

Date: Thu, 30 Jun 2016 14:27:02 +0000
From: "Fletcher, Garth" <fletcher@mun.ca>
To: "Dr Alison Leitch (aleitch@mun.ca)" <aleitch@mun.ca>, "tcheng@mun.ca" <tcheng@mun.ca>
Cc: Dean of Science <deansci@mun.ca>, "amercler@mun.ca" <amercler@mun.ca>
Subject: Proposed calendar changes from Earth Sciences for

Dear Alison and Tao: Our Undergraduate Studies Committee has reviewed the calendar changes proposed by EASC and found them to be fine. However the Committee indicates that there needs to be a secondary calendar change in Ocean Sciences added to the proposal document of EASC 2919 (which is equivalent to OCSC 2200).

Best Regards
Garth

Garth L. Fletcher
Head and Professor Emeritus
Department of Ocean Sciences
Ocean Sciences Centre
0 Marine Lab Road
St John's NL
Canada
A1C 5S7

Tel: 709-864-3276
Fax: 709-864-3220
Hi Penny

I have reviewed the proposals and am happy to support as presented.

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

Nov. 7, 2016

To whom it may concern,

Attached are the proposed course and program changes that the Department of Earth Sciences would like to make in the University Calendar. 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: Proposed changes to EASC undergraduate joint programs

From: Rohr, Linda

To: pmorrill@mun.ca

Date: 2016-11-14 16:37

Hi Penny

These proposed changes are fine with the School of Human Kinetics and Recreation.

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: Proposed changes to EASC undergraduate joint programs

Nov. 10, 2016

To whom it may concern,

Further to my Nov. 7th email, Earth Science department would like to propose calendar changes for our joint programs. The changes are similar to our last consult request on Nov. 7th of removing CHEM 1010 and CHEM
1011 as requirements for some of our courses, but this time the requested change applies to our joint programs. Our proposals have received positive responses from the departments that these joint programs are with. 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, Department of Earth Sciences

Subject RE: Proposed changes to EASC undergraduate joint programs

From cvardy@mun.ca

To pmorrill@mun.ca

Date Mon 14:59

Dear Dr. Morrill

The Faculty of Medicine supports the proposed calendar changes for your joint programs as outlined in your email.

Regards

Cathy Vardy, MD, FRCPC
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

-----Original Message-----
From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: November-10-16 3:50 PM
To: fba.ad.undergrad@mun.ca; shicks@mun.ca; jnallor@mun.ca; engrconsult@mun.ca; 
associatevpooffice@grenfell.mun.ca; mehickey@mun.ca; staceygm@mun.ca; 
nicusconsultations@mi-mun.ca; Vardy, Cathy; Caines, Sherry; jsutherlan@mun.ca; 
dean@univ.mun.ca; pharminfo@mun.ca; deanaci@mun.ca; adean@grads@mun.ca; 
univlib@mun.ca
Subject: Proposed changes to EASC undergraduate joint programs

Nov. 10, 2016

To whom it may concern,

Further to my Nov. 7th email, Earth Science department would like to propose calendar changes for our joint programs. The changes are similar to our last consult request on Nov. 7th of removing CHEM 1010 and CHEM 1011 as requirements for some of our courses, but this time the requested change applies to our joint programs. Our proposals have received positive responses from the departments that these joint programs are with. 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, Department of Earth Sciences

---

Subject: RE: Proposed changes to EASC undergraduate joint programs

From: Glew, Csopt

To: pmorrill@mun.ca

Cc: Dillon, Carla

Date: Thu 17:10

Hello Dr. Morrill,

Dr. Dillon, Associate Dean (Undergraduate) has reviewed the proposed calendar change and is happy to support it.

Csop Glew

CSOP GLEW, Hon. B.A., M.U.P. I MANAGER OF ACADEMIC PROGRAMS
School of Pharmacy
Memorial University of Newfoundland
St. John's, NL I A1B 3V6
Health Sciences Centre I Room H3435
T 709 777 6963 I F 709 777 7044

www.mun.ca/pharmacy

Please note: the deadline to apply for admission to the Doctor of Pharmacy (PharmD) program in September 2017 is February 1, 2017.

Where people and ideas become.
Follow us: Facebook: www.facebook.com/schoolofpharmacy Twitter: www.twitter.com/schoolofpharm
-----Original Message-----
From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: November-10-16 3:55 PM
To: fba.ad.undergrad@mun.ca; Hiccs, Sue; Mellor, Judith; engrcconsult@mun.ca; associatesvpoffice@grenfell.mun.ca; Hickey, Marie; Griffiths, Stacey; migcconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharminfo@mun.ca; Dean of Science; adeangradswk; Library Correspondence
Subject: Proposed changes to EASC undergraduate joint programs

Nov. 10, 2016

To whom it may concern,

Further to my Nov. 7th email, Earth Science department would like to propose calendar changes for our joint programs. The changes are similar to our last consult request on Nov. 7th of removing CHEM 1010 and CHEM 1011 as requirements for some of our courses, but this time the requested change applies to our joint programs. Our proposals have received positive responses from the departments that these joint programs are with. 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, Department of Earth Sciences

--

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

Subject RE: Proposed changes to EASC undergraduate joint programs

From Jody-Lynn Burke

To pmorrill@mun.ca

Cc Dean of Science

Date Tue 16:56

Hi Penny,

Thank you for the opportunity to review and comment on the proposed changes to EASC Joint Programs.
This change will have no impact on the programs within the Department of Biology. We are happy to support the changes as presented.

Jody Burke, BSc. (Hons), M.Ed, PGCOQM - Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

-----Original Message-----
From: Marino, Paul [mailto:pmarino@mun.ca]
Sent: November-14-16 11:34 AM
To: jodyb@mun.ca
Subject: FW: Proposed changes to EASC undergraduate joint programs

-----Original Message-----
From: Dean of Science
Sent: November-14-16 8:43 AM
To: Chris Radford, Math & Stats; Fletcher, Garth; Ian Neath, Psychology; John Hanchar, Earth Sciences; Jolanta Lagowski; Biochemistry Head; Minglun Gong, Computer Science; Marino, Paul; Travis Frigden, Chemistry
Cc: Foster, Andy; Collins, Rosalind (Chemistry); Coombs, Donna Geraldine; Edwards, Regina (Computer Science); Gaslard, Betty Ann; Guzzwell, Diane (Earth Sciences); Kenny, Shirley; Morrissey, Leonce (Math & Stats); Psych Secretary; Sparkes, Winnie
Subject: FW: Proposed changes to EASC undergraduate joint programs

Please send any comments directly to Penny Morrill at pmorrill@mun.ca with a copy to deanansi@mun.ca Thanks, Mary

-----Original Message-----
From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: November-10-16 3:55 PM
To: foda.ad.undergrad@mun.ca; Hicks, Sue; Mello, Judith; engrconsult@mun.ca; associateppoffice@grenfell.mun.ca; Hickey, Marie; Griffichs, Stacey; miugconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@mod.mun.ca; Sutherland,Ian D; DeanNurse; pharminfo@mun.ca; Dean of Science; adeanogradswk; Library Correspondence
Subject: Proposed changes to EASC undergraduate joint programs

Nov. 10, 2016

To whom it may concern,

Further to my Nov. 7th email, Earth Science department would like to propose calendar changes for our joint programs. The changes are similar to our last consult request on Nov. 7th of removing CHEM 1010 and CHEM 1011 as requirements for some of our courses, but this time the requested change applies to our joint programs. Our proposals have received positive responses from the departments that these joint programs are with. At this stage I am sending them to you as part of the consultation process.

Thank you for your time and consideration.
Cheers,
F penny Morrill
Chair of the Undergraduate Matters Committee, Department of Earth Sciences

TO: Penny Morrill, Chair of the Undergraduate Matters Committee, Earth Sciences

FROM: Alison Ambi, Science Research Liaison Librarian

DATE: November 16, 2016

RE: Proposed calendar changes for the Earth Sciences joint honours and joint majors

I have reviewed the proposed edits to the calendar entries for:

the joint honours programs in:
- Biology and Earth Sciences
- Earth Sciences and Geography
- Earth Sciences and Physics
- Geophysics and Physical Oceanography

the joint major in:
- Earth Sciences and Physics

and have determined that the changes will have no impact on library resources.

Hi Peggy
Another one like the other one.
Alison

Alison Ambi
Science Research Liaison Librarian
-----Original Message-----
From: Library Correspondence
Sent: November-17-16 10:36 AM
To: Ambi, Alison
Cc: White, Louise
Subject: FW: Proposed changes to EASC undergraduate joint programs

-----Original Message-----
From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: Thursday, November 10, 2016 3:55 PM
To: fba.ad.undergrad@mun.ca; Hicks, Sue; Mellor, Judith; engroconsult@mun.ca;
associatevpoffice@grenfell.mun.ca; Hickey, Marie; Griffiths, Stacey;
migconsultations@mi.mun.ca; cvardy@mun.ca; shorry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharminfo@mun.ca; Dean of Science; adeanugradswk; Library Correspondence
Subject: Proposed changes to EASC undergraduate joint programs

Nov. 10, 2016

To whom it may concern,

Further to my Nov. 7th email, Earth Science department would like to propose calendar changes for our joint programs. The changes are similar to our last consult request on Nov. 7th of removing CHEM 1010 and CHEM 1011 as requirements for some of our courses, but this time the requested change applies to our joint programs. Our proposals have received positive responses from the departments that these joint programs are with. 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, Department of Earth Sciences

--
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
TO: Penny Morrill, Chair of the Undergraduate Matters Committee, Earth Sciences

FROM: Alison Ambi, Science Research Liaison Librarian

RE: Proposed calendar changes to the EASC Common Block of Required Course and to the courses EASC 2030, 2502, 2916

DATE: November 16, 2016

I have reviewed the proposed edits to the calendar entries for the EASC Common Block of Required Course and to the courses EASC 2030, 2502, 2916, and have determined that the changes will have no impact on library resources.

Subject: RE: Consultation - proposed course and program changes from the Department of Earth Sciences

From: Ambi, Alison

To: pmorrill@mun.ca

Date: Today 08:17

Hi Penny,
Here you go.
Alison

Alison Ambi
Science Research Liaison Librarian
Room L2027B
QE2 Library
Memorial University of Newfoundland
www.library.mun.ca
709 864 7:25

-----Original Message-----
From: Library Correspondence
Sent: November-09-16 11:45 AM
To: Ambi, Alison
Cc: White, Louise
Subject: FW: Consultation – proposed course and program changes from the Department of Earth Sciences

-----Original Message-----
From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: Monday, November 07, 2016 4:40 PM
To: fba.ad.undergrad@mun.ca; Hicks, Sue; Mellor, Judith; ongrconsult@mun.ca; associatevo@gruenfeld.mun.ca; Hickey, Marie; Griffiths, Stacey; mugsconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.coine@med.mun.ca; Sutherland, Ian D; DeanNurse; pharinfo@mun.ca; Dean of Science; adeanugradswk; Library Correspondence
Subject: Consultation – proposed course and program changes from the Department of Earth Sciences

Nov. 7, 2016

To whom it may concern,

Attached are the proposed course and program changes that the Department of Earth Sciences would like to make in the University Calendar. 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

--
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

Subject FW: Consultation - proposed course and program changes from the Department of Earth Sciences

From adeanugradswk

To pmorrill@mun.ca

Date Today 11:51
Hello Penny,

Sorry about my delayed reply. I have reviewed your proposed calendar changes and I do not have any suggestions.

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

Regards

Heather

Heather J. Hair, PhD, RMFT, RSW
Associate Dean Undergraduate Programs
School of Social Work, Memorial University St. John’s, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

Subject: RE: Proposed changes to EASC undergraduate joint programs

From: Heather Hair
To: pmorrill@mun.ca
Cc: deanugrads@mun.ca
Date: Today 11:48

Hello Penny,

Sorry about my delayed reply. I have reviewed your proposed calendar changes and I do not have any suggestions.

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

Regards

Heather

Heather J. Hair, PhD, RMFT, RSW
Associate Dean Undergraduate Programs
School of Social Work, Memorial University St. John’s, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

-----Original Message-----
From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: November-10-16 3:55 PM
To: fbo.ad.undergrad@mun.ca; Hicks, Sue <s.hicks@mun.ca>; Mellor, Judith <j.mellor@mun.ca>; emgrconsult@mun.ca; associateyoffice@grenfell.mun.ca; Hickey, Marie <m.hickey@mun.ca>; Griffiths, Stacey <staceym@mun.ca>;}
Nov. 10, 2016

To whom it may concern,

Further to my Nov. 7th email, Earth Science department would like to propose calendar changes for our joint programs. The changes are similar to our last consult request on Nov. 7th of removing CHEM 1010 and CHEM 1011 as requirements for some of our courses, but this time the requested change applies to our joint programs. Our proposals have received positive responses from the departments that these joint programs are with. 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, Department of Earth Sciences

--

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

Subject RE: Consultation - proposed course and program changes from the Department of Earth Sciences

From Heather Hair

To pmorrill@mun.ca

Cc ‘adeanugradswk’

Date Today 11:46

Hello Penny,

Sorry about my delayed reply. I have reviewed your proposed calendar changes and I do not have any suggestions.

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

Regards
-----Original Message-----
From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: November-07-16 4:40 PM
To: fba.ad.undergrad@mun.ca; Hicks, Sue <shicks@mun.ca>; Melleror, Judith <jmellor@mun.ca>; eagrconsult@mun.ca; associatyepoffice@grenfell.mun.ca; Hickey, Marie <mehickey@mun.ca>; Griffiths, Stacey <staceyg@mun.ca>; miugconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@med.mun.ca; Sutherland, Ian D <isutherrland@mun.ca>; DeanNurse <deanurse@mun.ca>; pharzinfo@mun.ca; Dean of Science <deanci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Subject: Consultation - proposed course and program changes from the Department of Earth Sciences

Nov. 7, 2016

To whom it may concern,

Attached are the proposed course and program changes that the Department of Earth Sciences would like to make in the University Calendar. 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

--

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

Subject: FW: Consultation - proposed course and program changes from the Department of Earth Sciences

From: Martin Plumer
Hi Penny,

Physics has no issues with these proposed changes.

Cheers,
Martin

-----Original Message-----
From: Physics Head [mailto:physicshead@mun.ca]
Sent: November-08-16 10:20 AM
To: Martin Flumer
Subject: FW: Consultation - proposed course and program changes from the Department of Earth Sciences

Not sure if you got this but here it is for your and USC consideration.
Jolanta

On 2016-11-08, 7:54 AM, "Dean of Science" <deansci@mun.ca> wrote:

Please forward any comments to Penny Morrill at pmorrill@mun.ca with a copy to deansci@mun.ca Thanks, Mary

-----Original Message-----
From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: November-07-16 4:40 PM
To: fbs.ad.undergrad@mun.ca; Hicks, Sue; Mellor, Judith; engrconsult@mun.ca; associateyoffice@grenfell.mun.ca; Hickey, Marie; Griffiths, Stacey; miugconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharinfo@mun.ca; Dean of Science; adeanugradswk; Library Correspondence
Subject: Consultation - proposed course and program changes from the Department of Earth Sciences

Nov. 7, 2016

To whom it may concern,

Attached are the proposed course and program changes that the Department of Earth Sciences would like to make in the University Calendar. 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

---
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

Subject: RE: Consultation - proposed course and program changes from the Department of Earth Sciences

From: Mellor, Judith
To: Penny L Morrill
Date: Tue 14:19

Hello Penny:

The Faculty of Education fully supports your changes as indicated in the attached documents. A small comment, if I may, regarding EASC 2916. I was hoping you could consider adjusting the last sentence in the course description to say "prospective teachers" rather than simply "teachers." I noticed the description already runs to more than the 75 words allowed for a course description so unsure if you can make this happen. Thank you for your consideration of this.

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

-----Original Message-----
From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: November-07-16 4:40 PM
To: fba.ad.undergrad@mun.ca; Hicks, Sue; Mellor, Judith; engconsult@mun.ca;
associatevpoffice@grenfell.mun.ca; Hickey, Marie; Griffiths, Stacey;
miugconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharinfo@mun.ca; Dean of Science; adeanugradswk; Library Correspondence
Subject: Consultation - proposed course and program changes from the Department of Earth Sciences

Nov. 7, 2016

To whom it may concern,

Attached are the proposed course and program changes that the Department of Earth Sciences would like to make in the University Calendar. 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

--
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

Subject Fwd: Re: FW: Consultation - proposed course and program changes from the Department of Earth Sciences

From Travis Fridgen

To Penny L Morrill

Date Today 09:44

Hi Penny,

We are fully in support of the changes you propose here and to the minors.

Take care,

Travis

On 08/11/2016 7:54 AM, Dean of Science wrote:
Please forward any comments to Penny Morrill at pmorrill@mun.ca with a copy to deansci@mun.ca

Thanks.
Mary

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

From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: November-07-16 4:40 PM
To: fba.ad.undergrad@mun.ca; Hicks, Sue; Meilor, Judith; engrconsult@mun.ca; associateypoffice@grenfell.mun.ca; Hickey, Marie; Griffiths, Stacey; miugconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharminfo@mun.ca; Dean of Science: adeangradswk; Library Correspondence
Subject: Consultation -
proposed course and program changes from the Department of Earth Sciences

Nov. 7, 2016

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Thank you for your time and consideration.

Cheers,
Penny Morrill
Chair of the Undergraduate Matters Committee

---
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

---
Travis D. Fridgen BSc, BEd, PhD
Professor and Head
Department of Chemistry
Memorial University
St. John’s, NL, A1B 3X7
chemhead@mun.ca
709-864-3470
http://www.chem.mun.ca/zfac/tf2.php?
Subject Re: Proposed changes to Earth Sciences and Physics Joint Honours/Major and Geophysics and Physical Oceanography Joint Honours

From Lagowski, Jolanta

To pmoril@mun.ca

Cc Martin Plumer

Date Today 12:12

Hello Penny,

As indicated in the email below, Physics and Physical Oceanography has had a departmental meeting yesterday (Nov. 9th) and the motion to remove CHEM 1010, 1011, 1031 from all of our programs was approved unanimously. Hence we agree to your proposed changes to Earth Sciences and Physics Joint Honours/Major and Geophysics and Physical Oceanography Joint Honours. If you need any further information, please do not hesitate to contact me.

Regards,

Jolanta

Jolanta B. Lagowski, Professor and Head
Physics and Physical Oceanography
Memorial University
St. John's, NL, Canada A1B 3X7
Email: jolanta@mun.ca
Phone: (709) 864-8738

Subject RE: Proposed changes to Biology and Earth Sciences Joint Honours

From Marino, Paul

To Penny L Morrill

Cc Jody.Burke@mi.mun.ca

Date Today 15:31

Sorry Penny, I got it backwards - Chemistry just proposed this fall to cut the Organic for Biologists labs in half - that is when I talked to Travis about Organic and General Chemistry and that is the proposal Chemistry withdrew. However, the same principle holds for Biology - because we will move to requiring majors to take 2400/2401 we have to then must have our majors also taking 1050/1051 - which means we need to adjust our curriculum as described below. The bottom line is that we will be converging on what you are already suggesting below; it is just more complicated for us and will take us a few weeks to get to the same place. So, yes, we are ok with what you propose because we will soon require the same of our students - assuming the Dept. votes as seems highly likely.

I probably shouldn't answer e-mails at home just before dinner when my brain is starved - which is when I got the course info backwards.

Paul
Subject  RE: Proposed change to Earth Sciences and Geography Joint Honours

From  Catto, Norm

To  Penny L Morritt

Date  Mon 15:57

Dear Penny:

Thank you for writing. Although the Chemistry courses are not as central to our program as they are to yours, we will support Earth Sciences in this request.

Best wishes
Norm

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: Re: Consultation - proposed course and program changes from the Department of Earth Sciences

From: Engineering Consult

To: Penny L Morrill

Cc: Andrew Fisher, Barrington, Kaela

Date: Today 10:52

Dear Dr. Morrill,

Thank you for the opportunity to comment on the proposed Calendar changes to the Chemistry requirements in the degree regulations and to the Calendar entries for three courses in the Earth Sciences program.

I plan to present this consultation request to the next scheduled meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science, on Nov. 16. I will contact you again if any comments on this proposal arise at that meeting. I anticipate no impact on the programs of the Faculty of Engineering and Applied Science.

In the interim, I note that the Calendar description for EASC 2916 "Natural Hazards on a Dynamic Earth" contains 112 words, which exceeds the maximum of 75 words.

---

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science
Memorial University of Newfoundland
St. John's NL A1B 3X5

RE: Consultation - proposed course and program changes from the Department of Earth Sciences EASC
Common Block

Dr. Morrill,

Thank you for the opportunity to review and comment on the proposed changes to EASC Common Block of Required Courses. These changes will have no impact on the programs at the Marine Institute and we are happy to support this proposal as presented.

One note: on page 2 of the proposal the phrase "Chemistry 1050 and 1051 or Chemistry 1200 and 1001", currently bold, should be underlined to indicate it is an addition.

All the best,

Derek
Subject: RE: Consultation - proposed course and program changes from the Department of Earth Sciences - EASC 2916

From: MIUG Consultations

Sender: Dawn King
To: Penny L Morrill
Date: Today 09:44

Dr. Morrill,

Thank you for the opportunity to review and comment on the proposed change to the course EASC 2916 Natural Hazards on a Dynamic Earth. This change will have no impact on the programs at the Marine Institute and we are happy to support this proposal as presented.

Might I suggest that this would be a good opportunity to reduce the size of the course description to the maximum allowed size of 75 words.

All the best,

Derek Howse

Subject: RE: Consultation - proposed course and program changes from the Department of Earth Sciences - EASC 2502

From: MIUG Consultations

Sender: Dawn King
To: Penny L Morrill
Date: Today 09:43

Dr. Morrill,

Thank you for the opportunity to review and comment on the proposed change to the course EASC 2502 Introduction to Geochemistry. This change will have no impact on the programs at the Marine Institute and we are happy to support this proposal as presented.

All the best,

Derek

RE: Consultation - proposed course and program changes from the Department of Earth Sciences EASC 2030 Mineralogy

From: MIUG Consultations

Sender: Dawn King
To: Penny L Morrill
Date: Today 09:42

Dr. Morrill,

Thank you for the opportunity to review and comment on the proposed change to the course EASC 2030 Mineralogy. This change will have no impact on the programs at the Marine Institute and we are happy to support this proposal as presented.

All the best,

Derek Howse
November 25, 2016

TO: All Members, Faculty Council of Science

FROM: Joan Bury, Secretary
Committee on Undergraduate Studies, Faculty of Science

SUBJECT: Calendar Changes, New Course and New Program Proposals

At meetings held on November 15 and November 22, 2016, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Physics and Physical Oceanography
   - Changes to course description of Physics 3800

2. Department of Earth Sciences
   (i) Calendar changes to amend the course descriptions for seven Earth Sciences courses, including prerequisite changes
   (ii) Calendar changes to the Earth Sciences major programs with respect to the required first year Chemistry courses

3. Department of Mathematics and Statistics
   (i) Calendar change to the course description of Mathematics 3000
   (ii) Proposal for new course: Mathematics 109AB

4. Faculty of Science
   - Proposal for joint Bachelor of Science and Bachelor of Arts degree program

Joan Bury
Associate Registrar and
Secretary: Committee
on Undergraduate Studies,
Faculty of Science
Proposal
Calendar Change to Mathematics 3000

Executive Summary

We propose to increase the laboratory hours for Math 3000 from 1 to 1.5 hours.

Resource Implications: Instructional Costs

There are no additional instructional costs.

Consultations

Forthcoming.

Library Holdings and/or Other Resources Required

Forthcoming.

The costs, if any, associated with this change/these changes can be met from within the existing budget allocation or authorized new funding for the Faculty of Science.

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
Mathematics 3000 Real Analysis I

Abbreviated Course Title
Real Analysis I

Calendar Changes

In the 2016-17 Calendar, under Faculty of Science, on page 534, alter the course description of MATH 3000 as follows:

“3000 Real Analysis I covers proof techniques, structure of the real numbers, sequences, limits, continuity, uniform continuity, differentiation.
CR: the former MATH 2001
LH: 1.5
PR: MATH 2000”

In the 2016-17 Calendar, under Grenfell Campus, on page 235, alter the course description of MATH 3000 as follows:

“3000 Real Analysis I is proof techniques, structure of R, sequences, limits, continuity, uniform continuity, differentiation.
CR: the former MATH 2001
LH: 1.5
PR: MATH 2000”

Secondary Calendar Changes

There are no secondary changes.

Calendar Entry After Changes

In the 2016-17 Calendar, under Faculty of Science, on page 534, the course description of MATH 3000 should read as follows:

“3000 Real Analysis I covers proof techniques, structure of the real numbers, sequences, limits, continuity, uniform continuity, differentiation.
CR: the former MATH 2001
LH: 1.5
PR: MATH 2000”

In the 2016-17 Calendar, under Grenfell Campus, on page 235, the course description of MATH 3000 should read as follows:
"3000 Real Analysis I is proof techniques, structure of R, sequences, limits, continuity, uniform continuity, differentiation.
CR: the former MATH 2001
LH: 1.5
PR: MATH 2000"

Rationale

Both the St. John's campus and the Grenfell campus currently plan for and offer a 1.5 hour lab section for MATH 3000. The laboratory hour as listed in the calendar should match the laboratory time offered in practice.

Consultations Sought From

1. Grenfell Campus
2. Marine Institute
3. Faculty of Humanities and Social Sciences
4. Department of Biochemistry
5. Department of Biology
6. Department of Chemistry
7. Department of Computer Science
8. Department of Earth Sciences
9. Department of Ocean Sciences
10. Department of Physics and Physical Oceanography
11. Department of Psychology

Comments Received

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: _____________________________
Hello everyone,

Please review the attached proposal from Math & Stats to change the lab hours for Math 3000, and send your comments to me at your earliest convenience.

Best Regards,
Tara

--
Tara Stuckless
Program Officer
Ext. 8914, HH 3004
Mathematics & Statistics
Math Consult

From: Dawn King <Dawn.King@mi.mun.ca> on behalf of MIUG Consultations <MIUGconsultations@mi.mun.ca>
Sent: October-17-16 3:18 PM
To: Math Consult
Subject: RE: Consultation request for Calendar change proposal [Math & Stats]

Tara,

Thank you for the opportunity to review and comment on this change to the Math 3000 Calendar entry.

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

All the best,

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

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: Friday, October 14, 2016 2:53 PM
To: Library Correspondence <univlib@mun.ca>; associatevpoffice@grenfell.mun.ca; MIUG Consultations <MIUGconsultations@mi.mun.ca>; Griffiths, Stacey <stacey.m@mun.ca>; Biochemistry Head <biohead@mun.ca>; Marino, Paul <marino@mun.ca>; chemhead@mun.ca; cs-chair@mun.ca; jhanchar@mun.ca; mathconsult@mun.ca; Fletcher, Garth <fletcher@mun.ca>; physicshead@mun.ca; psychology.head@mun.ca
Subject: Consultation request for Calendar change proposal [Math & Stats]

Hello everyone,

Please review the attached proposal from Math & Stats to change the lab hours for Math 3000, and send your comments to me at your earliest convenience.

Best Regards,
Tara

--
Tara Stuckless
Program Officer
Ext. 8914, HH 3004
Mathematics & Statistics

This email is governed by the Terms and Conditions found in our Disclaimer.
Math Consult

From: Math Consult <mathconsult@mun.ca>
Sent: October-18-16 11:38 AM
To: 'MIUG Consultations'
Subject: RE: Consultation request for Calendar change proposal [Math & Stats]

Comments received. Thank you, - Tara

From: Dawn King [mailto:Dawn.King@mi.mun.ca] On Behalf Of MIUG Consultations
Sent: October-17-16 3:18 PM
To: Math Consult <mathconsult@mun.ca>
Subject: RE: Consultation request for Calendar change proposal [Math & Stats]

Tara,

Thank you for the opportunity to review and comment on this change to the Math 3000 Calendar entry.

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

All the best,

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

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: Friday, October 14, 2016 2:53 PM
To: Library Correspondence <univlib@mun.ca>; associatevpooffice@grenfell.mun.ca; MIUG Consultations <MIUGconsultations@mi.mun.ca>; Griffiths, Stacey <staceyM@mun.ca>; Biochemistry Head <biohead@mun.ca>
Marino, Paul <pmarino@mun.ca>; chemhead@mun.ca; cs-chair@mun.ca; jhanchar@mun.ca; mathconsult@mun.ca; Fletcher, Garth <fletcher@mun.ca>; physicshead@mun.ca; psychology.head@mun.ca
Subject: Consultation request for Calendar change proposal [Math & Stats]

Hello everyone,

Please review the attached proposal from Math & Stats to change the lab hours for Math 3000, and send your comments to me at your earliest convenience.

Best Regards,
Tara

--

8
Math Consult

From: Griffiths, Stacey <staceym@mun.ca>
Sent: October-20-16 2:31 PM
To: Math Consult
Subject: RE: Consultation request for Calendar change proposal [Math & Stats]

Thank you for the opportunity to provide feedback. The Associate Dean of Humanities and Social Sciences (Undergraduate) wishes to indicate that in his opinion there are unlikely to be significant concerns about this proposal among members of the Faculty of HSS.

Stacey Griffiths
Faculty of Humanities and Social Sciences
Memorial University of Newfoundland
St. John's, NL A1C 5S7
709-864-8255

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: October 14, 2016 2:54 PM
To: Library Correspondence; associatevpooffice@grenfell.mun.ca; miugconsultations@mi.mun.ca; Griffiths, Stacey; Biochemistry Head; Marino, Paul; chemhead@mun.ca; cs-chair@mun.ca; jhanchar@mun.ca; mathconsult@mun.ca; Fletcher, Garth; physicshead@mun.ca; psychology.head@mun.ca
Subject: Consultation request for Calendar change proposal [Math & Stats]

Hello everyone,

Please review the attached proposal from Math & Stats to change the lab hours for Math 3000, and send your comments to me at your earliest convenience.

Best Regards,
Tara

Tara Stuckless
Program Officer
Ext. 8914, HH 3004
Mathematics & Statistics

7
Math Consult

From: Math Consult <mathconsult@mun.ca>
Sent: October-21-16 3:56 PM
To: 'Griffiths, Stacey'
Subject: RE: Consultation request for Calendar change proposal [Math & Stats]

Hello Stacey,

Yes, it does seem far-fetched that any other units would object. I sent it to you guys merely because regulations state that I must. May I interpret “there are unlikely to be significant concerns about this proposal among members of the Faculty of HSS” as indicating you have no objections?

Thanks,
Tara

From: Griffiths, Stacey [mailto:stacey.m@mun.ca]
Sent: October-20-16 2:31 PM
To: Math Consult <mathconsult@mun.ca>
Subject: RE: Consultation request for Calendar change proposal [Math & Stats]

Thank you for the opportunity to provide feedback. The Associate Dean of Humanities and Social Sciences (Undergraduate) wishes to indicate that in his opinion there are unlikely to be significant concerns about this proposal among members of the Faculty of HSS.

Stacey Griffiths
Faculty of Humanities and Social Sciences
Memorial University of Newfoundland
St. John's, NL A1C 5S7
709-864-8255

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: October 14, 2016 2:54 PM
To: Library Correspondence; associatevooffice@grenfell.mun.ca; muguconsultations@mi.mun.ca; Griffiths, Stacey; Biochemistry Head; Marino, Paul; chemhead@mun.ca; cs-chair@mun.ca; jhanchar@mun.ca; mathconsult@mun.ca; Fletcher, Garth; physicshead@mun.ca; psychology.head@mun.ca
Subject: Consultation request for Calendar change proposal [Math & Stats]

Hello everyone,

Please review the attached proposal from Math & Stats to change the lab hours for Math 3000, and send your comments to me at your earliest convenience.

Best Regards,
Tara

--
Tara Stuckless
Program Officer
Math Consult

From: Griffiths, Stacey <stacey@mun.ca>
Sent: October-26-16 10:58 AM
To: Math Consult
Cc: Marland, Alex
Subject: RE: Consultation request for Calendar change proposal [Math & Stats]

No objections from the Faculty of HSS.

Stacey Griffiths
Faculty of Humanities and Social Sciences
Memorial University of Newfoundland
St. John's, NL A1C 5S7
709-864-8255

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: October 21, 2016 3:56 PM
To: Griffiths, Stacey
Subject: RE: Consultation request for Calendar change proposal [Math & Stats]

Hello Stacey,

Yes, it does seem far-fetched that any other units would object. I sent it to you guys merely because regulations state that I must. May I interpret “there are unlikely to be significant concerns about this proposal among members of the Faculty of HSS” as indicating you have no objections?

Thanks,
Tara

From: Griffiths, Stacey [mailto:stacey@mun.ca]
Sent: October-20-16 2:31 PM
To: Math Consult <mathconsult@mun.ca>
Subject: RE: Consultation request for Calendar change proposal [Math & Stats]

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Stacey Griffiths
Faculty of Humanities and Social Sciences
Memorial University of Newfoundland
St. John's, NL A1C 5S7
709-864-8255

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: October 14, 2016 2:54 PM
To: Library Correspondence; associatevpooffice@grenfell.mun.ca; miuqconsultations@mi.mun.ca; Griffiths, Stacey;
Math Consult

From: Michelle Miskell <mmiskell@mun.ca>
Sent: November-03-16 3:44 PM
To: mathconsult@mun.ca
Cc: "Penny Morrill" (pmorrill@mun.ca)
Subject: RE: Consultation request for Calendar change proposal [Math & Stats]
Attachments: MATH 3000 proposal 10 14 2016.pdf; Untitled attachment 00383.htm

Hi Tara,

Earth Sciences has no issues with this proposal.

Thank you,
Michelle

Ms. Michelle Miskell
Manager of Academic Programs
Department of Earth Sciences
Memorial University of Newfoundland
St. John's, NL A1B 3X5
(709) 864-4464
mmiskell@mun.ca
www.mun.ca/earthsclences

Begin forwarded message:

From: "Math Consult" <mathconsult@mun.ca>
Subject: Consultation request for Calendar change proposal [Math & Stats]
Date: October 14, 2016 at 2:53:22 PM GMT-2:30
To: "Library Correspondence" <univilib@mun.ca>, <associatevpoffice@grenfell.mun.ca>,
<miugconsultations@mi.mun.ca>, "Griffiths, Stacey" <staceym@mun.ca>, "Biochemistry Head"
<biohead@mun.ca>, "Marino, Paul" <pmarino@mun.ca>, <chemhead@mun.ca>, <cs-
chair@mun.ca>, <ihancher@mun.ca>, <mathconsult@mun.ca>, "Fletcher, Garth"
<fletcher@mun.ca>, <physicshead@mun.ca>, <psychology.head@mun.ca>

Hello everyone,

Please review the attached proposal from Math & Stats to change the lab hours for Math 3000, and send your
comments to me at your earliest convenience.

Best Regards,
Tara

--
Tara Stuckless
Program Officer
Ext. 8914, HH 3004
Mathematics & Statistics
November 25, 2016

TO: All Members, Faculty Council of Science

FROM: Joan Burry, Secretary
       Committee on Undergraduate Studies, Faculty of Science

SUBJECT: Calendar Changes, New Course and New Program Proposals

At meetings held on November 15 and November 22, 2016, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Physics and Physical Oceanography
   - Changes to course description of Physics 3800

2. Department of Earth Sciences
   (i) Calendar changes to amend the course descriptions for seven Earth Sciences courses, including prerequisite changes
   (ii) Calendar changes to the Earth Sciences major programs with respect to the required first year Chemistry courses

3. Department of Mathematics and Statistics
   (i) Calendar change to the course description of Mathematics 3000
   (ii) Proposal for new course: Mathematics 109A/B

4. Faculty of Science
   - Proposal for joint Bachelor of Science and Bachelor of Arts degree program

Joan Burry
Associate Registrar and
Secretary, Committee
on Undergraduate Studies,
Faculty of Science
Proposal
New Course: Mathematics 109A/B
Introductory Algebra and Trigonometry

Executive Summary

We propose a new pair of linked courses which will cover the same course content as Mathematics 1090 (Algebra and Trigonometry) but at a slower pace.

Resource Implications: Instructional Costs

We base our discussion on resources on two assumptions: first, that the cohort destined for these courses would be best served by maintaining small sizes, with fewer than 40 students; and second, that the courses under discussion will be offered regularly throughout the year. We estimate that 150 students would normally qualify for this course; thus we estimate 4 offerings of MATH 109A in the Fall semester, 1 offering in the Winter semester, and 1 offering in the Spring semester. For MATH 109B, we estimate 1 offering in the Fall, 2 offerings in the Winter, and 1 offering in the Spring. However, these 10 offerings may be partially offset by reductions in the number of offerings of MATH 1090, though we currently offer very few sections of MATH 1090 in any semester so this may not be possible.

An increase in the number of offerings of this scope is best served by hiring an eight-month contractual hire, which would account for 6 courses, and a suitable number of per course instructors to make up the balance.

Further, as it is envisioned these offerings will incorporate in-class problem solving, approximately 50 hours of undergraduate teaching assistants will be required for each offering. As well, each offering will require marking assistance proportional to its enrolment.

Consultations

Forthcoming.

Library Holdings and/or Other Resources Required

Forthcoming.

The costs, if any, associated with this change/these changes can be met from within the existing budget allocation or authorized new funding for the Faculty of Science.

Signature of Unit Head (if appropriate): _

Date: ________________________________

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

Date: ________________________________
Sample Course Outline and Method of Evaluation

Math 109A: Algebra skills, Equations & Inequalities

Real Numbers and Algebra
1. Algebraic expressions and real numbers
   a. Classifying numbers by sets
   b. Using interval notation
   c. Order of operations
   d. Definition of absolute value
   e. Distributive property
   f. Simplifying algebraic expressions/polynomial operations
   g. Simplifying expressions with absolute values
2. Exponents and Radicals
   a. Product/quotient/power rules
   b. Zero exponent, negative exponents
   c. Powers of products and quotients
   d. Simplifying square roots
   e. Operations with square roots
   f. Rationalizing
   g. Simplifying nth roots
3. Factoring Polynomials
   a. Greatest common factor
   b. Factoring rational and negative exponents
   c. Grouping
   d. Difference of squares
   e. Sum and difference of cubes
   f. Trinomials (quadratics and quadratic form)
4. Rational Expressions
   a. Simplifying
   b. Restrictions on domain
   c. Multiplying and dividing
   d. Adding and subtracting
   e. Rationalizing to simplify
   f. Simplifying complex rational expressions

Equations and Inequalities
1. Linear Equations
   a. Solving linear equations
   b. Solving linear inequalities
   c. Solving compound inequalities
2. Absolute Value
   a. Solving absolute value equations
   b. Solving absolute value inequalities
3. Quadratic Equations
   a. Solving quadratic equations by factoring
   b. Using the quadratic formula
   c. Using the discriminant to find the nature of solutions
   d. Complex numbers
   e. Operations on complex numbers
4. Higher Order Polynomials
   a. Solving polynomial equations
b. Roots and multiplicity  
c. Division of polynomials  
d. Rational roots theorem  
e. Writing polynomials as a product of linear factors  
f. Solving polynomial inequalities  

5. Rational  
a. Solving rational equations  
b. Solving rational inequalities  

6. Radicals  
a. Solving equations with a single nth root  
b. Solving equations with two square roots  

Exponential and Logarithmic Equations  

1. Exponential Equations and their Graphs  
a. Evaluating exponentials  
b. Characteristics of graphs  
c. The constant e  

2. Logarithms and their Graphs  
a. Changing between logarithmic and exponential forms  
b. Evaluating logarithms  
c. Bases for log and ln  
d. Characteristics of graphs  

3. Properties of Logarithms  
a. Product/quotient/power rules  
b. Expanding expressions  
c. Condensing expressions  
d. Change of base rule  

4. Exponential and Logarithmic Equations  
a. Solving exponential equations with like bases  
b. Solving exponential equations using logarithms  
c. Solving logarithms with one-to-one property  
d. Solving logarithms by switching to exponential form  

Math 109B: Trigonometry, Functions & Graphing  

Trigonometry  

1. Radian and Degree Measure  
a. Angles in standard position  
b. Coterminal angles  
c. Converting between degrees and radians  

2. Right Angle Trigonometry  
a. Trigonometric functions as ratios  
b. Pythagorean theorem  
c. Exact values for special angles  
d. Finding missing sides using trigonometry  

3. Trigonometric Functions and the Unit Circle  
a. Sine and cosine from the unit circle  
b. Pythagorean identity  
c. Sine and cosine of special angles  
d. Using reference angles  

4. Trigonometric Functions of Any Angle
a. Exact values of all six trigonometric functions at special angles
b. Even and odd trigonometric functions
c. Alternate forms of Pythagorean identity
d. Finding all trigonometric functions given one and quadrant

5. Graphs of Trigonometric Functions

Analytic Trigonometry

1. Verifying Trigonometric Identities
   a. Proofs and simplification

2. Sum and Difference Formulas
   a. Sum and difference for sine
   b. Sum and difference for cosine
   c. Sum and difference for tangent
   d. Evaluating by breaking angles into parts
   e. Proving identities

3. Double and Half-Angle Formulas
   a. Double angle formulas
   b. Half angle formulas
   c. Finding exact values
   d. Proving identities

4. Solving Trigonometric Equations
   a. Linear with one trigonometric function
   b. Power of a single trigonometric function
   c. Quadratic form
   d. Using identities and formulas to simplify
   e. Equations with multiples of angles

Functions and their Graphs

1. Functions
   a. Evaluating functions (including piecewise)
   b. When a relation is a function
   c. Vertical line test
   d. Domain and range of common functions

2. Composite Functions
   a. Combining functions with algebraic operations
   b. Composition of functions
   c. Domain of a composite function

3. Inverse Functions
   a. Checking if a function is one-to-one
   b. Verify inverses with composition
   c. Domain and range of inverse
   d. Finding inverses algebraically

4. Graphing on the Cartesian plane
   a. Plotting points
   b. Getting points from an equation
   c. The x and y intercepts
   d. Distance and midpoint formulas

5. Graphs of Functions
   a. Finding domain and range
   b. Domain and range of common functions
   c. Graphs of inverse functions
   a. Finding inverse from a graph, when possible
Sketching Graphs from Equations

1. Lines and Slopes
   - a. Slope as rate of change
   - b. Increasing/decreasing/constant
   - c. Different forms of equation
   - d. Graphing from intercepts
   - e. Parallel and perpendicular lines

2. Circles
   - a. Changing between forms/completing the square
   - b. Graphing from center and radius

3. Graphing from a Vertex and Intercepts
   - a. Graphing quadratics
   - b. Graphing absolute value functions
   - c. Graphing square root functions

Evaluation:
Both 109A and 109B would typically evaluated with the following schemes.
- Weekly quizzes (15%): At least 9.
- Weekly assignments (15%): Written assignments as are the norm for math courses.
- Tests (20%): Two tests at 10% each.
- Final exam (50%): While the final exam in 109A would be a stand-alone exam, the final exam in 109B would be the same as that for the Math 1090 offering in the same semester.

While Math 109B would be assigned a standard numeric grade, Math 109A would be assigned only pass/fail.

Texts

OpenStax: Pre-calculus or OpenStax: Algebra and Trigonometry, by Lead Author and Senior Content Editor, Jay Abramson. These are open-source texts available at: https://openstax.org/subjects/math, and are currently in use in MATH 1090.

Instructor(s)

Possible instructors include anyone who regularly teaches at the first-year level in the Department of Mathematics and Statistics. These include: Shannon Sullivan; Daniela Silvesan; John Craighead; Afework Solomon; Danny Dyer; Ivan Booth; Jack Suvak; Ron Haynes; Margo Kondratieva; Beth Ann Austin; Sherry Mantyka.
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title
Mathematics 109A/B Introductory Algebra and Trigonometry

Abbreviated Course Title
Intro Algebra & Trigonometry

Calendar Change(s)

Under the Faculty of Science, page 534, 2016-2017 Calendar, 10.8.3 Mathematics Courses, add the following:

"109A and 109B Introductory Algebra and Trigonometry is a two-semester course which provides students with the essential prerequisite elements for the study of an introductory course in calculus, at a slower pace than MATH 1090. Topics include algebra, functions and their graphs, exponential and logarithmic functions, trigonometry, polynomials, and rational functions. CR: if previously completed or currently registered for MATH 1000, 1001, 1090, the former 1080, or the former 1081
LC: 4
PR: a combination of placement test and high school Mathematics scores acceptable to the Department"

Secondary Calendar Changes

Under the Faculty of Business Administration, page 84, 2016-2017 Calendar, amend 5.2.1.1 Direct Entry (for High School Students) as follows:

"Students may apply for admission into first year of the Bachelor of Commerce (Co-operative) program (Terms A/B) directly from high school by indicating this in the appropriate place on their Undergraduate Application for Admission/Readmission to Memorial University of Newfoundland. Terms A/B normally starts in September. Direct entry from high school is subject to the applicant's final acceptance to the University and admissibility into either Mathematics 1000, or 1090 or 109A/B. Terms A/B normally starts in September."

Under the Faculty of Business Administration, page 95, 2016-2017 Calendar, 10.2 Core and Elective Course Descriptions, amend the prerequisite for Business 1101 as follows:

"PR: Mathematics 1090 or 109B or a combination of placement test and high school Mathematics scores acceptable to the Faculty"

Under Grenfell Campus, page 224, 2016-2017 Calendar, 13.7 Computer Science, amend the prerequisite for Computer Science 1600 as follows:

"PR: Level III Advanced Mathematics or Mathematics 1090 or 109B, which can be taken concurrently"

Under Grenfell Campus, page 224, 2016-2017 Calendar, 13.7 Computer Science, amend the pre- and
co-requisites for Computer Science 1700 as follows:

"CO: Mathematics 1090 or 109B (or equivalent), or Mathematics 1000
PR: Mathematics 1090 or 109B (or equivalent), or Mathematics 1000"

Under Grenfell Campus, page 234, 2016-2017 Calendar, 13.21 Mathematics and Statistics, amend the first sentence to read:

"At most 9 credit hours in Mathematics will be given for courses completed from the following list subject to normal credit restrictions: Mathematics 1000, 1031, 1050, 1051, 1080, 1081, 1090, 109A/B, 1150, 1151."

Under Grenfell Campus, page 234, 2016-2017 Calendar, 13.21 Mathematics and Statistics, delete Mathematics 102F, 103F and 104F:

"102F, 103F and 104F Mathematics Skills Program are non-credit courses intended for those students who either have a weak background in mathematics or are returning to the subject after some years. The program enables students to master mathematical operations such as those involving whole numbers, fractions, decimals, percents, integers, exponents, linear equations, algebraic and rational expressions, formulas, graphs, systems of linear equations, basic trigonometry, exponents and radicale, and quadratics."

Under Grenfell Campus, page 234, 2016-2017 Calendar, 13.21 Mathematics and Statistics, amend the prerequisite for Mathematics 1000 as follows:

"PR: MATH 1090 or 109B or a combination of placement test and high school Mathematics scores acceptable to the Department"

Under Grenfell Campus, page 235, 2016-2017 Calendar, 13.21 Mathematics and Statistics, amend the credit restriction and prerequisite for Mathematics 1090 as follows:

"CR: if previously completed or currently registered for MATH 1000, MATH 1001, MATH 109A/B, the former 1080, or the former 1081
PR: a combination of placement test and high school Mathematics scores acceptable to the Department or the former MATH 104F"

Under Grenfell Campus, page 236, 2016-2017 Calendar, 13.23 Physics, amend the co-requisite and prerequisite for Physics 1020 as follows:

"CO: Mathematics 1090 or 109B
PR: Level III Advanced Mathematics or Mathematics 1090 or 109B. It is recommended that students have completed at least one of level II and level III high school physics courses, however this course may be completed by someone who has no physics background provided some extra effort is made."

Under Grenfell Campus, page 237, 2016-2017 Calendar, 13.23 Physics, amend the prerequisite for Physics 2400 as follows:

"PR: Level III Advanced Mathematics or Mathematics 1090 or 109B. It is recommended that students have completed at least one of Level II and Level III high school physics courses."

Under the Faculty of Humanities and Social Sciences, page 283, 2016-2017 Calendar, 5.5.1 Suggested Program of Studies: Bachelor of Arts and Bachelor of Commerce (Co-operative) Prior to
admission to the Bachelor of Commerce (Co-operative) Program, amend Regulation 2 as follows:

"either Mathematics 1090 (or 109A/B) and 1000 or Mathematics 1000 and 3 credit hours in one of a language other than English or in the subject of the intended Major program;"

Under the Faculty of Science, page 488, 2016-2017 Calendar, 9.1.2 Major in Biochemistry, amend Regulation 1(c) as follows:

"Mathematics 1000, 1001 (or Mathematics 1090, 1000, or Mathematics 109A/B, 1000)"

Under the Faculty of Science, page 489, 2016-2017 Calendar, 9.1.2.1 Honours in Biochemistry, amend Regulation 1(c) as follows:

"Mathematics 1000, 1001 (or Mathematics 1090, 1000, or Mathematics 109A/B, 1000)"

Under the Faculty of Science, page 489, 2016-2017 Calendar, 9.1.3.1 Major in Nutrition, amend Regulation 1(c) as follows:

"Mathematics 1000, 1001 (or Mathematics 109A/B, 1000, or Mathematics 1000 and one elective)"

Under the Faculty of Science, page 490, 2016-2017 Calendar, 9.1.3.2 Honours in Nutrition, amend Regulation 1(c) as follows:

"Mathematics 1000, 1001 (or Mathematics 109A/B, 1000, or Mathematics 1000 and one elective)"

Under the Faculty of Science, page 490, 2016-2017 Calendar, 9.2.1 Biology — Entrance Requirements, amend Regulation 2 as follows:

"Mathematics 1090 and Mathematics 1000 (or Mathematics 109A/B and Mathematics 1000, or Mathematics 1000 only)"

Under the Faculty of Science, page 496, 2016-2017 Calendar, 9.3.5.2 Honours Degree in Chemistry — Other Information, amend Regulation 8 as follows:

"Students completing first year requirements for either Chemistry or Mathematics via the three course options (i.e. Chemistry 1010, 1050, 1051 (or 1010, 1011, and the former 1031), Mathematics 1090, 1000, 1001 (or 109A/B, 1000, 1001)) instead of the two course options (Chemistry 1050, 1051, Mathematics 1000, 1001) will require the corresponding number of extra credits to obtain an Honours degree."

Under the Faculty of Science, page 498, 2016-2017 Calendar, 9.3.7.3 Honours Degree in Computational Chemistry — Other Information, amend Regulation 4 as follows:

"Students completing first year requirements for any of Chemistry, Mathematics or Physics via the three course options (i.e. Chemistry 1010, 1050 and 1051 or 1010, 1011, the former 1031, Mathematics 1090, 1000, 1001 or 109A/B, 1000, 1001, Physics 1020, 1021, 1051) instead of the two course options (Chemistry 1050, 1051, Chemistry 1200, 1001, Mathematics 1000, 1001, Physics 1050, 1051) will require the corresponding number of extra credits to obtain an Honours degree."

Under the Faculty of Science, page 503, 2016-2017 Calendar, 9.8.1 Mathematics and Statistics — Regulations, amend Regulation 1 as follows:
"At most 9 credit hours in Mathematics will be given for courses completed from the following list subject to normal credit restrictions: Mathematics 1000, 1031, 1050, 1051, the former 1080, the former 1081, 1090, 109A/B, the former 1150 and 1151."

Under the Faculty of Science, page 503, 2016-2017 Calendar, 9.8.1 Mathematics and Statistics — Regulations, amend Regulation 3 as follows:

"Placement in Mathematics 1000, 1050, 1051, and-1090 and 109A/B, and Statistics 1510, shall be determined by the Department of Mathematics and Statistics on the basis of the student's score on the Mathematics Placement Test (MPT), SAT Subject Test in Mathematics Level 1, or other acceptable criteria-based test."

Under the Faculty of Science, page 506, 2016-2017 Calendar, 9.10 Physics and Physical Oceanography, amend Note 4 as follows:

"Physics 1050 is open to and recommended for students who have completed Level II Physics, Level III Physics and Level III Advanced Mathematics. Mathematics 1000 must be taken at the same time as, or be completed prior to, taking Physics 1050. Students who have completed Mathematics 1090 (or 109A/B) and Physics 1050 are required to complete Mathematics 1000 before registering for Physics 1051."

Under the Faculty of Science, page 506, 2016-2017 Calendar, 9.10.3 Honours in Physics, amend the first paragraph to read:

"Only 6 credit hours at the 1000 level in each of Physics, Chemistry and Mathematics can be used to fulfill the 120 credit hours required for the Honours program. The inclusion of Mathematics 1090 (or 109A/B), the sequence of Physics 1020, 1021, and 1051 or the substitution of Chemistry 1010, 1011 and the former 1031 for Chemistry 1050 and 1051 will each increase the number of credit hours required for the Honours Physics program by three."

Under the Faculty of Science, page 533, 2016-2017 Calendar, 10.8.3 Mathematics Courses, amend the first paragraph as follows:

"Placement in first-year mathematics courses at the St. John's Campus and online is based upon a student's pre-requisite level of proficiency in mathematics as demonstrated in a manner that is acceptable to the Department of Mathematics and Statistics. This may be through credit and grades earned in recognized high school or undergraduate mathematics courses or scores earned in the University's Mathematics Placement Test (MPT) or recognized standardized examinations such as International Baccalaureate (IB), Advanced Placement (AP), or the College Board's Subject Area Test in Mathematics Level I (SATM1) examinations. Where a prerequisite has not been met through one of these means, a student will be required to complete the University's Mathematics Placement Test (MPT) as a prerequisite for registration in a first-year mathematics course. A student who is not eligible for placement in a credit course in mathematics will be required to successfully complete appropriate foundation courses in order to proceed with further mathematics studies as indicated by the mathematics course pre-requisites."

Under the Faculty of Science, page 533, 2016-2017 Calendar, 10.8 Mathematics and Statistics, delete 10.8.1 Foundation Courses, including the courses Mathematics 102F, 102N, 103F and 104F:

"10.8.1 Foundation Courses"

102F Mathematics Skills Program is a non-credit course intended for students who either have a
weak background in mathematics or are returning to the subject after some years. The course enables students to master mathematical operations such as those involving whole numbers, fractions, decimals, percents, integers, exponents, linear equations and algebraic expressions.

CH: 0
LH: 2

102N Mathematics Skills Program for the B.N. (Collaborative) Program is a non-credit course intended for students of the B.N. (Collaborative) Program who have a weak background in mathematics and/or have not done mathematics in some years. The course enables students to master mathematical operations such as those involving whole numbers, fractions, decimals, percents, units of measurement, ratios and proportions.

CH: 0
LH: 2
PR: Mathematics 102F

104F Mathematics Skills Program is a non-credit course intended for those students who either have a weak background in mathematics or are returning to the subject after some years. The course enables students to master mathematical operations such as those involving rational expressions and equations, units of measurement, ratios and proportions, formulas, graphs of linear equations, systems of linear equations, basic geometry and trigonometry and number systems.

CH: 0
LH: 2
PR: Mathematics 104F

Under the Faculty of Science, page 534, 2016-2017 Calendar, 10.8 Mathematics and Statistics, delete 10.8.2 Accelerated M103F/M1051 Mathematics Skills Program/Finite Mathematics II and the associated course:

"103F Mathematics Skills Program/Finite Mathematics II is a non-credit course enabling students to master mathematics operations such as those involving algebraic and rational expressions, formulas, graphs, systems of linear equations, basic trigonometry and number systems. Mathematics 1051 is a credit course with topics including elementary matrices, linear programming, elementary number theory, mathematical systems and geometry.

CH: 0
CO: Mathematics 102F and a recommendation by an MLC instructor resulting in approval by the MLC Director
LH: three 50-minute classes and two 75-minute classes per week
PR: Mathematics 102F and a recommendation by an MLC instructor resulting in approval by the MLC Director"

Under the Faculty of Science, page 534, 2016-2017 Calendar, 10.8.3 Mathematics Courses, amend the prerequisite and usage limitation for Mathematics 1000 as follows:

"PR: MATH 1090 or 109B or a combination of placement test and high school Mathematics scores
acceptable to the Department
UL: at most 9 credit hours in Mathematics will be given for courses completed from the following list subject to normal credit restrictions: Mathematics 1000, 1031, 1050, 1051, the former 1080, the former 1081, 1090, 109A/B, the former 1150 and 1151"

Under the Faculty of Science, page 534, 2016-2017 Calendar, 10.8.3 Mathematics Courses, amend the prerequisite and usage limitation for Mathematics 1050 as follows:

“PR: a combination of placement test and high school mathematics scores acceptable to the department or the former MATH 103F
UL: At most 9 credit hours in Mathematics will be given for courses completed from the following list subject to normal credit restrictions: Mathematics 1000, 1031, 1050, 1051, the former 1080, the former 1081, 1090, 109A/B, the former 1150 and 1151. With the exception of those already admitted at the time of registration in this course to a Bachelor of Education program that requires this course, students who already have obtained credit for 6 or more Mathematics and/or Statistics credit hours numbered 2000 or above should not register for this course and they will not receive credit for it.”

Under the Faculty of Science, page 534, 2016-2017 Calendar, 10.8.3 Mathematics Courses, amend the prerequisite and usage limitation for Mathematics 1051 as follows:

“PR: a combination of placement test and high school mathematics scores acceptable to the department or the former MATH 103F
UL: At most 9 credit hours in Mathematics will be given for courses completed from the following list subject to normal credit restrictions: Mathematics 1000, 1031, 1050, 1051, the former 1080, the former 1081, 1090, 109A/B, the former 1150 and 1151. With the exception of those already admitted at the time of registration in this course to a Bachelor of Education program that requires this course, students who already have obtained credit for 6 or more Mathematics and/or Statistics credit hours numbered 2000 or above should not register for this course and they will not receive credit for it.”

Under the Faculty of Science, page 534, 2016-2017 Calendar, 10.8.3 Mathematics Courses, amend the credit restriction, prerequisite and usage limitation for Mathematics 1090 as follows:

“CR: if previously completed or currently registered for MATH 1000, 1001, 109A/B, the former 1080, or the former 1081
PR: a combination of placement test and high school Mathematics scores acceptable to the Department or the former MATH 104F
UL: at most 9 credit hours in Mathematics will be given for courses completed from the following list subject to normal credit restrictions: Mathematics 1000, 1031, 1050, 1051, the former 1080, the former 1081, 1090, 109A/B, the former 1150 and 1151"

Under the Faculty of Science, page 536, 2016-2017 Calendar, 10.8.4 Statistics Courses, amend the prerequisite for Statistics 1510 as follows:

“PR: Mathematics 1090 or 109B or a combination of placement test and high school Mathematics scores acceptable to the Department.”

Under the Faculty of Science, page 538, 2016-2017 Calendar, 10.10 Physics and Physical Oceanography — Courses, amend the co-requisite and prerequisite for Physics 1020 as follows:

“CO: Mathematics 1090 or 109B
PR: Level III Advanced Mathematics or Mathematics 1090 or 109B. It is recommended that students have completed at least one of level II and level III high school physics courses"
Under the Faculty of Science, page 538, 2016-2017 Calendar, 10.10 Physics and Physical Oceanography — Courses, amend the prerequisite for Physics 1021 as follows:

“PR: Science 1807; PHYS 1020 or 1050 and Mathematics 1090 or **109B** or 1000”

Under the Faculty of Science, page 541, 2016-2017 Calendar, 10.11.2 Psychology — Majors Courses, amend the prerequisite for Psychology 2910 as follows:

“PR: PSYC 1000 and 1001; Mathematics 1000 or two of 1090, **109B**, 1050 and 1051 (or equivalent) and admission to a Major in Psychology or Behavioural Neuroscience”

**Rationale**

As part of our on-going review of our own courses, we have become increasingly aware of weaknesses within the current cohort of students we accept into the existing MATH 1090. We have become particularly concerned after recent changes to the high school curriculum. Particularly, those students who complete Academic Math 3201 are at great risk of failing MATH 1090. Over the last two years, the failure rates in the Fall semester have been high (34% and 38%). However, the failure rate in the Winter semester, which had typically been around 30%, has risen to 43% and 52%. As the majority of the students who would take MATH 1090 in the Winter semester would have previously taken the course in the Fall, we interpret this as an extremely unprepared cohort of students who, after a year, have failed MATH 1090 not once, but twice.

In the past we could have dealt with this problem by changing the prerequisites for this course. Students who no longer met these prerequisites would have been required to attend the Math Learning Centre, and take a series of non-credit foundation courses, 102F, 103F, and 104F. After completing 104F, these students would have been eligible to take MATH 1090 with a firmer grasp of mathematical essentials. However, as part of the recent cutbacks, the Math Learning Centre has been shut down, so this path is no longer an option.

Instead, we will re-direct some of the students that would previously have entered MATH 1090 to MATH 109A/B. These linked courses will bridge this gap, covering the same material as MATH 1090 at a slower pace, and with increased classroom supports, including smaller class sizes, an increased emphasis on in-class problem solving, and in-class Teaching Assistants.

**Consultations Sought From**

1.   Grenfell Campus  
2.   Marine Institute  
3.   Faculty of Humanities and Social Sciences  
4.   Faculty of Business Administration  
5.   Faculty of Education  
6.   Faculty of Engineering and Applied Science  
7.   Faculty of Medicine  
8.   School of Human Kinetics and Recreation  
9.   School of Music  
10.  School of Nursing  
11.  School of Pharmacy  
12.  School of Social Work  
13.  Department of Biochemistry  
14.  Department of Biology

**Comments Received**  

Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No  
Yes/No
15. Department of Chemistry
16. Department of Computer Science
17. Department of Earth Sciences
18. Department of Ocean Sciences
19. Department of Physics and Physical Oceanography
20. Department of Psychology

Library Report Received

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:
Math Consult

From: Math Consult <mathconsult@mun.ca>
Sent: November-02-16 1:58 PM
To: Hicks, Sue; engrconsult@mun.ca; Hickey, Marie; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharminfo@mun.ca; adeanugradswk; Library Correspondence; associatevpoffce@grenfell.mun.ca; miugconsultations@mi.mun.ca; Griffiths, Stacey; Biochemistry Head; Marino, Paul; chemhead@mun.ca; cs-chair@mun.ca; jhanchar@mun.ca; mathconsult@mun.ca; Fletcher, Garth; physicshead@mun.ca; psychology.head@mun.ca; fba.ad.undergrad@mun.ca
Subject: Math & Stats Calendar Proposal: MATH 109A/B
Attachments: MATH 109AB ver.3.pdf

Please find attached a current proposal to introduce MATH 109A/B into the list of Math & Stats course offerings listed in the Calendar. This two-term linked course will provide an avenue towards Math 1000 for a student demographic historically unsuccessful in MATH 1090. Reply to this email address (mathconsult@mun.ca) with comments.

Regards,
Tara

--
Tara Stuckless | Program Officer
Department of Mathematics and Statistics
Memorial University of Newfoundland
HH 3004; (709) 864 8914; mathconsult@mun.ca
Math Consult

From: Ambi, Alison <aambi@mun.ca>
Sent: November-03-16 8:36 AM
To: mathconsult@mun.ca
Cc: White, Louise
Subject: RE: Math & Stats Calendar Proposal: MATH 109A/B
Attachments: CollectionEvaluation-MATH109AB.docx

Hello Tara,
Statement from the library attached.
Alison

Alison Ambi
Science Research Liaison Librarian
Room L2027B
QE2 Library
Memorial University of Newfoundland
www.library.mun.ca
709 864 7125

From: Library Correspondence
Sent: November-03-16 7:51 AM
To: Ambi, Alison
Cc: White, Louise
Subject: FW: Math & Stats Calendar Proposal: MATH 109A/B

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: Wednesday, November 02, 2016 1:59 PM
To: Hicks, Sue; enerconsult@mun.ca; Hickey, Marie; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharminfo@mun.ca; adeanugradswk; Library Correspondence; associateprovoffice@grenfell.mun.ca; miumgconsultations@mi.mun.ca; Griffiths, Stacey; Biochemistry Head; Marino, Paul; chemhead@mun.ca; cs-chair@mun.ca; jhanchar@mun.ca; mathconsult@mun.ca; Fletcher, Garth; physicshead@mun.ca; psychology.head@mun.ca; fba.ad.undergrad@mun.ca
Subject: Math & Stats Calendar Proposal: MATH 109A/B

Please find attached a current proposal to Introduce MATH 109A/B into the list of Math & Stats course offerings listed in the Calendar. This two-term linked course will provide an avenue towards Math 1000 for a student demographic historically unsuccessful in MATH 1090. Reply to this email address (mathconsult@mun.ca) with comments.

Regards,
Tara

--
Tara Stuckless | Program Officer
Department of Mathematics and Statistics
Memorial University of Newfoundland
HH 3004; (709) 864 8914; mathconsult@mun.ca
Math Consult

From: Glew, Csop <cglew@mun.ca>
Sent: November-03-16 9:09 AM
To: 'mathconsult@mun.ca'
Cc: Dillon, Carla
Subject: RE: Math & Stats Calendar Proposal: MATH 109A/B

Hello
Dr. Dillon, Associate Dean (Undergraduate) has reviewed the proposed calendar change and has no comments.

Csop Glew

CSOP GLEW, Hon. B.A., M.U.P.  I  MANAGER OF ACADEMIC PROGRAMS
School of Pharmacy
Memorial University of Newfoundland
St. John’s, NL I A18 3V6
Health Sciences Centre I Room H3435
T 709 777 6963 I F 709 777 7044
www.mun.ca/pharmacy
Please note: the deadline to apply for admission to the Doctor of Pharmacy (PharmD) program in September 2017 is February 1, 2017.

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Medication Therapy Services Clinic
www.mtsclinic.ca

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: November-02-16 1:59 PM
To: Hicks, Sue; engrconsult@mun.ca; Hickey, Marie; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharminfo@mun.ca; adeanugradswk; Library Correspondence; associatevpoffice@grenfell.mun.ca; miguconsultations@mi.mun.ca; Griffiths, Stacey; Biochemistry Head; Marino, Paul; chemhead@mun.ca; cs-chair@mun.ca; jhanchar@mun.ca; mathconsult@mun.ca; Fletcher, Garth; physhead@mun.ca; psychology.head@mun.ca; fba.ad.undergrad@mun.ca
Subject: Math & Stats Calendar Proposal: MATH 109A/B

Please find attached a current proposal to introduce MATH 109A/B into the list of Math & Stats course offerings listed in the Calendar. This two-term linked course will provide an avenue towards Math 1000 for a student demographic historically unsuccessful in MATH 1090. Reply to this email address (mathconsult@mun.ca) with comments.

Regards,
Tara
Hi Tara

Biochemistry is supportive. Just one suggestion that may help avoid possible confusion

On p6 of the proposal - summary page for Senate - the second paragraph under Secondary Calendar Changes is edited:

"Students may apply for admission into first year of the Bachelor of Commerce (Co-operative) program (Terms A/B) directly from high school by indicating this in the appropriate place on their Undergraduate Application for Admission/Readmission to Memorial University of Newfoundland. Direct entry from high school is subject to the applicant’s final acceptance to the University and admissibility into either Mathematics 1000, or 1090 or 109A/B. Terms A/B normally starts in September."

The reference to Terms A/B in the final sentence could be interpreted to refer to the offering of 109A/B in the sentence immediately preceding rather than to Terms A/B of the BComm (Coop) program. I suggest switching the order of the second and third sentences to avoid this.

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

Associate Member
Beatrice Hunter Cancer Research Institute

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

From: Math Consult [mathconsult@mun.ca]
Sent: November 2, 2016 1:59 PM
To: Hicks, Sue; engrconsult@mun.ca; Hickey, Marie; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharinfo@mun.ca; adeanugradswk; Library Correspondence; associatevpoffice@grenfell.mun.ca; miugconsultations@mi.mun.ca; Griffiths, Stacey; Biochemistry Head; Marino, Paul; chemhead@mun.ca; cs-chair@mun.ca; jhanchar@mun.ca; mathconsult@mun.ca; Fletcher, Garth; physicshead@mun.ca; psychology.head@mun.ca; fba.ad.undergrad@mun.ca
Subject: Math & Stats Calendar Proposal: MATH 109A/B

Please find attached a current proposal to introduce MATH 109A/B into the list of Math & Stats course offerings listed in the Calendar. This two-term linked course will provide an avenue towards Math 1000 for a student demographic historically unsuccessful in MATH 1090. Reply to this email address (mathconsult@mun.ca) with comments.
Math Consult

From: Math Consult <mathconsult@mun.ca>
Sent: November-14-16 2:19 PM
To: 'Biochemistry Head'
Subject: RE: Math & Stats Calendar Proposal: MATH 109A/B

Good point. Thanks very much for the catch.

Tara

From: Biochemistry Head [mailto:biohead@mun.ca]
Sent: November-10-16 10:43 AM
To: Math Consult <mathconsult@mun.ca>
Subject: RE: Math & Stats Calendar Proposal: MATH 109A/B

Hi Tara

Biochemistry is supportive. Just one suggestion that may help avoid possible confusion

On p6 of the proposal - summary page for Senate - the second paragraph under Secondary Calendar Changes is edited:

"Students may apply for admission into first year of the Bachelor of Commerce (Co-operative) program (Terms A/B) directly from high school by indicating this in the appropriate place on their Undergraduate Application for Admission/Readmission to Memorial University of Newfoundland. Direct entry from high school is subject to the applicant's final acceptance to the University and admissibility into either Mathematics 1000, or 1090 or 109A/B. Terms A/B normally starts in September."

The reference to Terms A/B in the final sentence could be interpreted to refer to the offering of 109A/B in the sentence immediately preceding rather than to Terms A/B of the BComm (Coop) program. I suggest switching the order of the second and third sentences to avoid this.

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

Associate Member
Beatrice Hunter Cancer Research Institute

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

From: Math Consult [mathconsult@mun.ca]
Sent: November 2, 2016 1:59 PM
To: Hicks, Sue; engrconsult@mun.ca; Hickey, Marie; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse;
Math Consult

From: Math Consult <mathconsult@mun.ca>  
Sent: November-14-16 2:25 PM  
To: 'Shannon Patrick Sullivan'  
Subject: RE: FW: Math & Stats Calendar Proposal: MATH 109A/B

Gotcha. Will reconsider, and consult Larry if I put forward the change. -Tara

-----Original Message-----
From: Shannon Patrick Sullivan [mailto:shannon@mun.ca]  
Sent: November-14-16 2:22 PM  
To: Math Consult <mathconsult@mun.ca>  
Subject: Re: FW: Math & Stats Calendar Proposal: MATH 109A/B

Hi Tara,

> In case you aren't checking mathconsult, I think this is a good suggestion.
> My practice when it comes to secondary Calendar changes which affect other units is to try to alter as little of the original wording as possible, unless I've got that unit's say-so to do more.

So, in this case, I'd suggest checking with Larry Bauer in Business to see if he'd be okay with the re-ordering of the sentences.

Cheers,  
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 · www.uces.mun.ca/~shannon
Hi:

I would have absolutely no problem with that change.

thanks
--larry

On Nov 15, 2016, at 10:56 AM, Math Consult <mathconsult@mun.ca> wrote:

Hello Dr. Bauer,

Math & Stats is introducing a linked MATH 109A/B course to formalize the Math 1090 [Extended] offering that we have in place currently. There is a secondary calendar change in your section of the calendar that I wanted to run by you. We have put forward the following:

Under the Faculty of Business Administration, page 84, 2016-2017 Calendar, amend 5.2.1.1 Direct Entry (for High School Students) as follows:

"Students may apply for admission into first year of the Bachelor of Commerce (Co-operative) program (Terms A/B) directly from high school by indicating this in the appropriate place on their Undergraduate Application for Admission/Readmission to Memorial University of Newfoundland. Direct entry from high school is subject to the applicant’s final acceptance to the University and admissibility into either Mathematics 1000, or 1090 or 109A/B. Terms A/B normally starts in September."

I’d gotten feedback that the referral to both 109A/B and the Commerce Terms A/B may be confusing to students. Would Business be okay with the following re-write?

"Students may apply for admission into first year of the Bachelor of Commerce (Co-operative) program (Terms A/B) directly from high school by indicating this in the appropriate place on their Undergraduate Application for Admission/Readmission to Memorial University of Newfoundland. Direct entry from high school is subject to the applicant’s final acceptance to the University and admissibility into either Mathematics 1000, or 1090 or 109A/B."

Thanks for your input,
Tara

--
Tara Stuckless Program
Officer
Mathematics & Statistics
HH-3004, x8914, mathgrad@mun.ca
November 25, 2016

TO: All Members, Faculty Council of Science

FROM: Joan Burry, Secretary
       Committee on Undergraduate Studies, Faculty of Science

SUBJECT: Calendar Changes, New Course and New Program Proposals

At meetings held on November 15 and November 22, 2016, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Physics and Physical Oceanography
   - Changes to course description of Physics 3800

2. Department of Earth Sciences
   (i) Calendar changes to amend the course descriptions for seven Earth Sciences courses, including prerequisite changes
   (ii) Calendar changes to the Earth Sciences major programs with respect to the required first year Chemistry courses

3. Department of Mathematics and Statistics
   (i) Calendar change to the course description of Mathematics 3000
   (ii) Proposal for new course: Mathematics 109A/B

4. Faculty of Science
   - Proposal for joint Bachelor of Science and Bachelor of Arts degree program

[Signature]
Jean Burry

Associate Registrar and
Secretary, Committee
on Undergraduate Studies,
Faculty of Science
Proposal
New Program:
Joint Degrees of Bachelor of Arts and Bachelor of Science

Executive Summary

We propose to introduce a new joint degree program through which a student can complete both a Bachelor of Arts and a Bachelor of Science while completing fewer credit hours than would currently be required by University regulations governing a second degree.

Resource Implications: Instructional Costs

While it is to be hoped that the proposed program would result in an increased number of majors across both the Faculty of Science and the Faculty of Humanities and Social Sciences, we anticipate that these would be sufficiently disseminated across all of the majors offered by both faculties such that there would be no direct resource implications.

Consultations

Comments were received from members of the Faculty of Humanities and Social Sciences and the Faculty of Science, as well as the Marine Institute. In response to this feedback, three additions were made to the proposed regulations: greater clarity concerning the ability to "double count" courses in certain departments; stronger encouragement to seek academic advice, especially with regards to course planning; and a limitation on the number of courses which may be taken outside of the Faculty of Humanities and Social Sciences and the Faculty of Science, in order to ensure that all students in the program exhibit comparable specialisation in the two Faculties regardless of the number of "double-counted" courses taken.

Library Holdings and/or Other Resources Required

As indicated in the attached memo from Amanda Tiller-Hackett, Humanities Collection Development Librarian, and Erin Alcock, Science Research Liaison Librarian, these changes will not require additional library holdings.

The costs, if any, associated with this change/these changes can be met from within the existing budget allocation or authorized new funding for the Faculty of Humanities and Social Sciences and the Faculty of Science.

Signature of Dean:

Date:
SUMMARY PAGE FOR SENATE

Approval Form

Program Title

Joint Degree of Bachelor of Arts and Bachelor of Science

Course Additions

None.

Calendar Entry

Under the Faculty of Humanities and Social Sciences, Program Regulations — General and Honours Degrees, add a new Regulation 5.6 as follows:

"5.6 Joint Degrees of Bachelor of Arts and Bachelor of Science

Students who wish to simultaneously pursue a Bachelor of Arts program and a Bachelor of Science program may do so by completing a minimum of 135 credit hours in courses, rather than the minimum of 150 credit hours required under General Academic Regulations (Undergraduate) – Residency Requirements – Second Degree.

Students who complete the Joint Degrees of Bachelor of Arts and Bachelor of Science are not required to complete a minor. Students may complete the requirements for a minor, or an additional (third) major, in accordance with General Academic Regulations (Undergraduate) – Degree and Departmental Regulations – Further Credentials.

Credit hours earned in Computer Science, Economics, Geography, Mathematics and Statistics, and Psychology may be eligible to simultaneously satisfy a requirement for credit hours in the Faculty of Humanities and Social Sciences and a requirement for credit hours in the Faculty of Science.

Careful planning of courses is crucial to ensure timely completion of the Joint Degrees of Bachelor of Arts and Bachelor of Science. Students enrolled in this program, or who plan to enroll in this program, are strongly encouraged to consult regularly with appropriate academic advisors in both the Faculty of Humanities and Social Sciences and the Faculty of Science. It may not be possible to complete the requirements for the Joint Degrees in the normal time if the decision to embark on the program is delayed.

Students who have enrolled in the Joint Degrees of Bachelor of Arts and Bachelor of Science must satisfy all program requirements before they may be granted either the degree of Bachelor of Arts or the degree of Bachelor of Science, and must graduate with both degrees at the same convocation.

1. The minimum of 135 credit hours for the Joint Degrees of Bachelor of Arts and Bachelor of Science shall include:
   a. a Major program chosen from those majors offered by departments within the Faculty of Humanities and Social Sciences and the interdisciplinary Arts majors, with the exception of majors offered by the Department of Computer Science, the Department of Mathematics and Statistics, and the Department of Psychology;
   b. a Major program chosen from those majors offered by departments within the Faculty of Science, with the exception of majors offered by the Department of Economics and the Department of Geography;
   c. the Core Requirements for the Faculty of Humanities and Social Sciences (including the Breadth of Knowledge Requirement, the Critical Reading and Writing Requirement, the Language Study Requirement, and the Quantitative Reasoning Requirement), for which the Quantitative Reasoning Requirement shall be satisfied by six credit hours in Mathematics courses;
   d. six credit hours in courses from each of two Sciences other than Mathematics;
   e. a total of at least 78 credit hours in courses offered by departments within the Faculty of Humanities and Social Sciences, and a total of at least 78 credit hours offered by departments within the Faculty of Science;
   f. no more than six credit hours in courses offered by a Faculty or School other than the Faculty of Humanities and Social Sciences or the Faculty of Science.

While the Joint Degrees of Bachelor of Arts and Bachelor of Science is available to all Major programs offered by the Faculty of Humanities and Social Sciences and the Faculty of Science, students pursuing a major outside of Computer
Science, Economics, Geography, Psychology, Pure Mathematics or Statistics should pay special attention to course planning and selection to ensure that this requirement is met within the required 135 credit hours.

2. Admission to the Major programs shall be governed by Faculty of Humanities and Social Sciences – Admission to the Bachelor of Arts General Degree Programs and Faculty of Science – Degree Regulations – Admission to the Department of Subject of Major.

3. Where an admission requirement or program regulation for the Major program from the Faculty of Science includes English 1080 and English 1110 (or equivalent), such requirements may instead be satisfied by the completion of three credit hours in any 1000-level Critical Reading and Writing (CRW) course offered by the Department of English, and an additional three credit hours in any Faculty of Humanities and Social Sciences course whose title begins with “Critical Reading and Writing” chosen from those listed under Core Requirements – Critical Reading and Writing (CRW) Requirement for the Bachelor of Arts.

4. Students who have already completed a bachelor’s degree are not eligible to complete the Joint Degrees of Bachelor of Arts and Bachelor of Science, but may separately complete a Bachelor of Arts or a Bachelor of Science in accordance with General Academic Regulations (Undergraduate) – Residence Requirements – Second Degree.

Under the Faculty of Science, Degree Regulations, add a new Regulation 6.6 as follows:

“6.6 Joint Degrees of Bachelor of Arts and Bachelor of Science

Students who wish to simultaneously pursue a Bachelor of Arts program and a Bachelor of Science program may do so by completing a minimum of 135 credit hours in courses, rather than the minimum of 150 credit hours required under General Academic Regulations (Undergraduate) – Residence Requirements – Second Degree.

Students who complete the Joint Degrees of Bachelor of Arts and Bachelor of Science are not required to complete a minor. Students may complete the requirements for a minor, or an additional (third) major, in accordance with General Academic Regulations (Undergraduate) – Degree and Departmental Regulations – Further Credentials.

Credit hours earned in Computer Science, Economics, Geography, Mathematics and Statistics, and Psychology may be eligible to simultaneously satisfy a requirement for credit hours in the Faculty of Humanities and Social Sciences and a requirement for credit hours in the Faculty of Science.

Careful planning of courses is crucial to ensure timely completion of the Joint Degrees of Bachelor of Arts and Bachelor of Science. Students enrolled in this program, or who plan to enroll in this program, are strongly encouraged to consult regularly with appropriate academic advisors in both the Faculty of Humanities and Social Sciences and the Faculty of Science. It may not be possible to complete the requirements for the Joint Degrees in the normal time if the decision to embark on the program is delayed.

Students who have enrolled in the Joint Degrees of Bachelor of Arts and Bachelor of Science must satisfy all program requirements before they may be granted either the degree of Bachelor of Arts or the degree of Bachelor of Science, and must graduate with both degrees at the same convocation.

1. The minimum of 135 credit hours for the Joint Degrees of Bachelor of Arts and Bachelor of Science shall include:
   a. a Major program chosen from those majors offered by departments within the Faculty of Humanities and Social Sciences and the interdisciplinary arts majors, with the exception of majors offered by the Department of Computer Science, the Department of Mathematics and Statistics, and the Department of Psychology;
   b. a Major program chosen from those majors offered by departments within the Faculty of Science, with the exception of majors offered by the Department of Economics and the Department of Geography;
   c. the Core Requirements for the Faculty of Humanities and Social Sciences (including the Breadth of Knowledge Requirement, the Critical Reading and Writing Requirement, the Language Study Requirement, and the Quantitative Reasoning Requirement), for which the Quantitative Reasoning Requirement shall be satisfied by six credit hours in Mathematics courses;
   d. six credit hours in courses from each of two Sciences other than Mathematics;
   e. a total of at least 78 credit hours in courses offered by departments within the Faculty of Humanities and Social Sciences, and a total of at least 78 credit hours offered by departments within the Faculty of Science;
   f. no more than six credit hours in courses offered by a Faculty or School other than the Faculty of Humanities and Social Sciences or the Faculty of Science.

While the Joint Degrees of Bachelor of Arts and Bachelor of Science is available to all Major programs offered by the Faculty of Humanities and Social Sciences and the Faculty of Science, students pursuing a major outside of Computer Science, Economics, Geography, Psychology, Pure Mathematics or Statistics should pay special attention to course planning and selection to ensure that this requirement is met within the required 135 credit hours.

2. Admission to the Major programs shall be governed by Faculty of Humanities and Social Sciences – Admission to the Bachelor of Arts General Degree Programs and Faculty of Science – Degree Regulations – Admission to the Department of Subject of Major.
3. Where an admission requirement or program regulation for the Major program from the Faculty of Science includes English 1080 and English 1110 (or equivalent), such requirements may instead be satisfied by the completion of three credit hours in any 1000-level Critical Reading and Writing (CRW) course offered by the Department of English, and an additional three credit hours in any Faculty of Humanities and Social Sciences course whose title begins with "Critical Reading and Writing" chosen from those listed under Core Requirements – Critical Reading and Writing (CRW) Requirement for the Bachelor of Arts.

4. Students who have already completed a bachelor's degree are not eligible to complete the Joint Degrees of Bachelor of Arts and Bachelor of Science, but may separately complete a Bachelor of Arts or a Bachelor of Science in accordance with General Academic Regulations (Undergraduate) – Residence Requirements – Second Degree."

Rationale

Every year, there is a small but significant number of undergraduate students at Memorial who are in the process of completing both a Bachelor of Arts and a Bachelor of Science: there were 26 such students in 2011-2012 and 2012-2013, 25 students in 2013-2014, and 20 students in 2014-2015. This compares favourably with the number of students who are completing the existing Joint Degrees of Bachelor of Arts and Bachelor of Commerce (Co-operative), which enjoyed enrollments of 36 students in 2011-2012 and 2012-2013, 41 students in 2013-2014, and 38 students in 2014-2015. This level of interest has come about despite the fact that there is no formal arrangement for these Arts/Science students: they must simply follow the existing regulations governing the awarding of a second undergraduate degree (that is, General Academic Regulation 6.3.3). These students are also required to satisfy "breadth" requirements for both the Bachelor of Arts and Bachelor of Science programs which are made effectively redundant when a student is pursuing both degrees. In particular, the Arts requirement of two Quantitative Reasoning (QR) courses is satisfied by the Science requirement of two courses in Mathematics, while the spirit of the Science requirement of two 1000-level courses in English is amply fulfilled via the Core Requirements for the Faculty of Humanities and Social Sciences. Furthermore, the Major for the Bachelor of Science effectively takes the place of the Minor normally required of students completing an Arts degree.

As such, the Faculty of Humanities and Social Sciences and the Faculty of Science feel that it would be appropriate to introduce formally a Joint Degrees of Bachelor of Arts and Bachelor of Science program in parallel with the existing Joint Degrees of Bachelor of Arts and Bachelor of Commerce (Co-operative). This program would require a minimum of 135 credit hours (see Why 135 Hours? below) and, consequently, we believe that this program would not only appeal to those students currently completing a Bachelor of Arts and a Bachelor of Science simultaneously, but would also inspire additional students to pursue studies in both Faculties rather than settling for a single degree. While the 135 credit hours requirement is still in excess of a normal four-year course load, we feel that this program would appeal to ambitious and highly-achieving students who will enter the University having already earned post-secondary credit hours (for example, through Concurrent Studies, the Advanced Placement program, or the International Baccalaureate program) and/or who would be willing to take courses outside of the normal Fall/Winter sequence, and hence would still be able to complete the proposed program within four years.

The 2016-2017 Calendar includes revised requirements for the Bachelor of Arts which prevent students completing that degree from selecting both a Major and a Minor in a discipline formally housed with the Faculty of Science. In the spirit of that regulation, and furthermore to ensure that students who pursue the Joint Degrees of Bachelor of Arts and Bachelor of Science genuinely specialise in both the Humanities and Social Sciences and in Science, students in the proposed program will be precluded from completing an Arts Major in a discipline housed within the Faculty of
Science (namely Computer Science, Psychology, Pure Mathematics or Statistics), and from completing a Science Major in a discipline housed with the Faculty of Humanities and Social Sciences (namely Economics or Geography).

Why 135 credit hours?

The University’s regulations governing a second undergraduate degree (most notably General Academic Regulation 6.3.3) stipulate that, in addition to meeting the program requirements for the second degree, students must complete at least 30 credit hours in excess of those completed to satisfy their first degree. Since the Bachelor of Arts and the Bachelor of Science both specify that students must complete a minimum of 120 credit hours, obtaining an Arts degree and a Science degree (in either order) would therefore require a minimum of 150 credit hours.

We propose that the Joint Degrees of Bachelor of Arts and Bachelor of Science program should stand as an exception to General Academic Regulation 6.3.3 in recognition of the complementary relationship which exists between the Bachelor of Arts and Bachelor of Science programs, as described above. We feel that a student who completes the proposed program will have fulfilled all of the objectives of both degree programs within the prescribed minimum of 135 credit hours, and that demanding the completion of a total of 150 credit hours would pose a deterrent to such a student without the guarantee of any meaningful enrichment of the student’s overall learning outcomes.

At the same time, we also recognise that the spirit of General Academic Regulation 6.3.3 demands that a student should earn two Memorial University undergraduate degrees only by undertaking additional work beyond that required of a single degree. As such, although a student may be able to satisfy all of the requirements of the proposed program in 120 credit hours (at least for certain combinations of Majors and carefully selected elective courses), we do not believe that it would be appropriate to reduce the minimum number of credit hours to the same amount required for the Bachelor of Arts or Bachelor of Science programs individually.

In summary, we feel that the proposed requirement of 135 credit hours represents a suitable compromise between General Academic Regulation 6.3.3 and the individual requirements for the Bachelor of Arts and the Bachelor of Science degrees. We note that, by setting the total number of credit hours equal to 15 credit hours fewer than required by General Academic Regulation 6.3.3, the proposed program would be consistent with the Joint Degrees of Bachelor of Arts and Bachelor of Commerce (Co-operative).

Consultations Sought From

<table>
<thead>
<tr>
<th>1. Grenfell Campus</th>
<th>Comments Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Marine Institute</td>
<td>No</td>
</tr>
<tr>
<td>3. Faculty of Humanities and Social Sciences</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Faculty of Science</td>
<td>Yes</td>
</tr>
<tr>
<td>5. Faculty of Business Administration</td>
<td>No</td>
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<tr>
<td>6. Faculty of Education</td>
<td>No</td>
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<tr>
<td>7. Faculty of Engineering and Applied Science</td>
<td>No</td>
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<tr>
<td>8. Faculty of Medicine</td>
<td>No</td>
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<tr>
<td>9. School of Human Kinetics and Recreation</td>
<td>No</td>
</tr>
<tr>
<td>10. School of Music</td>
<td>No</td>
</tr>
</tbody>
</table>
11. School of Nursing  
   No  
12. School of Pharmacy  
   No  
13. School of Social Work  
   No  

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:  
12 October 2016

TO: Dr. Alex Marland, Associate Dean of Humanities and Social Sciences (Undergraduate)

FROM: Amanda Tiller-Hackett, Humanities Collection Development Librarian
       Erin Alcock, Science Research Liaison Librarian

SUBJECT: Proposal: New Program: Joint Degrees of Bachelor of Arts and Bachelor of Science

The proposal to create a joint Bachelor of Arts and Bachelor of Science degree option is an effort to create a straight-forward option for students who wish to pursue both degrees. After having read the proposal, it appears that students will complete courses that are currently offered and, thus, currently supported by library holdings. The CRW core requirement, recently adopted by the Faculty of Humanities and Social Sciences, is also supported by library holdings, and by the Library Instruction program. For a preliminary list of library holdings in support of the CRW, please see https://www.mun.ca/hss/programs/undergraduate/crw_resources.php

As it currently stands, there are no library resource implications inherent in this proposal. Any new course proposals to support this new degree option will be assessed by the library on an individual basis, following the standard procedure.
Subject: FW: Consultation: Joint Degrees of Bachelor of Arts and Bachelor of Science
From: "Marland, Alex" <amarland@mun.ca>
Date: 13/10/2016 4:11 PM
To: "Sullivan, Shannon" <shannon@mun.ca>, "Associate Dean of Science (Research)"
<adsr@mun.ca>

FYI...

From: Griffiths, Stacey
Sent: October-13-16 4:09 PM
To: Marland, Alex <amarland@mun.ca>
Subject: FW: Consultation: Joint Degrees of Bachelor of Arts and Bachelor of Science

From: Dawn King [mailto:Dawn.King@mi.mun.ca] On Behalf Of MIUG Consultations
Sent: October 13, 2016 2:42 PM
To: Griffiths, Stacey
Subject: RE: Consultation: Joint Degrees of Bachelor of Arts and Bachelor of Science

Alex,

Apologies for the tardy response on the proposal for the joint degrees in Bachelor of Arts and Bachelor of Science.

Thank you again for the opportunity to review and comment.

Feedback from the Marine Institute on this proposal has been generally positive. It is seen as being beneficial to the student body in general. The only comment regarding the specific wording is around the calculating of the 135 credit hours. Reviewers were somewhat confused by the statement that a minimum of 78 credit hours were required from each of the faculties. I received a number of questions asking about the mathematics of how adding the two minimums of 78 provided a minimum of 135 credit hours. This confusion was caused by an ignorance of the crossover programs in the faculties and how the same credit hours could be used in both. The wording on this issue was fine.

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

All the best.

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>

FROM: Mercer, Stacey [mailto:staceym@mun.ca]
Sent: Monday, September 26, 2016 8:54 AM
Subject: Consultation: Joint Degrees of Bachelor of Arts and Bachelor of Science

Forwarded on behalf of Dr. Alex Marland, Associate Dean of Humanities and Social Sciences (Undergraduate):
Dear faculty members:

I am writing to extend an opportunity for you to provide formal feedback on the attached proposal to create a new joint degree program. If available, an executive summary appears below for your convenience.

Formal comments on the attached proposal, if any, should be sent to Stacey Griffiths at stacey@mun.ca as soon as possible. Written feedback received within 14 days of the date of this request will be appended to the proposal's submission to CUGS, St. John's campus.

If you need more time, please advise Stacey straight away.

Alex Marland
Associate Dean (Undergraduate)

Faculty of Humanities and Social Sciences

We propose to introduce a new joint degree program through which a student can complete both a Bachelor of Arts and a Bachelor of Science while completing fewer credit hours than would currently be required by University regulations governing a second degree.

This email is governed by the Terms and Conditions found in our Disclaimer.<http://www.mun.ca/ict/disclaimer>.

Attachments:

- winmail.dat

14.7 kB
Subject: Fwd: consultation for proposed Joint BA/BSc
From: Shannon Patrick Sullivan <shannon@mun.ca>
Date: 09/11/2016 11:30 PM
To: Shannon Sullivan <shannon@mun.ca>

Begin forwarded message:

From: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca<mailto:adsu@mun.ca>>
Subject: Re: Proposal for Joint BA/BSc
Date: November 4, 2016 at 11:24:10 AM GMT-2:30
To: Sharene Bungay <sharene@mun.ca<mailto:sharene@mun.ca>>

Thank you, Sharene.

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE
(Administration & Undergraduate)
Memorial University
St. John’s, NL, Canada A1B 3X7
T 709-864-8155
adsu@mun.ca<mailto:adsu@mun.ca>

On Nov 4, 2016, at 11:20 AM, Sharene Bungay <sharene@mun.ca<mailto:sharene@mun.ca>> wrote:

Hi Andy,
The Computer Science Undergraduate Studies Committee has reviewed
the proposal for a Joint BA/BSc. We have no objections.
Cheers,
Sharene.

From: Sharene Bungay <sharene@mun.ca<mailto:sharene@mun.ca>>
Subject: Proposal for Joint BA/BSc
Date: November 4, 2016 at 11:16:25 AM GMT-2:30
To: "sharene@mun.ca<mailto:sharene@mun.ca>" > Sharene Bungay" <sharene@mun.ca<mailto:sharene@mun.ca>>

Hi Andy,
The Computer Science Undergraduate Studies Committee has reviewed
the proposal for a Joint BA/BSc. We have no objections.
Cheers,
Sharene.

From: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca<mailto:adsu@mun.ca>>
Subject: Re: Consultation request for proposed Joint BA/BSc
Date: October 31, 2016 at 2:04:31 PM GMT-2:30
To: Martin Plumer <plumer@mun.ca><mailto:plumer@mun.ca>
Cc: "Lagowski, Jolanta" <jolantal@mun.ca><mailto:jolantal@mun.ca>

Thank you, Martin.

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE
(Administration & Undergraduate)
Memorial University
St. John's, NL, Canada A1R 3X7
T 709-864-8155
adsu@mun.ca<mailto:adsu@mun.ca>

On Oct 31, 2016, at 1:59 PM, Martin Plumer <plumer@mun.ca><mailto:plumer@mun.ca> wrote:

Hi Andy,

Physics has no issues with this proposal.

- Martin

From: Physics Head [mailto:physicshead@mun.ca]
Sent: October-05-16 8:48 AM
To: Martin Plumer
Cc: Rick Goulding
Subject: FW: Consultation request for proposed Joint BA/BSc

Martin,
For the USC review.
Jolanta

From: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca><mailto:adsu@mun.ca>
Date: Tuesday, October 4, 2016 at 4:57 PM
To: Minglun Gong <cs-chair@mun.ca><mailto:cs-chair@mun.ca>, Jolanta Lagowski <physicshead@mun.ca><mailto:physicshead@mun.ca>, Biochemistry Head <biohead@mun.ca><mailto:biohead@mun.ca>, Travis Fridgen <chemhead@mun.ca><mailto:chemhead@mun.ca>, "Fletcher, Garth" <fletcher@mun.ca><mailto:fletcher@mun.ca>, "Marino, Paul" <pmarino@mun.ca><mailto:pmarino@mun.ca>, John Hanchar <jhanchar@mun.ca><mailto:jhanchar@mun.ca>, Chris Radford <math-head@mun.ca><mailto:math-head@mun.ca>, psychhead <Psychology.Head@mun.ca><mailto:Psychology.Head@mun.ca>
Cc: "Wall, Mary" <maryw@mun.ca><mailto:maryw@mun.ca>, "Sullivan, Shannon" <shannon@mun.ca><mailto:shannon@mun.ca>, "Burry, Joan" <jburry@mun.ca><mailto:jburry@mun.ca>, "Kenny, Gail" <gkenny@mun.ca><mailto:gkenny@mun.ca>, Psych Secretary <psychsecretary@mun.ca><mailto:psychsecretary@mun.ca>, "Gaslard, Betty Ann" <elewis@mun.ca><mailto:elewis@mun.ca>, Diane Guzzwell <dguzzwell@mun.ca><mailto:dguzzwell@mun.ca>, Leonce Morrissey <leonce@mun.ca><mailto:leonce@mun.ca>, "Coombs, Donna Geraldine" <dcoombs@mun.ca><mailto:dcoombs@mun.ca>, Regina Edwards <redwards@mun.ca><mailto:redwards@mun.ca>, Rosalind Collins <collinsr@mun.ca><mailto:collinsr@mun.ca>, "Kenny, Shirley" <shirleyk@mun.ca><mailto:shirleyk@mun.ca>, "Sparkes, Winnie" <wsparkes@mun.ca><mailto:wsparkes@mun.ca>
Subject: Consultation request for proposed Joint BA/BSc

Good afternoon,

Attached is a proposed Calendar change from the Faculty of Science and Faculty of Humanities and Social Sciences for a joint degree program for Degrees of Bachelor of Arts and Bachelor of Science.

I look forward to your comments. Please reply to adsu@mun.ca<mailto:adsu@mun.ca> by November 1, 2016.

Thank you,

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE
(Administration & Undergraduate)
Memorial University
St. John's, NL, Canada A1B 3X7
T 709-864-8155
adsu@mun.ca<mailto:adsu@mun.ca>

From: Martin Plumer <plumer@mun.ca<mailto:plumer@mun.ca>>

Subject: FW: Consultation request for proposed Joint BA/BSc

Date: October 31, 2016 at 1:57:08 PM GMT-2:30

To: "'Associate Dean of Science (Undergraduate)'" <adsu@mun.ca<mailto:adsu@mun.ca>>
Cc: "'Lagowski, Jolanta'" <jolantal@mun.ca<mailto:jolantal@mun.ca>>

Hi Andy,

Physics has no issues with this proposal.

- Martin

From: Physics Head [mailto:physicshead@mun.ca]
Sent: October-05-16 8:48 AM
To: Martin Plumer
Cc: Rick Goulding
Subject: FW: Consultation request for proposed Joint BA/BSc

Martin,

For the USC review.

Jolanta
From: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca>  
Date: Tuesday, October 4, 2016 at 4:57 PM  
To: Minglun Gong <cs-chair@mun.ca>, Jolanta Lagowski <biochemistry@mun.ca>, Biochemistry Head <chemhead@mun.ca>, Travis Fridgen <fletcher@mun.ca>, "Fletcher, Garth" <pmarino@mun.ca>, "Marino, Paul"  
Cc: "Wall, Mary" <maryw@mun.ca>, "Sullivan, Shannon" <shannon@mun.ca>, "Burry, Joan" <jburry@mun.ca>, "Kenny, Gail" <gkenny@mun.ca>, Psych Secretary <psychsecretary@mun.ca>, "Gaslard, Betty Ann" <elewis@mun.ca>, Diane Guzzwell <dguzzwell@mun.ca>, Leonce Morrissey <leonce@mun.ca>, "Coombs, Donna Geraldine" <dcoombs@mun.ca>, Regina Edwards <redwards@mun.ca>, Rosalind Collins <collinsr@mun.ca>, "Kenny, Shirley" <shirleyk@mun.ca>, "Sparkes, Winnie" <wsparkes@mun.ca>  
Subject: Consultation request for proposed Joint BA/BSc

Good afternoon,

Attached is a proposed Calendar change from the Faculty of Science and Faculty of Humanities and Social Sciences for a joint degree program for Degrees of Bachelor of Arts and Bachelor of Science.

I look forward to your comments. Please reply to adsu@mun.ca by November 1, 2016.

Thank you,

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE  
(Administration & Undergraduate)  
Memorial University  
St. John’s, NL, Canada A1B 3X7  
T 709-864-8155  
adsu@mun.ca
From: omeruvia <oscar@mun.ca<mailto:oscar@mun.ca>>

Subject: Fwd: Fwd: Consultation request for proposed Joint BA/BSc (fwd)

Date: October 26, 2016 at 2:52:42 PM GMT-2:30

To: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca<mailto:adsu@mun.ca>>

Hello Andy,

I received this consultation document about a joint degree between BA and BSc. I feel that the Science 1150 and 1151 courses should be considered as part of the proposed Joint degree, specially since we have been successfully preparing BA students for the BEd majors for many years now. As you know, the Science 1150 and 1151 courses are well suited as intro courses to Natural Sciences and include lab components. Students in the BA would definitely benefit from the Science courses if they later enrolled in any of the first year courses of the other FoS departments, particularly, if they attempted to take first year Biology, Physics, Chemistry or Earth Sciences courses.

We actually had many more BA students before, but we lost several of them when the former Faculty of Arts removed the Science courses as requirements and replaced them with their own Quantitative Reasoning courses. Since Science 1150 and 1151 do not count as Quantitative Reasoning courses for the BA, students taking Sc 1150/1151 in a joint degree would not get double credit for taking our courses as part of their Science requirements.

If there is currently a strong presence of BA students in Science courses, it is taking place in our Science 1150, 1151 and even Science 1000 courses. My suggestion for the proposal is to add the Science 1150 and 1151 as pre-requisites, or at least electives, for the proposed joint degree.

regards,

Oscar

---------- Original Message -------
Subject: Consultation request for proposed Joint BA/BSc (fwd)
Date: Wed, 5 Oct 2016 09:40:10 -0230 (NDT)
From: R. Edwards <redwards@mun.ca<mailto:redwards@mun.ca>>
To: sharene@mun.ca<mailto:sharene@mun.ca>, donna@mun.ca<mailto:donna@mun.ca>

---------- Forwarded message ----------
Date: Tue, 4 Oct 2016 19:27:33 +0000
From: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca<mailto:adsu@mun.ca>>
To: Minglun Gong <cs-chair@mun.ca<mailto:cs-chair@mun.ca>>, Physics Head <physicshead@mun.ca<mailto:physicshead@mun.ca>>, Biochemistry Head <biohead@mun.ca<mailto:biohead@mun.ca>>, Travis Fridgen <chemhead@mun.ca<mailto:chemhead@mun.ca>>, "Fletcher, Garth" <fletcher@mun.ca<mailto:fletcher@mun.ca>>, "Marino, Paul" <pmarino@mun.ca<mailto:pmarino@mun.ca>>, John Hanchar <jhanchar@mun.ca<mailto:jhanchar@mun.ca>>, Chris Radford <mathhead@mun.ca<mailto:math-head@mun.ca>>, psychhead <Psychology.Head@mun.ca<mailto:Psychology.Head@mun.ca>>
Cc: "Wall, Mary" <maryw@mun.ca<mailto:maryw@mun.ca>>, "Sullivan, Shannon" <shannon@mun.ca<mailto:shannon@mun.ca>>, "Burry, Joan" <jburry@mun.ca<mailto:jburry@mun.ca>>, "Kenny, Gail"
Good afternoon,

Attached is a proposed Calendar change from the Faculty of Science and Faculty of Humanities and Social Sciences for a joint degree program for Degrees of Bachelor of Arts and Bachelor of Science.

I look forward to your comments. Please reply to adsu@mun.ca<mailto:adsu@mun.ca> by November 1, 2016.

Thank you,

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE
(Administration & Undergraduate)
Memorial University
St. John's, NL, Canada A1B 3X7
T 709-864-8155
adsu@mun.ca<mailto:adsu@mun.ca>

--

Dr. Oscar Meruvia-Pastor

Assistant Professor
Department of Computer Science (cross),
Faculty of Science - Office of the Dean
Memorial University of Newfoundland

Office: C2047
Tel: (709) 864-8504
Fax: (709) 864-3316 (attn.)

From: Michelle Miskell <mmiskell@mun.ca<mailto:mmiskell@mun.ca>>

Subject: RE: Consultation request for proposed Joint BA/BSc

Date: October 20, 2016 at 4:03:02 PM GMT-2:30

To: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca<mailto:adsu@mun.ca>>

Hi Andy,
Earth Sciences has no comment about the attached proposal.

Best wishes,

Michelle

Ms. Michelle Miskell
Manager of Academic Programs
Department of Earth Sciences
Memorial University of Newfoundland
St. John's, NL A1B 3X5
(709) 864-4464
mmiskell@mun.ca

www.mun.ca/earthsciences

From: Diane Guzzwell [mailto:dguzzwell@mun.ca]
Sent: October-05-16 8:23 AM
To: Michelle Miskell
Subject: Fwd: Consultation request for proposed Joint BA/BSc

Hi Michelle,

Another calendar change for UGMC.

Thanks,

Diane

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

Subject:

Consultation request for proposed Joint BA/BSc

Date:
Good afternoon,

Attached is a proposed Calendar change from the Faculty of Science and Faculty of Humanities and Social Sciences for a joint degree program for Degrees of Bachelor of Arts and Bachelor of Science.

I look forward to your comments. Please reply to adsu@mun.ca by November 1, 2016.

Thank you,

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE
From: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca>
Subject: Re: Joint degree proposal
Date: October 20, 2016 at 9:48:38 AM GMT-2:30
To: "Berry, Mark" <mberry@mun.ca>

Thank you, Mark.

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE
(Administration & Undergraduate)
Memorial University
St. John's, NL, Canada A1B 3X7
T 709-864-8155
adsu@mun.ca

On Oct 20, 2016, at 9:42 AM, Berry, Mark <mberry@mun.ca> wrote:

Hi Andy

No issues from Biochemistry, and we are supportive of the proposal.

Mark

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

Associate Member
Beatrice Hunter Cancer Research Institute

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

From: "Berry, Mark" <mberry@mun.ca>
Subject: Joint degree proposal
Date: October 20, 2016 at 9:42:36 AM GMT-2:30
To: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca>
Hi Andy

No issues from Biochemistry, and we are supportive of the proposal.

Mark

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

Associate Member
Beatrice Hunter Cancer Research Institute

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

From: Travis Fridgen <chemhead@mun.ca>

Subject: Re: Consultation request for proposed Joint BA/BSc

Date: October 5, 2016 at 1:41:13 PM GMT-2:30

To: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca>

Hi Andy,

But the way it reads in the proposal is that a student must do "a total of at least 78 credit hours in courses offered by departments within HSS, and a total of at least 78 credit hours offered by departments in Science."

To me, this means that a student must complete 156 credit hours to do the BSc/BA Joint. That is significantly more than 135 hours.

So what if a student wanted to do a joint chemistry and anthropology degree (which is a common joint degree on the mainland), they could complete their BSc requirements from the department by taking 14 chemistry prescribed chemistry courses, two physics, and four maths, a total of 60 credit hours and they could fullfill the department of Anthropology requirements with 13 Anthro courses or 39 credit hours. They would need to do six credit hours in English which I suppose would bring their HSS total up to 45 credit hours.

According to the statement in question, then, a student would still need one of the two opposite ends of the spectrum

scenario 1: 6 more science and 11 more HSS courses? (for a total of 156 credit hours)

scenario 2: 10 courses in Math, psych, eco, geo or cs, (for a total of 135 credit hours)

Scenerio 2 might not be in the interest of the student. That is why I don't understand the 78 credit thing. Why not just meet the requirements of both departments and take a total of 135 credit hours?

Take care,
On 05/10/2016 1:10 PM, Associate Dean of Science (Undergraduate) wrote:

Hi Travis,

Thanks very much for your feedback.

Yes, the current proposal requires 78 credit hours in HSS courses to satisfy the existing regulation for the B.A. and 78 credit hours in Science to satisfy the existing B.Sc. regulation. Courses studied in departments offering both degrees (Math & Stats, Psychology, Economics, Geography, Computer Science) would count towards both degrees. For instance, a student in the Joint BA/BSc program with Physics as their B.Sc. major might study 6 Math courses and a Computer Science course for their Physics major and with these courses counting as both HSS and Science, they could satisfy the 78 credit hours in each of HSS and Science by studying 135 hours in total. Obviously some B.A. and B.Sc. programs will be easier to combine with the Joint BA/BSc program than others.

I think you are right that we should be assisting student who wish to complete an Honours B.A. or B.Sc. in conjunction with the Joint BA/BSc program. A small number of ambitious students do this now but is a challenge to complete it in five years.

All the best,

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE
(Administration & Undergraduate)
Memorial University
St. John's, NL, Canada A1B 3X7
T 709-864-8155
adsu@mun.ca<mailto:adsu@mun.ca>

On Oct 4, 2016, at 6:05 PM, Travis Fridgen <chemhead@mun.ca<mailto:chemhead@mun.ca>> wrote:

Hi Andy,

Interesting!

I am confused by 5.6.1.e in Humanities and 6.6.1.e in Science which says that the 135 credit hours for the joint must include a total of 78 credit hours offered by Humanities and Social Sciences and 78 credit hours offered by the faculty of Social Sciences which is a total of 156 credit hours.

It would be interesting to know what a student would be required to do to complete an Honours degree in either Arts or Science if they so decided after completing the joint set of degrees. I think a student might find this useful.

I will send this out to chemistry for further comments.

Take care,

Travis

On 04/10/2016 4:57 PM, Associate Dean of Science (Undergraduate) wrote:

Good afternoon,

Attached is a proposed Calendar change from the Faculty of Science and Faculty of
Humanities and Social Sciences for a joint degree program for Degrees of Bachelor of Arts and Bachelor of Science.

I look forward to your comments. Please reply to adsu@mun.ca by November 1, 2016.

Thank you,

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE
(Administration & Undergraduate)
Memorial University
St. John's, NL, Canada A1B 3X7
T 709-664-8155
adsu@mun.ca

--

Travis D. Fridgen BSc, BEd, PhD
Professor and Head
Department of Chemistry
Memorial University
St. John's, NL, A1B 3X7
chemhead@mun.ca
709-664-3470
http://www.chem.mun.ca/zfac/tdf.php?

From: "Associate Dean of Science (Undergraduate)" adsu@mun.ca
Subject: Re: Consultation request for proposed Joint BA/BSc
Date: October 5, 2016 at 1:10:59 PM GMT-2:30
To: Travis Fridgen chemhead@mun.ca

Hi Travis,

Thanks very much for your feedback.

Yes, the current proposal requires 78 credit hours in HSS courses to satisfy the existing regulation for the B.A. and 78 credit hours in Science to satisfy the existing B.Sc. regulation. Courses studied in departments offering both degrees (Math & Stats, Psychology, Economics, Geography, Computer Science) would count towards both degrees. For instance, a student in the Joint BA/BSc program with Physics as their B.Sc. major might study 6 Math courses and a Computer Science course for their Physics major and with these courses counting as both HSS and Science, they could satisfy the 78 credit
hours in each of HSS and Science by studying 135 hours in total. Obviously some B.A. and B.Sc. programs will be easier to combine with the Joint BA/BSc program than others.

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All the best,
Andy

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(Administration & Undergraduate)
Memorial University
St. John's, NL, Canada A1B 3X7
T 709-864-8155
adsu@mun.ca<mailto:adsu@mun.ca>

On Oct 4, 2016, at 6:05 PM, Travis Fridgen <chemhead@mun.ca<mailto:chemhead@mun.ca>> wrote:

Hi Andy,

Interesting!

I am confused by 5.6.1.e in Humanities and 6.6.1.e in Science which says that the 135 credit hours for the joint must include a total of 78 credit hours offered by Humanities and Social Sciences and 78 credit hours offered by the faculty of Social Sciences which is a total of 156 credit hours.

It would be interesting to know what a student would be required to do to complete an Honours degree in either Arts or Science if they so decided after completing the joint set of degrees. I think a student might find this useful.

I will send this out to chemistry for further comments.

Take care,
Travis

On 04/10/2016 4:57 PM, Associate Dean of Science (Undergraduate) wrote:
Good afternoon,

Attached is a proposed Calendar change from the Faculty of Science and Faculty of Humanities and Social Sciences for a joint degree program for Degrees of Bachelor of Arts and Bachelor of Science.

I look forward to your comments. Please reply to adsu@mun.ca<mailto:adsu@mun.ca> by November 1, 2016.

Thank you,
Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE
(Administration & Undergraduate)
Memorial University
St. John's, NL, Canada A1B 3X7
T 709-864-8155
adsu@mun.ca<mailto:adsu@mun.ca>
--
Travis D. Fridgen BSc, BEd, PhD
Professor and Head
Department of Chemistry
Memorial University
St. John's, NL, A1B 3X7
chemhead@mun.ca
709-864-3470
http://www.chem.mun.ca/zfac/tdf.php?

From: "Stuckless, Tara Lee" <tstuckless@mun.ca>
Subject: RE: Fwd: Consultation request for proposed Joint BA/BSc
Date: October 5, 2016 at 11:48:27 AM GMT-2:30
To: Chris Radford <cradford@mun.ca>, "Associate Dean of Science (Undergraduate)" <adsu@mun.ca>
Cc: "Sullivan, Shannon" <shannon@mun.ca>

Hello Andy and Chris,

My only comment about the joint BA/BSc program is that without better course-scheduling tools there will be resource implications. Our course schedule does not take into account the scheduling of most Humanities/Social Sciences courses. Currently there is no easy way to change course slots and be sure conflicts aren't being introduced between courses required for the academic programs students are taking. Further, given space availability, even if we come up with a slot change that won't break the schedule, classroom space is problematic. Will there be an obligation on Departments to ensure joint programs between the two Faculties are actually possible in a given time-frame? Or, will this be an option students may pursue only if the current course schedule allows?

If there is an obligation to ensure any student in any joint program has the possibility to finish in a given time frame, I think the following resource implication should be added to the proposal:

> Cost of scheduling software necessary to make alterations to future semester course schedules as new joint majors between the two faculties are declared.

Cheers,

Tara
From: Chris Radford [mailto:cradford@mun.ca]
Sent: October-05-16 10:09 AM
To: mathconsult@mun.ca<mailto:mathconsult@mun.ca>
Subject: Fwd: Fwd: Consultation request for proposed Joint BA/BSc

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

Subject:

Fwd: Consultation request for proposed Joint BA/BSc

Date:

Wed, 5 Oct 2016 08:33:05 -0230

From:

Math Head <math-head@mun.ca><mailto:math-head@mun.ca>

To:

Chris Radford <cradford@mun.ca><mailto:cradford@mun.ca>

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

Subject:

Consultation request for proposed Joint BA/BSc

Date:

Tue, 4 Oct 2016 19:27:33 +0000

From:

Associate Dean of Science (Undergraduate) <adsu@mun.ca><mailto:adsu@mun.ca>
To:

Minglun Gong <cs-chair@mun.ca> <mailto:cs-chair@mun.ca>, Physics Head <physicshead@mun.ca> <mailto:physicshead@mun.ca>, Biochemistry Head <biohead@mun.ca> <mailto:biohead@mun.ca>, Travis Fridgen <chemhead@mun.ca> <mailto:chemhead@mun.ca>, Fletcher, Garth <fletcher@mun.ca> <mailto:fletcher@mun.ca>, Marino, Paul <pmarino@mun.ca> <mailto:pmarino@mun.ca>, John Hancher <jhancher@mun.ca> <mailto:jhancher@mun.ca>, Chris Radford <math-head@mun.ca> <mailto:math-head@mun.ca>, Psychhead <Psychology.Head@mun.ca> <mailto:Psychology.Head@mun.ca>

CC:

Wool, Mary <maryw@mun.ca> <mailto:maryw@mun.ca>, Sullivan, Shannon <shannon@mun.ca> <mailto:shannon@mun.ca>, Burry, Joan <jburry@mun.ca> <mailto:jburry@mun.ca>, Kenny, Gail <gkenny@mun.ca> <mailto:gkenny@mun.ca>, Psych Secretary <psychsecretary@mun.ca> <mailto:psychsecretary@mun.ca>, Gaslard, Betty Ann <elewis@mun.ca> <mailto:elewis@mun.ca>, Diane Guzzwell <dguzzwell@mun.ca> <mailto:dguzzwell@mun.ca>, Leonce Morrissey <leonce@mun.ca> <mailto:leonce@mun.ca>, Coombs, Donna Geraldine <dcoombs@mun.ca> <mailto:dcoombs@mun.ca>, Regina Edwards <redwards@mun.ca> <mailto:redwards@mun.ca>, Rosalind Collins <collinsr@mun.ca> <mailto:collinsr@mun.ca>, Kenny, Shirley <shirleyk@mun.ca> <mailto:shirleyk@mun.ca>, Sparkes, Winnie <wsparkes@mun.ca> <mailto:wsparkes@mun.ca>

Good afternoon,

Attached is a proposed Calendar change from the Faculty of Science and Faculty of Humanities and Social Sciences for a joint degree program for Degrees of Bachelor of Arts and Bachelor of Science.

I look forward to your comments. Please reply to adsu@mun.ca <mailto:adsu@mun.ca> by November 1, 2016.

Thank you,

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE
(Administration & Undergraduate)
Memorial University
St. John’s, NL, Canada A1B 3X9
T 709-864-8155
adsu@mun.ca <mailto:adsu@mun.ca>
From: Travis Fridgen <chemhead@mun.ca>

Subject: Re: Consultation request for proposed Joint BA/BSc

Date: October 4, 2016 at 6:05:49 PM GMT-2:30

To: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca>

Hi Andy,

Interesting!

I am confused by 5.6.1.e in Humanities and 6.6.1.e in Science which says that the 135 credit hours for the joint must include a total of 78 credit hours offered by Humanities and Social Sciences and 78 credit hours offered by the faculty of Social Sciences which is a total of 156 credit hours.

It would be interesting to know what a student would be required to do to complete an Honours degree in either Arts or Science if they so decided after completing the joint set of degrees. I think a student might find this useful.

I will send this out to chemistry for further comments.

Take care,

Travis

On 04/10/2016 4:57 PM, Associate Dean of Science (Undergraduate) wrote:

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I look forward to your comments. Please reply to adsu@mun.ca by November 1, 2016.

Thank you,

Andy

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(Administration & Undergraduate)
Memorial University
St. John’s, NL, Canada A1B 3X7
Tel. 709-864-8155
adsu@mun.ca

--
Travis D. Fridgen BSc, BEd, PhD
Professor and Head
Department of Chemistry  
Memorial University  
St. John's, NL, A1B 3X7  
chemhead@mun.ca<mailto:chemhead@mun.ca>  
709-864-3470  
http://www.chem.mun.ca/zfac/tdf.php?

From: "Associate Dean of Science (Undergraduate)" <adsu@mun.ca<mailto:adsu@mun.ca>>

Subject: Consultation request for proposed Joint BA/BSc

Date: October 4, 2016 at 4:57:34 PM GMT-2:30

To: Minglun Gong <cs-chair@mun.ca<mailto:cs-chair@mun.ca>>, Physics Head  
<physicshead@mun.ca<mailto:physicshead@mun.ca>>, Biochemistry Head  
<biohead@mun.ca<mailto:biohead@mun.ca>>, Travis Fridgen  
<chemhead@mun.ca<mailto:chemhead@mun.ca>>, "Fletcher, Garth"  
<fletcher@mun.ca<mailto:fletcher@mun.ca>>, "Marino, Paul"  
<pmarino@mun.ca<mailto:pmarino@mun.ca>>, John Hanchar  
<jhanchar@mun.ca<mailto:jhanchar@mun.ca>>, Chris Radford <math-head@mun.ca<mailto:math-head@mun.ca>>, psychhead <Psychology.Head@mun.ca<mailto:Psychology.Head@mun.ca>>

Cc: "Wall, Mary" <maryw@mun.ca<mailto:maryw@mun.ca>>, "Sullivan, Shannon"  
<shannon@mun.ca<mailto:shannon@mun.ca>>, "Burry, Joan"  
<jburry@mun.ca<mailto:jburry@mun.ca>>, "Kenny, Gail"  
<kgkenny@mun.ca<mailto:kgkenny@mun.ca>>, Psych Secretary  
<psychsecretary@mun.ca<mailto:psychsecretary@mun.ca>>, "Gaslard, Betty Ann"  
<elewis@mun.ca<mailto:elewis@mun.ca>>, Diane Guzzwell  
<dguzzwell@mun.ca<mailto:dguzzwell@mun.ca>>, Leonce Morrissey  
<leonce@mun.ca<mailto:leonce@mun.ca>>, "Coombs, Donna Geraldine"  
<dcoombs@mun.ca<mailto:dcoombs@mun.ca>>, Regina Edwards  
<redwards@mun.ca<mailto:redwards@mun.ca>>, Rosalind Collins  
<collinsr@mun.ca<mailto:collinsr@mun.ca>>, "Kenny, Shirley"  
<shirleyk@mun.ca<mailto:shirleyk@mun.ca>>, "Sparkes, Winnie"  
<wsparke@mun.ca<mailto:wsparke@mun.ca>>

Good afternoon,

Attached is a proposed Calendar change from the Faculty of Science and Faculty of 
Humanities and Social Sciences for a joint degree program for Degrees of Bachelor of 
Arts and Bachelor of Science.

I look forward to your comments. Please reply to adsu@mun.ca<mailto:adsu@mun.ca> by 
November 1, 2016.

Thank you,

Andy

DR. ANDY FOSTER | ASSOCIATE DEAN OF SCIENCE  
(Administration & Undergraduate)  
Memorial University  
St. John's, NL, Canada A1B 3X7  
T 709-864-8155  
adsu@mun.ca<mailto:adsu@mun.ca>

Attachments:
Subject: FW: Consultation: Joint Degrees of Bachelor of Arts and Bachelor of Science
From: "Griffiths, Stacey" <stacey@mun.ca>
Date: 04/10/2016 11:10 AM
To: "Sullivan, Shannon" <shannon@mun.ca>
CC: "Marland, Alex" <amarland@mun.ca>

FYI

From: Nancy Pedri [mailto:npedri@mun.ca]
Sent: September 28, 2016 10:24 AM
To: Griffiths, Stacey
Subject: RE: Consultation: Joint Degrees of Bachelor of Arts and Bachelor of Science

I would like to express concern about reducing the required credit hours for the degree. It is unclear to me how 135 credit hours meets the program requirements since the two degrees are complementary. I would like to see a stronger, clearer rationale for this. Also, the document opens by stating that students have been pursuing this double degree option despite (I assume) having to follow the general academic regulation of 150 credit hours. This seems to argue against the statement that this regular amount of hours would serve as a deterrent.

I look forward to seeing how this develops,

Nancy

-------------
Nancy Pedri
Professor, Department of English
http://www.faculty.mun.ca/npedri/

From: Mercer, Stacey [mailto:stacey@mun.ca]
Sent: September-26-16 8:54 AM
To: undisclosed-recipients:
Subject: Consultation: Joint Degrees of Bachelor of Arts and Bachelor of Science

Forwarded on behalf of Dr. Alex Marland, Associate Dean of Humanities and Social Sciences (Undergraduate):

Dear faculty members:

I am writing to extend an opportunity for you to provide formal feedback on the attached proposal to create a new joint degree program. If available, an executive summary appears below for your convenience.

Formal comments on the attached proposal, if any, should be sent to Stacey Griffiths at stacey@mun.ca as soon as possible. Written feedback received within 14 days of the date of this request will be appended to the proposal's submission to CUGS, St. John's campus.

If you need more time, please advise Stacey straight away.

Alex Marland
Associate Dean (Undergraduate)
Faculty of Humanities and Social Sciences

We propose to introduce a new joint degree program through which a student can complete both a Bachelor of Arts and a Bachelor of Science while completing fewer credit hours than would currently be required by University regulations governing a second degree.

Attachments:

winmail.dat 13.2 kB
November 30, 2016

TO: All Members, Faculty Council of Science

FROM: Joan Burry, Secretary
       Committee on Undergraduate Studies, Faculty of Science

SUBJECT: Calendar Changes, New Course and New Program Proposals

At a meeting held on November 29, 2016, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Computer Science
   (i) Proposals for thirteen new courses: COMP 2100, 2300, 3200, 3201, 3202, 3300, 3301, 3401, 4300, 4301, 4302, 4303, 4304
   (ii) Proposal for two new majors: Computer Science (Smart Systems) and Computer Science (Visual Computing and Games)

2. Department of Biology
   Calendar changes to amend the course description for Biology 4200

3. Department of Ocean Sciences
   (i) Amendment to the prerequisite for Ocean Sciences 2000
   (ii) Amendment to the minor program in Sustainable Aquaculture and Fisheries Ecology
   (iii) Proposal for new joint major program in Marine Biology

Joan Burry
Associate Registrar and
Secretary, Committee
on Undergraduate Studies,
Faculty of Science
Proposal
New Course – COMP 2100
Social Web Analysis

Course Number and Title
2100 Social Web Analysis

Abbreviated Course Title
Social Web Analysis

Calendar Description

2100 Social Web Analysis covers the analysis of social network structures, the flow of data within them and the methods to extract useful information about these networks, their participants and the content of their communication. Security and trust issues are also covered.

Pre-requisite(s)
COMP 1000

Credit Restrictions
None

Secondary Calendar Changes
None

Rationale
This course will introduce the underpinnings of social networks and how to measure their influence on our daily life. It is a foundation of understanding the Web qualitatively and quantitatively. The knowledge obtained in this course can also be applied to understanding many other types of networked structures.

Consultations
Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.
Sample Course Outline and Method of Evaluation

- Network Structures and Measures (6 hours)
- Network Visualization (4 hours)
- Understanding Structure through User Attributes and Behaviour (4 hours)
- Propagation in Networks (5 hours)
- Location Based Social Interaction (4 hours)
- Security and Privacy (2 hours)
- Trust, Social Issues and Other Topics (2 hours)

Method of Evaluation:

- Assignments (6) 30%
- Project 10%
- Midterm exam 20%
- Final exam 40%

Texts


Research papers.

Instructor(s)

W. Banzhaf, K. Vidyasankar, Y. Chen
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  2100 Social Web Analysis

Abbreviated Course Title  Social Web Analysis

Calendar Change (new course)

2100 Social Web Analysis covers the analysis of social network structures, the flow of data within them and the methods to extract useful information about these networks, their participants and the content of their communication. Security and trust issues are also covered. PR: COMP 1000

Secondary Calendar Changes

None

Rationale

This course will introduce the underpinnings of social networks and how to measure their influence on our daily life. It is a foundation of understanding the Web qualitatively and quantitatively. The knowledge obtained in this course can also be applied to understanding many other types of networked structures.

Consultations Sought From

<table>
<thead>
<tr>
<th>Consultations Sought From</th>
<th>Comments Received</th>
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<tbody>
<tr>
<td>Department of Biochemistry</td>
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<td>Department of Biology</td>
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<td>Department of Chemistry</td>
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<td>School of Social Work</td>
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<td>Grenfell Campus</td>
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<td>Marine Institute</td>
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<td>Library Report Received</td>
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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:
Proposal
New Course – COMP 3200
Algorithmic Techniques for Smart Systems

Course Number and Title
3200 Algorithmic Techniques for Smart Systems

Abbreviated Course Title
Alg. Tech for Smart Systems

Calendar Description
3200 Algorithmic Techniques for Smart Systems covers basic algorithmic techniques and data structures that are used to embed basic intelligent behaviors, such as problem solving, reasoning and learning in software systems and agents.

Pre-requisite(s)
COMP 2001 and COMP 2002, and Statistics 1510 or Statistics 2550

Credit Restrictions
COMP 4753

Secondary Calendar Changes
4753 Artificial Intelligence has selected topics from AI programming languages; heuristic searching; problem solving; game-playing; knowledge representations; knowledge-based systems; reasoning in uncertainty situations; planning; natural language understanding; pattern recognition; computer vision; and machine learning.
CR: COMP 3200
PR: COMP 3719 and 3754

Rationale
Smart systems rely on algorithms handling uncertainty, learning from the environment and reasoning. This course will introduce the basics of these algorithms for intelligent behavior.

Consultations
Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.
Sample Course Outline and Method of Evaluation

- Background: AI and Agents (3 hours)
  - AI definition and areas
  - Agent definition, structure and types
- Search (10 hours)
  - Exhaustive search
  - Heuristic search
  - Local search (e.g., hill-climbing)
  - Constraint satisfaction
  - Adversarial search
  - Search under uncertainty
- Logical Reasoning (9 hours)
  - Knowledge-based systems
  - Reasoning
  - Planning
  - Fuzzy logic
- Probabilistic Reasoning (8 hours)
  - Quantifying uncertainty
  - Bayesian networks
  - Dynamic Bayesian networks

Method of Evaluation:

- Assignments (5) 45%
- Tests (2) 30%
- Final exam 25%

Texts


Instructor(s)

T. Wareham, L. Pena-Castillo
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  3200 Algorithmic Techniques for Smart Systems

Abbreviated Course Title  Alg Tech for Smart Systems

Calendar Change (new course)

3200 Algorithmic Techniques for Smart Systems covers basic algorithmic techniques and data structures that are used to embed basic intelligent behaviors, such as problem solving, reasoning and learning in software systems and agents.
CR: COMP 4753
PR: COMP 2001 and COMP 2002, and Statistics 1510 or Statistics 2550

Secondary Calendar Changes

4753 Artificial Intelligence has selected topics from AI programming languages; heuristic searching; problem solving; game-playing; knowledge representations; knowledge-based systems; reasoning in uncertainty situations; planning; natural language understanding; pattern recognition; computer vision; and machine learning.
CR: COMP3200
PR: COMP 3719 and 3754

Rationale

Smart systems rely on algorithms handling uncertainty, learning from the environment and reasoning. This course will introduce the basics of these algorithms for intelligent behavior.

Consultations Sought From

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**Library Report Received**

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

**Name**

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**APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES**

**Chair:**

**Secretary:**

**Date:**
Proposal
New Course – COMP 3201
Introduction to Nature-Inspired Computing

Course Number and Title
3201 Introduction to Nature-Inspired Computing

Abbreviated Course Title
Nature-Inspired Computing

Calendar Description

3201 Introduction to Nature-Inspired Computing is an introductory course which gives an overview of nature-inspired computing methods as they have been introduced over the past decades. Students will develop a firm understanding of the motivations, approaches and achievements of these methods.

Pre-requisite(s)
COMP 2002

Credit Restrictions
COMP 4752

Secondary Calendar Changes

4752 Introduction to Computational Intelligence provides an introduction to four of the fundamental computational intelligence methods: artificial neural networks, evolutionary computation, swarm intelligence and fuzzy systems. The integration of these techniques for problem solving will also be introduced.
CR: COMP 3201
PR: COMP 3719 and COMP 3754

Rationale

Nature-inspired methods of computing have been proposed since the 1950s. They have now gained prominence due to the wide availability of computational power that allows them to be fruitfully applied in our uncertain and complex world where traditional methods of exact computation have reached their limits.

Consultations

Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.
Sample Course Outline and Method of Evaluation

- Introduction to nature-inspired computing (1 hour)
  - History
  - Major tasks
  - Natural paradigms

- Cellular automata (1 hour)
  - Dynamical systems simulation
  - Self-replication

- Neural Networks (8 hours)
  - Background and history of artificial neural networks (ANNs)
  - Learning algorithms based on ANNs
  - Optimization with ANNs
  - Selected applications of ANNs

- Evolutionary Computing (8 hours)
  - Background and history of evolutionary computation (EC)
  - Different branches of EC: GA, GP, EA, EP, DE
  - Selected applications of EC methods

- Swarm Intelligence (8 hours)
  - Background and history of collective and swarm intelligence
  - Examples of swarm intelligence in biology
  - Mechanisms of swarm behavior (e.g., recruitment, quorum sensing)
  - Selected application of swarm methods

- Artificial Life (2 hours)
  - Background and history of Artificial Life research
  - Self-organizing systems
  - Artificial Chemistry

- Complex networks and emergence (2 hours)
  - Background and history of network science
  - Random networks, small-world networks and networks in nature
  - Artificial networks and their features
  - Selected phenomena in network science

Method of Evaluation:

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Texts

Instructor(s)

A. Verdy, W. Banzhaf
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title 3201 Introduction to Nature-inspired Computing

Abbreviated Course Title Nature-inspired Computing

Calendar Change (new course)

3201 Introduction to Nature-Inspired Computing is an introductory course which gives an overview of nature-inspired computing methods as they have been introduced over the past decades. Students will develop a firm understanding of the motivations, approaches and achievements of these methods.
CR: COMP 4752
PR: COMP 2002

Secondary Calendar Changes

4752 Introduction to Computational Intelligence provides an introduction to four of the fundamental computational intelligence methods: artificial neural networks, evolutionary computation, swarm intelligence and fuzzy systems. The integration of these techniques for problem solving will also be introduced.
CR: COMP 3201
PR: COMP 3719 and COMP 3754

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- Faculty of Medicine
- School of Human Kinetics and Recreation
- School of Music
- School of Nursing
- School of Pharmacy
- School of Social Work
- Grenfell Campus
- Marine Institute

## Comments Received

- Yes
- Yes
- Yes
- No
- Yes
- Yes

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

**Name**

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**APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES**

**Chair:**

**Secretary:**

**Date:**
Proposal
New Course – COMP 3202
Introduction to Machine Learning

Course Number and Title
3202 Introduction to Machine Learning

Abbreviated Course Title
Intro to Machine Learning

Calendar Description
3202 Introduction to Machine Learning introduces concepts and algorithms in machine learning for regression and classification tasks. The course gives the student the basic ideas and intuition behind model selection and evaluation, and selected machine learning methods such as random forests, support vector machines, and hidden Markov models.

Pre-requisite(s)
COMP 3200; or COMP 2001 and COMP 2002 and Statistics 2550

Credit Restrictions
None

Secondary Calendar Changes
None

Rationale
Machine learning has become one of the primary means to achieve artificial intelligence with computers. With the ubiquity of data, statistical methods of learning by machines have become widespread. This course will introduce machine learning and its applications.

Consultations
Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.

Sample Course Outline and Method of Evaluation

- Introduction to Machine Learning (3 hours)
  - Definition and examples of machine learning tasks, e.g., classification
  - Types of learning: supervised, unsupervised and reinforcement
- Linear methods for regression and classification (5 hours)
• Model Assessment and Selection (3 hours)
  • Bias, variance, overfitting, and model complexity
• Measuring classifier performance (3 hours)
  • Cross-validation
  • Precision / Recall
  • Area under ROC curve
• Supervised learning (6 hours)
  • Nearest-neighbor
  • Decision Trees
• Combining classifiers (6 hours)
  • Boosting
  • Random Forests
• Other approaches such as support vector machines, hidden Markov models, etc (4 hours)

Method of Evaluation:

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Texts


Instructor(s)

L. Pena-Castillo, T. Hu
SUMMARY PAGE FOR SENATE
Approval Form

Course Number and Title  3202 Introduction to Machine Learning

Abbreviated Course Title  Intro to Machine Learning

Calendar Change (new course)

3202 Introduction to Machine Learning introduces concepts and algorithms in machine learning for regression and classification tasks. The course gives the student the basic ideas and intuition behind model selection and evaluation, and selected machine learning methods such as random forests, support vector machines, and hidden Markov models.
PR: COMP 3200; or COMP 2001 and COMP 2002 and Statistics 2550

Secondary Calendar Changes
None

Rationale

Machine learning has become one of the primary means to achieve artificial intelligence with computers. With the ubiquity of data, statistical methods of learning by machines have become widespread. This course will introduce machine learning and its applications.

Consultations Sought From  Comments Received
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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:
Secretary:
Date:
Proposal
New Course – COMP 2300
Introduction to Multimedia Programming

Course Number and Title

2300 Introduction to Multimedia Programming

Abbreviated Course Title

Intro Multimedia Programming

Calendar Description

2300 Introduction to Multimedia Programming is an introduction to programming and computer science with an emphasis on the development of multimedia applications. The course introduces the fundamental principles of programming, including object-oriented and event-driven programming. Students will develop an understanding of how to use and create classes and methods and combine them with multimedia libraries to produce animations, handle input from keyboard and mouse, and import sounds and videos to produce multimedia applications which can be directly deployed on the Internet.

Pre-requisite(s)

COMP 1000

Credit Restrictions

COMP 1550

In addition to three weekly one-hour lectures there is a structured laboratory as scheduled in the university timetable. Attendance at these laboratory sessions is compulsory.

Secondary Calendar Changes

1550 Introduction to Multimedia Application Development is an introduction to programming and computer science with an emphasis on the development of multimedia applications. The course introduces the fundamental principles of programming, including object-oriented and event-driven programming, how to use and create classes and methods and combine them with multimedia libraries to produce animations, handle input from keyboard and mouse, and import sounds and videos to produce multimedia applications which can be directly deployed on the Internet.
CR: COMP 2300
LH: 3
Rationale

Multimedia applications are present in cartoons, electronic books for young audiences, videos, games, web advertisement and interactive applications. Computer science students who are interested in visual computing and graphic interfaces should have a good idea of how most multimedia content is digitally represented and implemented, and this course is meant to provide it.

Consultations

Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.

Sample Course Outline and Method of Evaluation

- Introduction: definitions of multimedia, digital data fundamentals, multimedia authoring overview
- Flash and ActionScript: overview of Flash, ActionScript syntax overview
- Using objects: getting familiar with variables, using objects, calling methods, using properties and events
- Datatypes: primitive datatypes, expressions, strings, string manipulation
- Conditionals: if statement, boolean expressions, switch-case statements, nesting conditionals
- Loops: while, do and for loops
- Arrays and Functions: using arrays, defining functions
- Object References: understanding objects vs. object references, calling objects from the library, defining the document class
- Implementing Object Classes: implementing methods, understanding constructors, instance fields, and local variables
- Events and Event Handling: ActionScript event basics, assessing objects through event handlers, event listeners
- Style and HCI Guidelines for Multimedia: fonts, color, user feedback, splash screens, loaders and publishing

Method of Evaluation:

- In-class evaluations: 15%
- Laboratory Work: 25%
- Midterm exam: 30%
- Final exam: 30%
Texts


Instructor(s)

E. Brown, R. Gupta, O. Meruvia-Pastor
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  COMP 2300 Introduction to Multimedia Programming

Abbreviated Course Title  Intro Multimedia Programming

Calendar Change (new course)

2300 Introduction to Multimedia Programming is an introduction to programming and computer science with an emphasis on the development of multimedia applications. The course introduces the fundamental principles of programming, including object-oriented and event-driven programming. Students will develop an understanding of how to use and create classes and methods and combine them with multimedia libraries to produce animations, handle input from keyboard and mouse, and import sounds and videos to produce multimedia applications which can be directly deployed on the Internet.
CR: COMP 1550
LH: 3
PR: COMP 1000

Secondary Calendar Changes

1550 Introduction to Multimedia Application Development is an introduction to programming and computer science with an emphasis on the development of multimedia applications. The course introduces the fundamental principles of programming, including object-oriented and event-driven programming, how to use and create classes and methods and combine them with multimedia libraries to produce animations, handle input from keyboard and mouse, and import sounds and videos to produce multimedia applications which can be directly deployed on the Internet.
CR: COMP 2300
LH: 3

Rationale

Multimedia applications are present in cartoons, electronic books for young audiences, videos, games, web advertisement and interactive applications. Computer science students who are interested in visual computing and graphic interfaces should have a good idea of how most multimedia content is digitally represented and implemented, and this course is meant to provide it.

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

**Name**

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

**Chair:**

**Secretary:**

**Date:**
Proposal
New Course – COMP 3300
Interactive Technologies

Course Number and Title

3300 Interactive Technologies

Abbreviated Course Title

Interactive Technologies

Calendar Description

3300 Interactive Technologies provides exposure to traditional desktop, mobile and games contexts with respect to interaction design. Practical application of interaction design principles in this course involves introductory programming in the contexts of desktop interfaces, mobile devices and video/computer gaming. These different contexts for interaction design are compared and contrasted.

Pre-requisite(s)

COMP 2001

Credit Restrictions

None

Secondary Calendar Changes

None

Rationale

Supports the Visual Computing and Games Stream, and exposes students to skills and tools relevant to end user application development.

Consultations

Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.

Sample Course Outline and Method of Evaluation

• Introduction to interaction design
  o Interaction Design goals, guidelines and principles (3 hours)
  o Cognate areas of impact: cognitive psychology, graphic design, industrial design, ergonomics, human-computer interaction, media studies, user-interface design (3 hours)
- Design methodology (2 hours)
- Prototyping tools (1 hour)

- Desktop Context
  - Desktop design constraints and objectives (1 hour)
  - Introduction to Desktop GUI builders (WindowBuilder/Eclipse) (3 hours)
  - GUI component frameworks and systems (3 hours)

- Mobile Context
  - Mobile device design constraints and objectives (1 hour)
  - Introduction to a Mobile App development suite (Android Studio) (3 hours)
  - Mobile App programming (6 hours)

- Games Context
  - Games design space and objectives (1 hour)
  - Introduction to a game design suite (Unity3D) (3 hours)
    - Games programming (6 hours)

### Method of Evaluation:

Original implementation assignments (3)  60%
Tests and Design Problems (3)            40%

### Texts


### Instructor(s)

E. Brown, M. Gong, O. Meruvia-Pastor
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  COMP 3300 Interactive Technologies

Abbreviated Course Title  Interactive Technologies

Calendar Change (new course)

3300 Interactive Technologies provides exposure to traditional desktop, mobile and games contexts with respect to interaction design. Practical application of interaction design principles in this course involves introductory programming in the contexts of desktop interfaces, mobile devices and video/computer gaming. These different contexts for interaction design are compared and contrasted.

PR: COMP 2001

Secondary Calendar Changes

None

Rationale

Supports the Visual Computing and Games Stream, and exposes students to skills and tools relevant to end user application development.

Consultations Sought From                                           Comments Received
Department of Biochemistry                                           Yes
Department of Biology                                               Yes
Department of Chemistry                                              Yes
Department of Earth Sciences                                        No
Department of Economics                                              Yes
Department of Geography                                             Yes
Department of Mathematics and Statistics                            Yes
Department of Ocean Sciences                                         No
Department of Physics and Oceanography                              Yes
Department of Psychology                                            Yes
Department of Computer Engineering                                  Yes
Faculty of Arts                                                     Yes
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**Chair:**

**Secretary:**

**Date:**
Proposal
New Course – COMP 3301
Visual Computing and Applications

Course Number and Title
3301 Visual Computing and Applications

Abbreviated Course Title
Visual Comput and App

Calendar Description

3301 Visual Computing and Applications provides students with the fundamental knowledge and skills in the fields of computer vision, computer graphics, and visualization. Visual perception is responsible for most of our impressions about the world around us. This course introduces how computers are used to both mimic the human visual system (e.g., recognize shapes) and to create visual content (e.g. synthesize images). Related techniques on image synthesis, processing and analysis are discussed under a unified framework. How visual computing principles were used to create visual effects in movies and commercials is also examined.

Pre-requisite(s)

COMP 2002

Credit Restrictions

None

Secondary Calendar Changes

None

Rationale

This course is introduced to provide students with the fundamental knowledge and skills in the fields of computer vision, computer graphics, and visualization.

Consultations

Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.

Sample Course Outline and Method of Evaluation

- Introduction(4 hours)
human perception; intensity & color; display hardware
- Image basics (4 hours)
  imaging capture; image representation & sampling; 2D transformations; image warping
- Raster graphics (4 hours)
  line & circle drawing; line clipping; polygon filling
- Image processing (8 hours)
  per-pixel operation; histogram; filtering; Fourier transformation
- Image analysis (6 hours)
  edge detection; Hough transform; thresholding; segmentation; template matching
- Image synthesis (6 hours)
  alpha compositing; matting; halftoning; feature-based warping; morphing

Method of Evaluation:

- Assignments (4) 40 %
- Midterm 20 %
- Final exam 40%

Texts


http://people.csail.mit.edu/hasinoff/320/

http://www.cs.toronto.edu/~kyros/courses/320/

http://www.ics.uci.edu/~majumder/VC/CS211.htm

Instructor(s)

M. Gong, O. Meruvia-Pastor, A. Vardy
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  3301 Visual Computing and Applications

Abbreviated Course Title  Visual Comput and App

Calendar Change (course)

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PR: COMP 2002

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

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
Proposal
New Course – COMP 4300
Introduction to Game Programming

Course Number and Title
4300 Introduction to Game Programming

Abbreviated Course Title
Intro to Game Programming

Calendar Description
4300 Introduction to Game Programming is an introductory course for students interested in learning the fundamentals of game programming. Topics include vector math for games, fundamentals of rendering, introduction to animation and artificial intelligence, collision detection, game physics and user-interfaces. Students are required to write a fully functional game during the course.

Pre-requisite(s)
COMP 2001

Credit Restrictions
None

Secondary Calendar Changes
None

Rationale
Game programming courses offer a good training ground for some important concepts of computer science, including memory and system resource management, computer graphics, multimedia, artificial intelligence and machine learning. In addition, game programming has always been a popular topic for some computer science students who are interested in game playing and participating in the gaming industry, which is a very important industry in Canada.

Consultations
Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.
Sample Course Outline and Method of Evaluation

- Course Introduction, Game Programming Basics (3 hours)
- Vector Math and Games (3 hours)
- Rendering (3 hours)
- Quaternions and Input/Sound (3 hours)
- Artificial Intelligence (3 hours)
- Collision Detection and Game Physics (3 hours)
- Camera Systems (3 hours)
- User Interface Systems (3 hours)
- Event-Based Systems and Scripting Languages (3 hours)
- Animation and Assorted Gameplay (3 hours)
- Basic Networking (3 hours)

Method of Evaluation:

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<td>Laboratory work (10)</td>
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<td>In-class evaluations (every lecture)</td>
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<td>Final Game Project</td>
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Texts


Instructor(s)

E. Brown, O. Meruvia-Pastor
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  4300 Introduction to Game Programming

Abbreviated Course Title  Intro to Game Programming

Calendar Change (new course)

4300 Introduction to Game Programming is an introductory course for students interested in learning the fundamentals of game programming. Topics include vector math for games, fundamentals of rendering, introduction to animation and artificial intelligence, collision detection, game physics and user-interfaces. Students are required to write a fully functional game during the course.
PR: COMP 2001

Secondary Calendar Changes

None

Rationale

Game programming courses offer a good training ground for some important concepts of computer science, including memory and system resource management, computer graphics, multimedia, artificial intelligence and machine learning. In addition, game programming has always been a popular topic for some computer science students who are interested in game playing and participating in the gaming industry, which is a very important industry in Canada.

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
Proposal
New Course – COMP 4301/ENGI 8814
Computer Vision

Course Number and Title
4301 Computer Vision

Abbreviated Course Title
Computer Vision

Calendar Description

4301 Computer Vision (same as Engineering 8814) studies how to develop methods that enable a machine to "understand" or analyze images. The course introduces the fundamental problems in computer vision and the state-of-the-art approaches that address them. Topics include feature detection and matching, geometric and multi-view vision, structure from X, segmentation, object tracking and visual recognition.

Pre-requisite(s)
COMP 3301 or Engineering 7854

Credit Restrictions
Engineering 8814

Secondary Calendar Changes
Add a complementary credit restriction to Engineering 8814

8814 Computer Vision studies how to develop methods that enable a machine to "understand" or analyze images. The course introduces the fundamental problems in computer vision and the state-of-the-art approaches that address them. Topics include feature detection and matching, geometric and multi-view vision, structure from X, segmentation, object tracking and visual recognition.
CR: COMP 4301
PR: ENGI 7854 or permission of the instructor

Rationale
This course teaches students the fundamental problems in computer vision and major approaches that address them. The cross-listed course, Engineering 8814, has been approved.

Consultations
Sample Course Outline and Method of Evaluation

- Unit 1: Grouping and fitting (4 hours)
  K-means, Hough transform, RANSAC
- Unit 2: Feature detection and matching (4 hours)
  Interest point detection (corners/blobs), SIFT, HOG
- Unit 3: Geometric and multi-view vision (4 hours)
  Geometric transformation, Camera model and camera calibration, Image stitching
- Unit 4: Feature based alignment (4 hours)
  2D and 3D feature based alignment, Pose estimation
- Unit 5: Structure from X (4 hours)
  Epipolar geometry, Stereo vision, Essential and fundamental matrix, Structure from motion
- Unit 6: Segmentation and tracking (4 hours)
  Foreground segmentation in video, Optical flow, Tracking
- Unit 7: Recognition (4 hours)
  Introduction to recognition, Object detect and recognition (face detection, pedestrian recognition), General category recognition (bags of features)

Method of Evaluation:

- Assignment(s) (2) 20%
- Midterm 20%
- Project 30%
- Final exam 30%

Texts


Selected state-of-the-art Journal publications

Instructor(s)

M. Shehata, A. Vardy, M. Gong
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  4301 Computer Vision

Abbreviated Course Title  Computer Vision

Calendar Change (new course)

4301 Computer Vision (same as Engineering 8814) studies how to develop methods that enable a machine to "understand" or analyze images. The course introduces the fundamental problems in computer vision and the state-of-the-art approaches that address them. Topics include feature detection and matching, geometric and multi-view vision, structure from X, segmentation, object tracking and visual recognition.

CR: Engineering 8814
PR: COMP 3301 or Engineering 7854

Secondary Calendar Changes

Add a complementary credit restriction to Engineering 8814

8814 Computer Vision studies how to develop methods that enable a machine to "understand" or analyze images. The course introduces the fundamental problems in computer vision and the state-of-the-art approaches that address them. Topics include feature detection and matching, geometric and multi-view vision, structure from X, segmentation, object tracking and visual recognition.

CR: COMP 4301
PR: ENGI 7854 or permission of the instructor

Rationale

This course teaches students the fundamental problems in computer vision and major approaches that address them. The cross-listed course, Engineering 8814, has been approved.

Consultations Sought From                      Comments Received
Department of Biochemistry                      Yes
Department of Biology                           Yes
Department of Chemistry                         Yes
Department of Earth Sciences                    No
Department of Economics                         Yes
Department of Geography                         Yes
Department of Mathematics and Statistics        Yes
Department of Ocean Sciences                    No
Department of Physics and Oceanography          Yes
Department of Psychology                        Yes
Department of Computer Engineering             Yes
Faculty of Arts                                 Yes
Faculty of Business Administration             No
<p>| Faculty of Education   | No |
| Faculty of Engineering and Applied Science | Yes |
| Faculty of Medicine   | Yes |
| School of Human Kinetics and Recreation | Yes |
| School of Music       | Yes |
| School of Nursing     | No  |
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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
Proposal
New Course – COMP 4302
3D Computer Graphics

Course Number and Title
4302 3D Computer Graphics

Abbreviated Course Title
3D Computer Graphics

Calendar Description

4302 3D Computer Graphics introduces the students to the state-of-the-art concepts and developments in the field of 3D computer graphics. The underlying algorithms, as well as the basic techniques to develop interactive 3D graphics systems including games and simulators, are presented. Topics of the course include 3D geometrical transformations, 3D projections, 3D modeling and rendering, 3D graphics languages and systems. Advanced photorealistic rendering and image-based rendering techniques may also be covered.

Pre-requisite(s)
COMP 3301

Credit Restrictions
COMP 4751

Secondary Calendar Changes

4751 Computer Graphics examines display devices, display processors, display file compilers, display transformations, structured display files, graphical input devices, perspective, hidden line elimination, languages and graphics systems.
CR: COMP 4302
LH: 3
PR: COMP 3719 and Mathematics 2050

Rationale

The newly introduced Visual Computing course covers some basic topics in 2D raster graphics and image handling. By having Visual Computing as a pre-requisite, 3D Computer Graphics will focus on the development of 3D graphics applications and on the coverage of topics that are specific to 3D graphics.
Consultations

Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.

Sample Course Outline and Method of Evaluation

- Introduction to 3D Graphics (1 hour)
- Graphics Pipelines (1 hour)
  fixed & programmable pipelines
- Graphic APIs (1-4 hours)
- Processing input for 3D graphics systems (1 hour)
- Geometrical Transformation (4 hours)
  Math Preliminary, 3D Transformations, 3D Projections, 3D Viewing
- 3D Modeling (3-6 hours)
  Geometric Primitives, Defining 3D Geometry, Parametric Curve, Parametric Surface, Solid Modeling, Point Set Surface
- Shading (3 hours)
- 3D Rendering (3-6 hours)
  Visibility Determination, Rasterization and Rendering Buffers, Illumination Model, Polygon Shading, Texture Mapping, Anti-Aliasing
- Photorealistic Rendering (1-4 hours)
  Global Illumination, Ray Casting, Ray Tracing, Radiosity Rendering, Photon Mapping

Method of Evaluation:

- Midterm exam 25%
- Assignments (3-4) 45%
- Final exam 30%

Texts


Selected state-of-the-art Journal publications

Instructor(s)

M. Gong, O. Meruvia-Pastor
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  4302 3D Computer Graphics

Abbreviated Course Title 3D Computer Graphics

Calendar Change (new course)

4302 3D Computer Graphics introduces the students to the state-of-the-art concepts and developments in the field of 3D computer graphics. The underlying algorithms, as well as the basic techniques to develop interactive 3D graphics systems including games and simulators, are presented. Topics of the course include 3D geometrical transformations, 3D projections, 3D modeling and rendering, 3D graphics languages and systems. Advanced photorealistic rendering and image-based rendering techniques may also be covered.
CR: COMP 4751
PR: COMP 3301

Secondary Calendar Changes

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CR: COMP 4302
LH: 3
PR: COMP 3719 and Mathematics 2050

Rationale

The newly introduced Visual Computing course covers some basic topics in 2D raster graphics and image handling. By having Visual Computing as a pre-requisite, 3D Computer Graphics will focus on the development of 3D graphics applications and on the coverage of topics that are specific to 3D graphics.

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Department of Economics
Department of Geography
Department of Mathematics and Statistics
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Department of Physics and Oceanography
Department of Psychology
Department of Computer Engineering Yes
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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
Proposal
New Course – COMP 4303
Artificial Intelligence in Computer Games

Course Number and Title
4303 Artificial Intelligence in Computer Games

Abbreviated Course Title
AI in Computer Games

Calendar Description

4303 Artificial Intelligence in Computer Games provides an introduction to specific state-of-the-art algorithmic techniques and data structures that are used to efficiently implement human-like abilities (e.g., awareness, memory, rational decision-making (under uncertainty), movement, co-operation in groups) in computer game agents.

Pre-requisite(s)
COMP 3200

Credit Restrictions
None

Secondary Calendar Changes
None

Rationale

As the programming of computer games becomes more sophisticated, Artificial Intelligence methods are increasingly employed to produce appealing game experiences. This course introduces current techniques of the artificial intelligence for games.

Consultations

Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.

Sample Course Outline and Method of Evaluation

- Background: Computer Games (3 hours) [Chapter 1]
- Basic Decision-Making (12 hours) [Part II]
  (Scripting; Finite-state Automata; Rule-based systems; Utility systems)
- Movement (6 hours) [Part III]
- Advanced Decision-Making (6 hours) [Part IV]
  (strategy and tactics; group activities)
- Awareness and Memory (6 hours) [Part V]
- Learning from Experience (3 hours)

The listed chapters and parts refer to the textbook below. As this is an edited volume, only certain chapters in each part will be covered. The above will where appropriate be augmented with readings covering relevant material not treated in the textbook, e.g., group activities, neural network agent architectures, reinforcement learning.

Method of Evaluation:

- Assignments (4) 40%
- Tests (2) 30%
- Course project 30%

Texts

Textbook URL: [http://www.gameai.pro.com/](http://www.gameai.pro.com/)

Instructor(s)

T. Wareham
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  4303 Artificial Intelligence in Computer Games

Abbreviated Course Title  AI in Computer Games

Calendar Change (new course)

4303 Artificial Intelligence in Computer Games provides an introduction to specific state-of-the-art algorithmic techniques and data structures that are used to efficiently implement human-like abilities (e.g., awareness, memory, rational decision-making (under uncertainty), movement, co-operation in groups) in computer game agents.
PR: COMP 3200

Secondary Calendar Changes

None

Rationale

As the programming of computer games becomes more sophisticated, Artificial Intelligence methods are increasingly employed to produce appealing game experiences. This course introduces current techniques of the artificial intelligence for games.

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Chair:

Secretary:

Date:
Proposal
New Course – COMP 4304
Data Visualization

Course Number and Title

4304 Data Visualization

Abbreviated Course Title

Data Visualization

Calendar Description

4304 Data Visualization covers interactive representation of data using a modern programming library. Topics include an introduction to the software platform and the principles for data selection, analysis, design and creation of dynamic visualizations. Students produce interactive web-based objects, addressing problems in the presentation and understanding of large data collections. The techniques discussed are applicable to different sources and types of data.

Pre-requisite(s)

COMP 2001, COMP 2002

Credit Restrictions

COMP 4767

Secondary Calendar Changes

4767 Information Visualization and Applications focuses on the design and implementation of interactive visualization techniques for the analysis, comprehension, exploration, and explanation of large collections of abstract information. Topics to be covered include principles of visual perception, information data types, visual encodings of data, representation of relationships, interaction methods, understanding user goals and tasks, and evaluation techniques. Case studies of accepted techniques and the current state-of-the-art in information visualization will be presented.
CR: COMP 4304
PR: COMP 2760 and COMP 3719

Rationale

Data visualization is a developing area with cross-disciplinary application, drawing on different applied areas in computer science. The material is pertinent to Computer Science generally, to visual and data related program streams and to data analysis in applied disciplines.
Consultations

Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.

Sample Course Outline and Method of Evaluation

- Introduction to visual design
  - Visual representations of data (3 hours)
  - Human visual perception (2 hours)
  - Visual encoding and representation (4 hours)
  - Evaluation techniques (2 hours)
- Software techniques and tools
  - Introduction to a data visualization toolkit (D3.js) (6 hours)
  - Interaction techniques and extensions (3 hours)
- Big Data Visualization
  - Types of data / multidimensional data (2 hours)
  - Finding relationships in data (3 hours)
  - Data analysis objectives (1 hour)
  - Data selection and filtering (2 hours)
  - Interaction with data sets (4 hours)

Method of Evaluation:

- Assignments (4) 40%
- Project 30%
- Term test (1 or 2) 15%
- Final exam 15%

Texts


Scott Marray, Interactive Data Visualization for the Web, O'Reilly, 2013

Pablo Navarro Castillo, Mastering D3.js, Marcos Iglesias, February 11, 2015

Instructor(s)

E. Brown, M. Gong
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  4304 Data Visualization

Abbreviated Course Title  Data Visualization

Calendar Change (new course)

4304 Data Visualization covers interactive representation of data using a modern programming library. Topics include an introduction to the software platform and the principles for data selection, analysis, design and creation of dynamic visualizations. Students produce interactive web-based objects, addressing problems in the presentation and understanding of large data collections. The techniques discussed are applicable to different sources and types of data.
CR: COMP 4767
PR: COMP 2001, COMP 2002

Secondary Calendar Changes

4767 Information Visualization and Applications focuses on the design and implementation of interactive visualization techniques for the analysis, comprehension, exploration, and explanation of large collections of abstract information. Topics to be covered include principles of visual perception, information data types, visual encodings of data, representation of relationships, interaction methods, understanding user goals and tasks, and evaluation techniques. Case studies of accepted techniques and the current state-of-the-art in information visualization will be presented.
CR: COMP 4304
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Rationale

Data visualization is a developing area with cross-disciplinary application, drawing on different applied areas in computer science. The material is pertinent to Computer Science generally, to visual and data related program streams and to data analysis in applied disciplines.

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Chair:

Secretary:

Date:
Proposal
New Course – COMP 3401
Introduction to Data Mining

Course Number and Title
3401 Introduction to Data Mining

Abbreviated Course Title
Intro to Data Mining

Calendar Description
3401 Introduction to Data Mining introduces students to the basic concepts and techniques for data mining and knowledge discovery. Students will develop an understanding of the essential data mining technologies, and be able to design and evaluate methods for simple data mining applications.

Pre-requisite(s)
COMP 2002, COMP 2007 and Statistics 2550

Credit Restrictions
None

Secondary Calendar Changes
None

Rationale
The huge amount of data being generated in many areas such as the life sciences, social sciences and social networks makes it a necessity to be able to automatically extract (mine) useful patterns or knowledge from these data. This course provides a comprehensive introduction to data mining.

Consultations
Distributed to Faculties of Science, Arts, Business Administration, Education, Engineering and Applied Science, Medicine, School of Human Kinetics and Recreation, Music, Nursing, Pharmacy, Social Work, Grenfell Campus and Marine Institute.

Sample Course Outline and Method of Evaluation

- Basic concepts for data mining (3 hours)
- Attributes (4 hours)
- Data pre-processing (3 hours)
- Mining frequent patterns (4 hours)
- Classification (9 hours)
- Clustering (6 hours)

Method of Evaluation:

- Assignments (5) 15%
- Midterm exam 25%
- Project 10%
- Final exam 50%

Texts

Jiawei Han, Micheline Kamber and Jian Pei, *Data Mining, Concepts and Techniques* 3rd Edition, Morgan Kaufmann Publishers, 2012.

Instructor(s)

J. Tang, L. Pena-Castillo
SUMMARY PAGE FOR SENATE

Approval Form

Course Number and Title  3401 Introduction to Data Mining

Abbreviated Course Title  Intro to Data Mining

Calendar Change (new course)

3401 Introduction to Data Mining introduces students to the basic concepts and techniques for data mining and knowledge discovery. Students will develop an understanding of the essential data mining technologies, and be able to design and evaluate methods for simple data mining applications.

Secondary Calendar Changes

None

Rationale

The huge amount of data being generated in many areas such as the life sciences, social sciences and social networks makes it a necessity to be able to automatically extract (mine) useful patterns or knowledge from these data. This course provides a comprehensive introduction to data mining.

Consultations Sought From

| Department of Biochemistry | Yes |
| Department of Biology      | Yes |
| Department of Chemistry    | Yes |
| Department of Earth Sciences | No |
| Department of Economics    | Yes |
| Department of Geography    | Yes |
| Department of Mathematics and Statistics | Yes |
| Department of Ocean Sciences | No |
| Department of Physics and Oceanography | Yes |
| Department of Psychology   | Yes |
| Department of Computer Engineering | Yes |
| Faculty of Arts            | Yes |
| Faculty of Business Administration | No |
| Faculty of Education       | No |
| Faculty of Engineering and Applied Science | Yes |
| Faculty of Medicine        | Yes |
| School of Human Kinetics and Recreation | Yes |
| School of Music            | Yes |
| School of Nursing          | No  |
| School of Pharmacy         | Yes |
Consultations Sought From
School of Social Work
Grenfell Campus
Marine Institute

Library Report Received

Comments Received
Yes
No
Yes

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

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:
Secretary:
Date:
November 10, 2016

TO:      Joan Burry, Secretary
         Committee on Undergraduate Studies, Faculty of Science

FROM:   Minglun Gong, Department Head
         Department of Computer Science

SUBJECT: Calendar Change - Streams Proposal

Further to the proposal submitted in January for a new program in Computer Science, the Department of Computer Science is proposing going forward with two of the proposed six streams: Smart Systems, and Visual Computing and Gaming. A copy of the proposals is enclosed for your convenience.

Collegial consultation for this revised decision took place at the departmental meeting held October 27, 2016. As part of the consultation process, the original proposal was circulated to other academic units with a request for comments by November 12, 201, and copies of those comments are enclosed.

Minglun Gong
/re
Enclosures
Nov 8, 2016

To: Dr. Shannon Sullivan
   Chair, Faculty of Science Undergraduate Studies Committee

From: Minglun Gong
   Head, Department of Computer Science

Subject: Resource requirements for two proposed streams

---------------------------------------------------------------------------------

Regarding your enquiry about the resource requirements for implementing the Visual Computing and Games stream and the Smart Systems stream proposed by the Department of Computer Science, I am happy to confirm that the department will be able to offer these two streams with our existing resources.

Sincerely,

Minglun Gong
New Program Proposal - Computer Science

Major in Computer Science (Smart Systems)  
(B.Sc. only)

Executive Summary

Following the recommendations of the most recent Academic Program Review of the undergraduate programs offered by the Department of Computer Science, a stream-based program is proposed in the area of artificial intelligence—Smart Systems. The proposal ties in with and is a variant of the changes to our general degree (B.Sc. and B.A.) in Computer Science, and follows the newest (2013) curriculum recommendations prepared by a joint international ACM/IEEE committee (ACM and IEEE are the main professional organizations of the discipline) on curriculum revision. Due to many changes in the discipline of Computer Science, this revision constitutes a once-in-a-decade revamping of our undergraduate program offerings.

The focus on Smart Systems is achieved by reducing the core requirements that all Computer Science students have to take from 36 to 27 credit hours, in favour of courses in the area of Smart Systems. As a result of this reduction of the core, nine credit hours are now available, in addition to the nine credit hours that were previously available for Computer Science electives. These 18 credit hours are now distributed among stream-required and stream-elective courses in the following way.

Four additional courses are required for a Major in Computer Science (Smart Systems):

1. COMP 3200: Algorithmic Techniques for Smart Systems
2. COMP 3201: Introduction to Nature-inspired Computing
3. COMP 3202: Introduction to Machine Learning
4. COMP 3301: Visual Computing and Applications (also required in the Visual Computing and Games stream)

The first three of these courses are introduced for this new stream, but can also be chosen by other students as electives. The last course is introduced in the context of another stream (Visual Computing and Games) but constitutes a required course for Smart Systems, too. In addition, students declaring their major in Smart Systems can select two courses out of a set of six electives which already exist or are introduced in the context of another proposed stream.

Electives (two must be chosen):
1. COMP 3401: Introduction to Data Mining
2. COMP 3550: Introduction to Bioinformatics (already exists)
3. COMP 4301: Computer Vision (elective in Visual Computing and Games stream)
4. COMP 4303: Artificial Intelligence in Computer Games (elective in Visual Computing and Games stream)
5. COMP 4750: Natural Language Processing (already exists)
New Program Proposal - Computer Science

6. COMP 4766: Introduction to Autonomous Robotics (already exists)

Resource Implications: Instructional Costs

During the transition into the new program offerings, the Department's resources will be strained. However, no new faculty (other than replacement of retiring/resigning faculty) will be necessary. It is hoped that the new program offerings will make the University and the Department more attractive to students, fulfilling a key requirement of the last APR.

The Department has taken care that as many courses as possible can be used in different streams and that teaching sections are grouped together to offer courses in the most efficient manner possible. As noted, older courses will be phased out in step with the introduction of the new program and streams. If necessary, accommodations will be made for students currently in the program.

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Library Report Received Yes
New Program Proposal - Computer Science

Library Holdings and/or Other Resources Required

While the library holdings can adequately meet the needs of the proposed courses, a few areas of the collection should be supplemented or refreshed.

The costs, if any, associated with this change/these changes can be met from within the existing budget allocation or authorized new funding for the Department of Computer Science.

Signature of Unit Head (if appropriate): ________________________________

Date: ____________________________________________________________

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

_______________________________________________________________

Date: ____________________________________________________________
New Program Proposal - Computer Science

SUMMARY PAGE FOR SENATE

Approval Form

Program Title

Major in Computer Science (Smart Systems)

Course Additions

Core Courses
COMP 3200: Algorithmic Techniques for Smart Systems
COMP 3201: Introduction to Nature-inspired Computing
COMP 3202: Introduction to Machine Learning
COMP 3301: Visual Computing and Applications

Elective Courses
COMP 3401: Introduction to Data Mining
COMP 4301: Computer Vision
COMP 4303: Artificial Intelligence in Computer Games

Calendar Entry

9.4.2 Major in Computer Science (Smart Systems) (B.Sc. only)

1. Forty-five credit hours in Computer Science courses are required for a major in
Computer Science (Smart Systems):
      and 2008.
   b) Computer Science 3200, 3201, 3202 and 3301.
   c) Six additional credit hours in Computer Science courses selected from Computer
      Science 3401, 3550, 4301, 4303, 4750, 4766.

2. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics
1510 or 2550.

Secondary Calendar Changes

None.

Rationale

Computing devices are everywhere. As they are being embedded in more and more
everyday products and services, there is an increasing demand for such computing to
New Program Proposal - Computer Science

understand and adapt to both user needs and requests, as well as dynamic real-world environments, in a more human-like and human-comprehensible fashion. Handling the complexity and uncertainty that characterizes both human beings and dynamic real-world environments in a manner that is efficient, robust, and intelligent requires special techniques, many of which are both inspired by and operate well within limits imposed by nature. The aim of the Smart Systems stream is to give an overview of the growing body of algorithmic and mathematical techniques that have proven practical in allowing computer systems to deal intelligently with the complexities and uncertainties of both human beings and the real world in an efficient and robust manner.

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Library Report Received: Yes

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

Name: 
New Program Proposal - Computer Science

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair: __________________________________________________________

Secretary: ______________________________________________________

Date: ___________________________________________________________
New Program Proposal - Computer Science

Major in Computer Science
(Visual Computing and Games)  (B.Sc. only)

Executive Summary

Following the recommendations of the most recent Academic Program Review of the undergraduate programs offered by the Department of Computer Science, a stream-based program is proposed in the area of Visual Computing and Games. The proposal ties in with and is a variant of the changes to our general degree (B.Sc. and B.A.) in Computer Science, and follows the newest (2013) curriculum recommendations prepared by a joint international ACM/IEEE committee (ACM and IEEE are the main professional organizations of the discipline) on curriculum revision. Due to many changes in the discipline of Computer Science, this revision constitutes a once-in-a-decade revamping of our undergraduate program offerings.

The focus on Visual Computing and Games is achieved by reducing the core requirements that all Computer Science students have to take from 36 to 27 credit hours, in favour of courses in the area of visual computing and game programming. As a result of this reduction of the core, nine credit hours are now available, in addition to the nine credit hours that were previously available for Computer Science electives. These 18 credit hours are now distributed among stream-required and stream-elective courses in the following way.

Three additional courses are required for a major in Computer Science (Visual Computing and Games):

1. COMP 3300: Interactive Technologies
2. COMP 3301: Visual Computing and Applications (also required in the Smart Systems stream)
3. COMP 4300: Game Programming Algorithms and Techniques

These courses are introduced for this new stream, but can also be chosen by other students as required courses or electives. In addition, students declaring their major in Visual Computing and Games can select two courses out of a set of five electives which already exist or are introduced in the context of this or another proposed stream.

Elective courses (two must be chosen):

1. COMP 2300: Introduction to Multimedia Programming
2. COMP 4301: Computer Vision (also an elective in the Smart Systems stream)
3. COMP 4302: 3D Computer Graphics
New Program Proposal - Computer Science

4. COMP 4303: Artificial Intelligence in Computer Games (also an elective in the Smart Systems stream)
5. COMP 4304: Data Visualization

A final elective can be chosen from the above list of Computer Science elective courses or the following three recommended courses.

Recommended electives:

1. COMP 2100: Social Web Analysis
2. COMP 4766: Introduction to Autonomous Robotics (already exists)
3. COMP 4768: Software Development for Mobile Devices (already exists)

Resource Implications: Instructional Costs

During the transition into the new program offerings, the Department’s resources will be strained. However, no new faculty (other than replacement of retiring/resigning faculty) will be necessary. It is hoped that the new program offerings will make the University and the Department more attractive to students, fulfilling a key requirement of the last APR.

The Department has taken care that as many courses as possible can be used in different streams and that teaching sections are grouped together to offer courses in the most efficient manner possible. As noted, older courses will be phased out in step with the introduction of the new program and streams. If necessary, accommodations will be made for students currently in the program.

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New Program Proposal - Computer Science

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Library Report Received: Yes

Library Holdings and/or Other Resources Required

While the library holdings can adequately meet the needs of the proposed courses, a few areas of the collection should be supplemented or refreshed.

The costs, if any, associated with this change/these changes can be met from within the existing budget allocation or authorized new funding for Department of Computer Science.

Signature of Unit Head (if appropriate): __________________________________________

Date: __________________________________________________________________________

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

Date: __________________________________________________________________________
New Program Proposal - Computer Science

SUMMARY PAGE FOR SENATE

Approval Form

Program Title

Major in Computer Science (Visual Computing and Games)

Course Additions

Core Courses
COMP 3300: Interactive Technologies
COMP 3301: Visual Computing and Applications
COMP 4300: Game Programming Algorithms and Techniques

Elective Courses
COMP 2100: Social Web Analysis
COMP 2300: Introduction to Multimedia Programming
COMP 4301: Computer Vision
COMP 4302: 3D Computer Graphics
COMP 4303: Artificial Intelligence in Computer Games
COMP 4304: Data Visualization

Calendar Entry

9.4.3 Major in Computer Science (Visual Computing and Games) (B.Sc. only)

1. Forty-five credit hours in Computer Science courses are required for a major in Computer Science (Visual Computing and Games):
   b) Computer Science 3300, 3301 and 4300.
   c) Six additional credit hours in Computer Science courses selected from Computer Science 2300, 4301, 4302, 4303, 4304.
   d) Three additional credit hours in Computer Science courses selected from those listed in c above, or Computer Science 2100, 4766, 4768.

2. Additional courses required are: Mathematics 1000, 1001, 2000, 2050, and Statistics 1510 or 2550.

Secondary Calendar Changes

None.
New Program Proposal - Computer Science

Rationale

Visual perception is responsible for most of our impressions about the world around us. The field of Visual Computing in Computer Science studies how to use computers to both mimic humans' visual processing power (e.g., object recognition) and to create visual content (e.g., games and movies). Computer games offer a great opportunity for computer scientists to learn and apply fundamental concepts of the design and creation of interactive experiences and visual content. The courses in the Visual Computing and Games stream cover a variety of sub-fields that are related to visual computing and interaction, including image processing, computer vision, multimedia, and game development. The stream has a strong emphasis on hands-on learning and exploration of applied aspects of visual computing and games. Students in this stream will be equipped with skills that will allow them to develop professionally in these visually oriented fields. They will also be prepared for graduate studies in computer graphics, vision and human-computer interaction.

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Library Report Received

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New Program Proposal - Computer Science

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

Name: 

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APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair: 

Secretary: 

Date: 

TO:  Wolfgang Banzhaf, Department Head,  
      Department of Computer Science

FROM:  Alison Ambi, Science Research Liaison Librarian,  
       QEI Library

DATE: November 2015

RE: Library evaluation for proposed calendar changes  
associated with the Computer Science undergraduate  
curriculum update:  
  • Introduction of 37 new courses (See Appendix 1) and 6  
    new major streams  
  • Removal of former courses  
  • Associated housekeeping calendar adjustments  
    (prerequisites, graduation requirements, etc.)
Summary

The proposed housekeeping calendar changes and course discontinuations associated with the Computer Science undergraduate curriculum update will have no effect on Library resources.

Of the 37 proposed new courses, 15 have been created by re-packaging topics previously taught in other undergraduate courses (see Appendix 1). Those courses should therefore be adequately supported by current library resources and collections guidelines, and an evaluation was not necessary.

An evaluation of library resources was conducted to determine whether current holdings and collections guidelines will adequately support the remaining 22 courses.

The proposed changes to the undergraduate curriculum follow recommendations by the ACM (Association of Computing Machinery) and the IEEE (Institute of Electrical and Electronic Engineers). These recommendations reflect current research trends in the field. Memorial subscribes to the electronic products of these two organizations as well as many other core resources in the field. Memorial researchers consequently have access to a strong collection of primary resources.

Undergraduate students in Computer Science, however, tend to require secondary literature and practical guides to supplement their textbooks. Until they reach the upper years the primary research literature is typically too specific or too technical for most students’ purposes. This evaluation therefore focused on the extent to which the core primary research is supplemented by book holdings. The library purchases books both individually and in multi-disciplinary eBook packages like SpringerLink, ebrary, IGI Global, etc.

While the current library book holdings can adequately supplement the textbooks for the new courses, a few areas of the collection should be supplemented or refreshed to ensure that they are well supported. Specifically:

- Introductory texts and manuals for programming languages will need to be refreshed. The relative merits of purchasing physical or eBooks in this genre will be considered and in December more beginner guides to Python will be purchased and the collection of manuals for various other languages will be updated.

- The collection guidelines for Computer Science will be changed to ensure that purchasing is more focused on some of the newer topics over the next few years, for example nature-inspired computing, visual, game and mobile web programming, 3D graphics, artificial intelligence in games, autonomous systems and machine learning. As many of these topics will not be taught until 2018/2019 there is time to strengthen the collection in these areas.

- A selection of the recommended texts for the upper level courses will be purchased or updated over the next few years.
Analysis

Library Holdings Evaluation

The proposed Computer Science courses are based on undergraduate curriculum recommendations by the ACM (Association of Computing Machinery) and the IEEE (Institute of Electrical and Electronic Engineers). These recommendations reflect current research trends in the field.

Memorial Libraries subscribes to both the ACM and IEEE digital products:
- ACM Digital Library - Every article ever published by the ACM and citations from other major publishers in computing
- IEEE Xplor - Journals and Books

In addition to the ACM and IEEE products, students and researchers at Memorial are provided with access to many computer science journals from other publishers and a range of other electronic collections and indexes relevant to the field of Computer Science including Web of Science, Scopus, Abstracts in New Technology & Engineering, The Collection of Computer Science Bibliographies, Compendex, and Proquest Dissertations and Theses.

Computer Scientists also benefit from a culture of openly sharing their research, for example in the freely accessible article archives CoRR (Computing Research Repository housed on ArXiv) and CiteSeerX.

Memorial researchers consequently have access to a strong collection of core primary resources reflecting current trends in the field, as well as indexing tools to allow the discovery of relevant literature beyond the current holdings.

Undergraduate students in Computer Science, however, tend to require secondary literature, and practical guides to supplement their textbooks. Until they reach the upper years the primary research literature is typically too specific or too technical for most students’ purposes.

This evaluation therefore focused on the extent to which the core primary research is supplemented by book holdings. The library purchases books both individually and in multi-disciplinary eBOOK packages like SpringerLink, ebrary, IGI Global, etc.

Searches were conducted in “OneSearch” (limited to “catalogue” and publication start date 2005) to estimate the book holdings relevant to the key topics associated with the new courses. While the figures for paper books in the QEIi library are accurate, some of the eBOOK numbers may be inflated because eBooks are sometimes indexed at the chapter level and the results sometimes include a few other things (for example conference proceedings). When eBOOK numbers exceed a few hundred, this is probably why, and these large numbers can simply be interpreted as “we have many electronic book-type documents on this topic.” Books and eBooks are also often not tagged with the same subject headings. Any list of “hits” from a search using a subject heading might favour results in one or the other category. Caveats aside, the figures can provide a sense of the strength of the collection on particular topics and where the collection might need to be supplemented or refreshed.

Allison Ambl, Collections Division, QEIi Library, St. John’s, Newfoundland, Canada A1B 3Y1
Phone: 709 864-7155  Email: ambl@mun.ca  Fax: 709 864 2153
Core Courses

Of the 11 proposed new core courses, 9 have been created by repackaging topics that are currently taught. (See Appendix 1) Evaluations for these will not be necessary. Two have new content:

COMP 1001  Introduction to Programming

COMP 2001  Object-Oriented Programming and Human-Computer Interaction

Manuals and introductory texts for the programming languages used in these courses are the most likely supplemental resources that students might seek. For the introduction to programming course Python will now be taught while Java will be used for Object-Oriented Programming course. Because programming languages are developed continually, results were limited to those published from 2005 onwards.

<table>
<thead>
<tr>
<th>Subject Heading/Keywords</th>
<th>QEII Books</th>
<th>eBooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5: Python (Computer program language)</td>
<td>18*</td>
<td>111</td>
</tr>
<tr>
<td>S: Java (Computer Programming Language)</td>
<td>23</td>
<td>399</td>
</tr>
<tr>
<td>S: Human computer interaction</td>
<td>169</td>
<td>1596</td>
</tr>
</tbody>
</table>

*Entries preceded by "S" are controlled vocabulary subject terms, rather than just keywords. *Only 2 truly introductory titles published after 2005 are currently available at the QEII library.

The paper manuals for these programming languages are a little dated. A few more recent Python introductory texts would be ideal for serving these students. Introductory titles from the O’Reilly series have been made available for a few years through the Safari eBook package, but students have expressed a preference for this type of resource to be available as physical rather than eBooks. For this reason, and due to budget constraints, the Safari package is slated for cancellation. The challenge with physical books is they are available to only one user at a time and recently published books in this genre are high theft items. It might be beneficial to consider a smaller more affordable and highly focused Safari package in conjunction with the purchase of a few physical introductory texts.

Journal articles are not typically useful for studies at this level.

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Streams:

1. Net Centric Computing

COMP 2100 Social Web Analysis

COMP 3100 Web Programming

COMP 4100 Web Services

COMP 4101 Search Engines

Because many of these topics/terms like “social networks” are discussed in literature from other fields (Psychology, Sociology, Education, etc.) it was a little more challenging to get purely Computer Science-focused results sets. There might still be “noise” in these numbers.

<table>
<thead>
<tr>
<th>Keywords/Subject Headings</th>
<th>QEI Books</th>
<th>eBooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer science social web analysis</td>
<td>12</td>
<td>598</td>
</tr>
<tr>
<td>Computer science AND S: Information technology - social aspects</td>
<td>19</td>
<td>218</td>
</tr>
<tr>
<td>S: Web search engines</td>
<td>17</td>
<td>64</td>
</tr>
<tr>
<td>S: Online Social Networks AND location</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>S: Social Networks AND location</td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td>S: Social Networks AND privacy</td>
<td>16</td>
<td>66</td>
</tr>
<tr>
<td>S: Social Networks AND trust</td>
<td>7</td>
<td>48</td>
</tr>
<tr>
<td>Web programming AND (browser* OR server* OR HTTP)</td>
<td>5</td>
<td>383</td>
</tr>
<tr>
<td>S: HTML</td>
<td>2</td>
<td>117</td>
</tr>
<tr>
<td>S: HTML AND &quot;HTML 5&quot;</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>S: CSS OR S: Cascading style sheets</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>&quot;Document object model&quot;</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>&quot;Y: JavaScript&quot;</td>
<td>0</td>
<td>157</td>
</tr>
<tr>
<td>&quot;Server side&quot; AND script*</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>S: PHP (Computer Program Language)</td>
<td>0</td>
<td>127</td>
</tr>
<tr>
<td>Node.js</td>
<td>0</td>
<td>35</td>
</tr>
</tbody>
</table>

Alison Ambi, Collections Division, QEI Library, St. John's, Newfoundland, Canada A1B 3Y1
Phone: 709 864-7125   Email: ambi@mun.ca   Fax: 709 864 2153
2. Smart Systems

COMP 3200  Algorithmic Techniques for Autonomous Systems

COMP 3201  Introduction to Nature-Inspired Computing

COMP 3202  Introduction to Machine Learning

COMP 3301  Visual Computing and Applications (See visual computing stream)
3. Visual Computing and Games

COMP 2300  Introduction to Multimedia Programming

COMP 3300  Interactive Technologies
Blackman, S. (2013) Beginning 3D Game Development with Unity (2nd Ed.). Springer. (SpringerLink)

COMP 3301  Visual Computing and Applications

COMP 4300  Introduction to Game Programming
Sanjay Madhav, Game Programming Algorithms and Techniques.

COMP 4301  Computer Vision

COMP 4302  3D Computer Graphics

COMP 4303  Artificial Intelligence in Computer Games
4. Data Science

COMP 3202 Introduction to Machine Learning (See section 2 – Smart Systems)

COMP 3400 Introduction to Databases

COMP 3401 Introduction to Data Mining
Jiawei Han, Micheline Kamber and Jian Pei, Data Mining, Concepts and Techniques 3rd Edition, Morgan Kaufmann Publishers, 2012. (QEL stacks)

COMP 4405 Privacy and Security – An Introduction
5. Scientific Computing

COMP 3500  Introduction to Scientific Computing

COMP 3501  Computational Linear Algebra with Applications
Alan Laub, Computational Matrix Analysis, SIAM, 2012.
COMP 4500    Numerical Optimization with Applications

COMP 4501    Numerical Algorithms for Shared and Distributed Memory Architecture
Kaminsky, A., Building Parallel Programs: SMPs, Clusters & Java, Course Technology, 2010.

<table>
<thead>
<tr>
<th>Keywords/Subject Headings</th>
<th>QEII Books</th>
<th>eBooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Scientific Computing&quot;</td>
<td>28</td>
<td>103</td>
</tr>
<tr>
<td>S: MATLAB</td>
<td>80</td>
<td>134</td>
</tr>
<tr>
<td>S: Numerical analysis</td>
<td>108</td>
<td>598</td>
</tr>
<tr>
<td>S: Numerical analysis AND S: MATLAB</td>
<td>17</td>
<td>33</td>
</tr>
<tr>
<td>S: Algebras, linear</td>
<td>21</td>
<td>74</td>
</tr>
<tr>
<td>S: Linear systems</td>
<td>16</td>
<td>42</td>
</tr>
<tr>
<td>S: Mathematical optimization</td>
<td>105</td>
<td>754</td>
</tr>
<tr>
<td>S: Mathematical optimization AND &quot;Linear programming&quot;</td>
<td>7</td>
<td>47</td>
</tr>
<tr>
<td>&quot;Nonlinear optimization&quot;</td>
<td>4</td>
<td>51</td>
</tr>
<tr>
<td>S: Nonlinear theories</td>
<td>36</td>
<td>166</td>
</tr>
<tr>
<td>S: Nonlinear theories AND S: Mathematical optimization</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>S: computer science AND distributed memory</td>
<td>50</td>
<td>300</td>
</tr>
<tr>
<td>S: Parallel programming (computer science)</td>
<td>17</td>
<td>61</td>
</tr>
<tr>
<td>S: Numerical calculations</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>S: Numerical calculations AND Algorithms</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

6. Theory of Computing

COMP 3600    Algorithm Design and Analysis

COMP 3601    Mathematical Methods in Theory of Computation
No texts
COMP 3602  Introduction to the Theory of Computation

<table>
<thead>
<tr>
<th>Keywords/Subject Headings</th>
<th>QEii Books</th>
<th>eBooks</th>
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</thead>
<tbody>
<tr>
<td>S: Computer algorithms</td>
<td>150</td>
<td>229</td>
</tr>
<tr>
<td>S: Algorithms</td>
<td>271</td>
<td>771</td>
</tr>
<tr>
<td>S: Algorithms AND T: design</td>
<td>9</td>
<td>27</td>
</tr>
<tr>
<td>T: “analysis of algorithms”</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>S: Theory of computation</td>
<td>20</td>
<td>274</td>
</tr>
<tr>
<td>S: Computer Science - Mathematics</td>
<td>51</td>
<td>331</td>
</tr>
<tr>
<td>S: Number theory AND “Computer Science”</td>
<td>4</td>
<td>39</td>
</tr>
<tr>
<td>S: Graph Theory AND “Computer Science”</td>
<td>27</td>
<td>43</td>
</tr>
<tr>
<td>S: Algorithms AND S: Algorithm Analysis and Problem Complexity</td>
<td>55</td>
<td>150</td>
</tr>
</tbody>
</table>

Conclusions

All of the topics in the proposed new courses are supported to some extent by current library holdings. Most are supported well or adequately.

Some areas of the collection should ideally be enhanced, either because this topic has not previously been a priority or, because the topic is relatively new and less has been published. For example the collections related to nature-inspired computing, visual, game and mobile web programming, 3D graphics, artificial intelligence in games, autonomous systems and machine learning could be strengthened. It is anticipated that many of the courses on these topics will not be offered until 2018 or 2019, which allows plenty of time to enhance the collection. Modifications will be made to the Computer Science collections guidelines to ensure that these topics receive focused collection development over the next few years.

Many of the beginner guides and manuals for the programming languages used in the new curriculum are dated. A few more recent introductory texts will need to be purchased in December, especially for Python. While students prefer physical books in this genre, the single-user limitations and high theft rate make this method of addressing the need less practical. Access to introductory titles from the O'Reilly series could be obtained by negotiating a smaller Safari eBook package (the current package is too costly to retain). Options will be considered and action will be taken to rectify this gap in December.

While the library does not typically purchase text books, texts recommended for the upper level courses are often key texts in the field. We appear to have roughly half of the texts for the upper-level courses (some are older editions). Over time we can work on adding the others to the collection.
Appendix 1 – Courses, Content and Timelines

Note: The information in this appendix was provided by the Computer Science department.

Appendix Table 1: New Courses - Summary of Content and Introduction Schedule

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>New Content?</th>
<th>Previously Covered In</th>
<th>Year to be Introduced? (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 1000</td>
<td>Computer Science – An Introduction</td>
<td>No</td>
<td>1700</td>
<td>2016</td>
</tr>
<tr>
<td>COMP 1001</td>
<td>Introduction to Programming</td>
<td>30% (#)</td>
<td>1710</td>
<td>2016</td>
</tr>
<tr>
<td>COMP 1002</td>
<td>Logic for Computer Science</td>
<td>No</td>
<td>2742</td>
<td>2016</td>
</tr>
<tr>
<td>COMP 2001</td>
<td>Object-Oriented Programming and Human-Computer Interaction</td>
<td>10% (#)</td>
<td>2710</td>
<td>2017</td>
</tr>
<tr>
<td>COMP 2002</td>
<td>Data Structures and Algorithms</td>
<td>No</td>
<td>2711</td>
<td>2017</td>
</tr>
<tr>
<td>COMP 2003</td>
<td>Computer Architecture</td>
<td>No</td>
<td>3724</td>
<td>2017</td>
</tr>
<tr>
<td>COMP 2004</td>
<td>Operating Systems</td>
<td>No</td>
<td>4721</td>
<td>2017</td>
</tr>
<tr>
<td>COMP 2005</td>
<td>Software Engineering</td>
<td>No</td>
<td>3716</td>
<td>2017</td>
</tr>
<tr>
<td>COMP 2006</td>
<td>Computer Networking</td>
<td>No</td>
<td>3715</td>
<td>2017</td>
</tr>
<tr>
<td>COMP 2007</td>
<td>Information Management</td>
<td>No</td>
<td>3754</td>
<td>2017</td>
</tr>
<tr>
<td>COMP 2008</td>
<td>Social Issues and Professional Practice</td>
<td>No</td>
<td>2760</td>
<td>2017</td>
</tr>
</tbody>
</table>

Stream – Net-Centric Computing

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Percentage</th>
<th>Previously Covered In</th>
<th>Year to be Introduced? (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 2100</td>
<td>Social Web Analysis</td>
<td>100%</td>
<td></td>
<td>2018</td>
</tr>
<tr>
<td>COMP 3100</td>
<td>Web Programming</td>
<td>80%</td>
<td>3715</td>
<td>2018</td>
</tr>
<tr>
<td>COMP 4100</td>
<td>Web Services</td>
<td>80%</td>
<td>3715</td>
<td>2019</td>
</tr>
<tr>
<td>COMP 4101</td>
<td>Search Engines</td>
<td>100%</td>
<td></td>
<td>2019</td>
</tr>
</tbody>
</table>

Stream – Smart Systems

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Percentage</th>
<th>Previously Covered In</th>
<th>Year to be Introduced? (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 3200</td>
<td>Algorithmic Techniques for Autonomous Systems</td>
<td>100%</td>
<td></td>
<td>2018</td>
</tr>
<tr>
<td>COMP 3201</td>
<td>Introduction to Nature-inspired Computing</td>
<td>70%</td>
<td>4752, partially</td>
<td>2018</td>
</tr>
<tr>
<td>COMP 3202</td>
<td>Introduction to Machine Learning</td>
<td>100%</td>
<td></td>
<td>2018</td>
</tr>
<tr>
<td>COMP 3301</td>
<td>Visual Computing and Applications</td>
<td>See below</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Stream – Visual Computing and Games

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 3300</td>
<td>Interactive Technologies</td>
<td>80%</td>
<td>2018</td>
</tr>
<tr>
<td>COMP 3301</td>
<td>Visual Computing and Applications</td>
<td>90%</td>
<td>2018</td>
</tr>
<tr>
<td>COMP 4300</td>
<td>Introduction to Game Programming</td>
<td>100%</td>
<td>2019</td>
</tr>
<tr>
<td>COMP 4301</td>
<td>Computer Vision</td>
<td>50%</td>
<td>2019</td>
</tr>
<tr>
<td>COMP 4307</td>
<td>3D Computer Graphics</td>
<td>100%</td>
<td>2019</td>
</tr>
<tr>
<td>COMP 4303</td>
<td>Artificial Intelligence in Computer Games</td>
<td>100%</td>
<td>2019</td>
</tr>
<tr>
<td>COMP 4304</td>
<td>Data Visualization</td>
<td>50%</td>
<td>2019</td>
</tr>
</tbody>
</table>

## Stream – Data Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 3202</td>
<td>Introduction to Machine Learning</td>
<td>See above</td>
<td></td>
</tr>
<tr>
<td>COMP 3400</td>
<td>Introduction to Databases</td>
<td>No</td>
<td>4754, partially 2018</td>
</tr>
<tr>
<td>COMP 3401</td>
<td>Introduction to Data Mining</td>
<td>100%</td>
<td>(***) 2018</td>
</tr>
<tr>
<td>COMP 4405</td>
<td>Security and Privacy – An Introduction</td>
<td>100%</td>
<td>(***) 2016</td>
</tr>
</tbody>
</table>

## Stream – Scientific Computing

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 3500</td>
<td>Introduction to Scientific Computing</td>
<td>No</td>
<td>3731 2018</td>
</tr>
<tr>
<td>COMP 3501</td>
<td>Computational Linear Algebra with Applications</td>
<td>No</td>
<td>4734 2018</td>
</tr>
<tr>
<td>COMP 4500</td>
<td>Numerical Optimization with Applications</td>
<td>No</td>
<td>3753 2019</td>
</tr>
<tr>
<td>COMP 4501</td>
<td>Numerical Algorithms for Shared and Distributed Memory Architecture</td>
<td>100%</td>
<td>2019</td>
</tr>
</tbody>
</table>

## Stream – Theory of Computing

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 3600</td>
<td>Algorithm Design and Analysis</td>
<td>No</td>
<td>4740 2018</td>
</tr>
<tr>
<td>COMP 3601</td>
<td>Mathematical Methods in Theory of Computation</td>
<td>100%</td>
<td>2018</td>
</tr>
<tr>
<td>COMP 3602</td>
<td>Introduction to the Theory of Computation</td>
<td>No</td>
<td>3719 2018</td>
</tr>
</tbody>
</table>

(*) Estimate  
(**) Graduate course already exists  
(***) COMP 1001 Programming Language changes from JAVA to PYTHON
COMP 2001 The HCI component of the course
### Table 2: Courses to be Discontinued over the next Four Years

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Topic subsumed in new course?</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 2602</td>
<td>Computer Programming in Fortran*</td>
<td>1510 **</td>
</tr>
<tr>
<td>COMP 2650</td>
<td>Problem Solving with Personal Computers</td>
<td>1600 **</td>
</tr>
<tr>
<td>COMP 2752</td>
<td>Introduction to Business Data Processing*</td>
<td>No</td>
</tr>
<tr>
<td>COMP 2801</td>
<td>Introduction to Computing for Business</td>
<td>No</td>
</tr>
<tr>
<td>COMP 3714</td>
<td>Programming Languages and their Processors*</td>
<td>No</td>
</tr>
<tr>
<td>COMP 3717</td>
<td>Symbolic Computation and Recursion*</td>
<td>No</td>
</tr>
<tr>
<td>COMP 3723</td>
<td>Logic Design*</td>
<td>No</td>
</tr>
<tr>
<td>COMP 3751</td>
<td>Computational Aspects of Operations Research*</td>
<td>No</td>
</tr>
<tr>
<td>COMP 3790</td>
<td>Directed Readings*</td>
<td>No</td>
</tr>
<tr>
<td>COMP 4719</td>
<td>Software Specification*</td>
<td>4738 **</td>
</tr>
<tr>
<td>COMP 4725</td>
<td>Introduction to LSI Design*</td>
<td>No</td>
</tr>
<tr>
<td>COMP 4735</td>
<td>Advanced Matrix Computations and Applications*</td>
<td>3501, partially</td>
</tr>
<tr>
<td>COMP 4761</td>
<td>Human-Computer Interaction</td>
<td>2001, 3300</td>
</tr>
</tbody>
</table>

**Housekeeping: Inactive Courses and Courses that have already been replaced — to be removed from the Calendar after 2015-2016**

- COMP-1700  Introduction to Computer Science
- COMP-1710  Object-Oriented Programming
- COMP-4748  Introduction to the Science of Complexity
- COMP-4754  Database Systems
- COMP-4767  Information Visualization and Applications

**To be immediately discontinued after this academic year, 2015-2016:**

- COMP-2710  Object-Oriented Programming II
- COMP-2711  Introduction to Algorithms and Data Structures
- COMP-2742  Logic for Computer Science
- COMP-2760  Encountering the Computer: Society and the Individual
- COMP-3754  Introduction to Information and Intelligent Systems
- COMP-4721  Operating Systems
To be discontinued after 2017-2018:

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>COMP-1550</td>
<td>Introduction to Multimedia Application Development</td>
</tr>
<tr>
<td>COMP-3715</td>
<td>Network Computing with Web Applications</td>
</tr>
<tr>
<td>COMP-3716</td>
<td>Software Methodology</td>
</tr>
<tr>
<td>COMP-3724</td>
<td>Computer Organization</td>
</tr>
<tr>
<td>COMP-3725</td>
<td>Computer Architecture and Operating Systems</td>
</tr>
<tr>
<td>COMP-3731</td>
<td>Introduction to Scientific Computing</td>
</tr>
<tr>
<td>COMP-3753</td>
<td>Computational Aspects of Linear Programming</td>
</tr>
<tr>
<td>COMP-4734</td>
<td>Advanced Matrix Computations and Applications</td>
</tr>
<tr>
<td>COMP-4740</td>
<td>Design and Analysis of Algorithms</td>
</tr>
<tr>
<td>COMP-4751</td>
<td>Computer Graphics</td>
</tr>
<tr>
<td>COMP-4753</td>
<td>Artificial Intelligence</td>
</tr>
<tr>
<td>COMP-4746</td>
<td>Special Topics in Theoretical Aspects</td>
</tr>
</tbody>
</table>

(*) Inactive course
(**) Course already exists
<table>
<thead>
<tr>
<th>Consultations Sought From</th>
<th>Comments Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Biochemistry</td>
<td>Yes</td>
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<tr>
<td>Department of Biology</td>
<td>Yes</td>
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<tr>
<td>Department of Chemistry</td>
<td>Yes</td>
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<tr>
<td>Department of Earth Sciences</td>
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<tr>
<td>Department of Economics</td>
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<tr>
<td>Department of Geography</td>
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<tr>
<td>Department of Mathematics and Statistics</td>
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<tr>
<td>Department of Ocean Sciences</td>
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<tr>
<td>Department of Physics and Oceanography</td>
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<td>Department of Psychology</td>
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<td>Department of Computer Engineering</td>
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<tr>
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<td>Faculty of Business Administration</td>
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<tr>
<td>School of Human Kinetics and Recreation</td>
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<td>School of Social Work</td>
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<tr>
<td>Grenfell Campus</td>
<td>No</td>
</tr>
<tr>
<td>Marine Institute</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Hi, 

The Department of Computer Science has undertaken a massive review of its current undergraduate program. The proposed changes incorporate recommendations of our latest APR report, and follow the newest (2013) ACM/IEEE guidelines for offering Computer Science curricula. 

We would appreciate receiving your comments by November 12.

As a result of this process, your school/department/faculty may wish to consider this as an opportunity to include certain Computer Science course(s) in your
curriculum. Please feel free to contact me to explore this opportunity.

Best regards,

Wolfgang Banzhaf
Department Head

--
Department of Computer Science
Memorial University
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009
cs-chair@mun.ca
--------
sent-mail: Re: Calendar Changes for Computer Science Program (10 of 312)

Date: Fri, 16 Oct 2015 16:27:00 -0230
From: cs-chair <cs-chair@mun.ca>
To: cs-chair <cs-chair@mun.ca>
Cc: stacey.m@mun.ca, tba.ad.undergrad@mun.ca, shicks@mun.ca, bfairize@mun.ca, dpeterson@mun.ca, angrconsult@mun.ca, associatevpofoffice@grenfell.mun.ca, mehickey@mun.ca, miugconsulations@mi.mun.ca, cvardy@mun.ca, sherry.caines@med.mun.ca, mvolk@mun.ca, deanNurse@mun.ca, pharminfo@mun.ca, deansci@mun.ca, adnanugradswk@mun.ca, univlib@mun.ca, biohead@mun.ca, pmarino@mun.ca, chemhead@mun.ca, jhanchar@mun.ca, math-head@mun.ca, fletcher@mun.ca, jolanta@mun.ca, psychology.head@mun.ca, wocke@mun.ca, ncallio@mun.ca, banzhai@mun.ca

Subject: Re: Calendar Changes for Computer Science Program

Part(s):
- 2 Proposed-Calendar-Changes-CS-Regulations.pdf (213.78 KB)
- 3 Faculty-of-Arts-Summary.pdf (43.52 KB)
- 4 Proposed-Calendar-Changes-Joint-Degrees.pdf (115.94 KB)
- 5 Proposed-Calendar-Changes-Existing-CS-Courses.pdf (378.84 KB)

The remaining 4 attachments are now attached.

----------

Please find 4 of a total eight attachments for the following email. The remaining 4 will follow in the next email.

> 
> > Quoting cs-chair <cs-chair@mun.ca>:
> > > Hello,
> > > > The Department of Computer Science has undertaken a massive review of its
> > > current undergraduate program. The proposed changes incorporate
> > > recommendations of our latest APR report, and follow the newest (2013)
> > > ACM/IEEE
> > > guidelines for offering Computer Science curricula.
> > >

11/23/2015
We would appreciate receiving your comments by November 12.

As a result of this process, your school/department/faculty may wish to consider this as an opportunity to include certain Computer Science course(s) in your curriculum. Please feel free to contact me to explore this opportunity.

Best regards,

Wolfgang Banzhaf
Department Head

--
Department of Computer Science
Memorial University
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009
cs-chair@mun.ca


INBOX: RE: Calendar Changes for Computer Science Program

Date: Tue, 27 Oct 2015 11:31:54 +0000
From: Biochemistry Head <biohead@mun.ca>
To: cs-chair <cs-chair@mun.ca>
Subject: RE: Calendar Changes for Computer Science Program

Wolfgang

Nothing but support from Biochemistry for what looks like a fairly major overhaul. Best of luck with this.

Mark

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

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

From: cs-chair [cs-chair@mun.ca]
Sent: October 16, 2015 4:25 PM
To: cs-chair
Cc: Mercer, Stacey; fba.ad.undergrad@mun.ca; Hicks, Sue; Fraise, Beverly; dpeters@mun.ca; engconsult@mun.ca; associatevpo@rish@mun.ca; Hickey, Marilyn; miuconsultations@thes.muni.ca; cvrdy@mun.ca; Sherry.caines@med.muni.ca; Volk, Maureen; dean@rufe; pharminfo@mun.ca; Dean of Science; adean@rufe; Library Correspondence; Biochemistry Head; Harino, Paul; chemhead@mun.ca; jhanchar@mun.ca; math-head@mun.ca; Fletcher, Garth; Lagowski, Jolanta; psychology.head@mun.ca; wlocke@mun.ca; Catti, Norm; banzaf@mun.ca
Subject: Re: Calendar Changes for Computer Science Program

Please find 4 of a total eight attachments for the following email. The remaining 4 will follow in the next email.
Subject: RE: Urgent: Consultation on program changes
From: "Marino, Paul" <pmarino@mun.ca>
Date: 2015-12-01, 11:45 AM
To: Wolfgang Banzhaf <banzhaf@mun.ca>

Hi Wolfgang,

This was one of the program changes that did not get transmitted to our undergraduate officer and hence committee. Apparently, this isn't just Biology though - I think the problem is that sometimes these go to me and to the Admin. Secretary who then sends them to our undergrad officer, sometimes they go to all 3 of us and sometimes they go to just me. These inconsistencies are allowing some of these proposals to slip through the cracks and that is what happened to CS's.

Nonetheless, we did look at it and our undergrad committee discussed it with Lourdes (who is on this committee) and there is nothing in your proposed changes that we have any particular concerns about. Ultimately, as we review our own program (we are having an APR) we may have to make adjustments to our own program, but otherwise we are fine with your proposed changes.

I apologize for this, but it has happened with several program consultations this semester.

Paul

-----Original Message-----
From: Wolfgang Banzhaf (mailto:banzhaf@mun.ca)
Sent: December-01-15 9:55 AM
To: Marino, Paul
Cc: Wolfgang Banzhaf
Subject: Urgent: Consultation on program changes

Dear Paul,

Computer Science has sent out a set of changes for our undergrad program that also impacts Biology.

We have changed and modernized our core courses and removed some obsolete courses.

For some reason, your department has not sent an agreement on comments on the proposed secondary changes.

Today is the day we have to submit to the Faculty of Science for council meeting next week. Could you review the changes and give departmental agreement / comments by noon?

I attach the proposed secondary changes for Biology. They refer to a replacement of a recommended course COMP 2650 (which is removed) by COMP 1600 or COMP 1000 (our new introductory course to Computer Science), and to a slight change in the prerequisites of the Bioinformatics course BIOL 3951 where COMP 2710 will be replaced by COMP 2001.

I attach a list. Please let me know whether this is ok with you, otherwise, we can't put those secondary changes through with the package.

Thanks very much,

Wolfgang
Hi Wolfgang and Sharene,

I missed that! We are looking into it now to see what can be done. With COMP 2002, can 1510 not be a prerequisite as well as 1001 (like it is for COMP 3500)? Right now (according to the secondary changes) our students would take 1510, 1000, and 1001. 1510 is intro to scientific computing and 1001 is intro to computing. If 1510 could be used as a prerequisite to 2002 in place of 1001 (like it is for 3500), then we could have our students take 1510 and 1002.

Then our programs would have for example

9.3.6 General Degree - Major in Computational Chemistry

4. Computer Science 1510 and 1002
5. Computer Science 2500 or 2002
6. Computer Science 3500 or Mathematics 3132.

Thanks,
Travis

On 16/11/2015 10:48 AM, CS-Chair wrote:
> Dear Travis,
> > there are two issues you might want to look into
> > In your Comp Chem program, it seems that there now
> > might be a hidden prerequisite to COMP-2002.
> > Also, we are in the process of amending our proposal
> > by removing the prerequisite of COMP-1000 for COMP-1001.
> > Sharene would be happy to discuss this with you or
another representative in more detail.

Best

Wolfgang

On 2015-11-01 7:30 PM, Travis Fridgen wrote:

Dear Wolfgang,

We have gone through the extensive review the Computer science program has undergone. Some of the revisions affect the Computational Chemistry program as you have pointed out, but we have absolutely no problems with the changes.

Take care,

Travis

On 16/10/2015 4:27 PM, cs-chair wrote:

The remaining 4 attachments are now attached.

---------

Please find 4 of a total eight attachments for the following email. The remaining 4 will follow in the next email.

Quoting cs-chair <cs-chair@mun.ca>:

Hello,

The Department of Computer Science has undertaken a massive review of its current undergraduate program. The proposed changes incorporate recommendations of our latest APR report, and follow the newest guidelines for offering Computer Science curricula.

We would appreciate receiving your comments by November 12.

As a result of this process, your school/department/faculty may wish to consider this as an opportunity to include certain Computer Science course(s) in your curriculum. Please feel free to contact me to explore this opportunity.

Best regards,

Wolfgang Banchař
Department Head

Department of Computer Science
Memorial University
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009
cs-chair@mun.ca

You are using 83% of your quota. 416 / 500 0 MB

INBOX: RE: Calendar Changes for Computer Science Program (2 of 495)

Date: Tue, 1 Dec 2015 13:03:26 -0330
From: wade.locke@mcmaster.ca
To: 'CS-Chair' <cs-chair@mcmaster.ca>, "Marland, Alex" <ammarland@mcmaster.ca>, "Mercer, Stacey" <staceym@mcmaster.ca>, lynch@mcmaster.ca, "Susan A. Curls" <sacurls@mcmaster.ca>
Cc: 
Subject: RE: Calendar Changes for Computer Science Program

We are ok with the suggested changes and the most recent one point out. Alex, I assume you will take care of the changes for the calendar.

wade

-----Original Message-----
From: CS-Chair <cs-chair@mcmaster.ca>
Sent: December-01-15 10:05 AM
To: Marland, Alex; wlocke@mcmaster.ca
Cc: Computer Science Chair: Mercer, Stacey
Subject: Re: Calendar Changes for Computer Science Program

Dear Alex and Dr. Locke,

thanks very much for your comment and arrangement.
In regard to your comment about the Mathematics offering, I understand where you come from, but we are not authorized to make those changes to the program of the department of Mathematics. I would expect them to come from there.

Further, we have received comments from Geography, but not from Economics as of yet.

I attach the proposed secondary changes to the Economics program. They refer to our core program offerings which will change if approved: COMP 1700 will be replaced by COMP 1000. This is going to be the new introductory course to Computer Science. Our first programming course will be COMP 1001, instead of the former COMP 1710 and will use Python, instead of Java as its language.

I attach the proposed secondary changes to this email for your review. Dr. Locke, please let me know whether this is agreeable to your department.

https://webmail.mun.ca/munlogin/imp/message.php?index=19858

12/1/2015
FW: Calendar Changes for Computer Science Program

-----Original Message-----
From: Catto, Norm
Sent: October 27, 2015 10:43 AM
To: Mercer, Stacey
Subject: RE: Calendar Changes for Computer Science Program

Dear Stacey:

Dr. Rodolphe Dovillers and Alvin Simms are supportive of these changes. Other faculty members may also wish to provide feedback shortly.

Best wishes
Norm

-----Original Message-----
From: Mercer, Stacey
Sent: October 26, 2015 4:09 PM
To: Catto, Norm
Subject: RE: Calendar Changes for Computer Science Program

Thank you

Stacey Griffiths
Office of the Dean of Arts
Memorial University of Newfoundland
St. John's, NL A1C 5S7
709-864-8255

-----Original Message-----
From: Catto, Norm
Sent: October 26, 2015 9:42 AM

https://webmail.mun.ca/munlogin/imp/message.php?index=19578
To: Mercer, Stacey; 'wade locke'
Subject: RE: Calendar Changes for Computer Science Program

Dear Stacey:

Thank you for writing. I met on Friday with Drs. Banzhaf and Bungay concerning this. They will provide me with more information concerning the first-year courses, after which I will get back to you.

Best wishes
Norm

-----Original Message-----
From: Mercer, Stacey
Sent: October-23-15 2:04 PM
To: Catto, Norm; wade.locke
Subject: FW: Calendar Changes for Computer Science Program

Good morning,
You are invited to give feedback on the attached proposals.
Thank you.

Stacey Giffiths
Office of the Dean of Arts
Memorial University of Newfoundland
St. John's, NL A1C 5S7
709-864-8255

-----Original Message-----
From: cs-chair [mailto:cs-chair@mun.ca]
Sent: October 16, 2015 4:25 PM
To: cs-chair
Cc: Mercer, Stacey; fba.ad.undergrad@mun.ca; Hicks, Sue; Fraite, Beverly;
dpeters@mun.ca; engrconsult@mun.ca; associatevpoffice@grenfell.mun.ca; Hickey,
Harie; miugconsultations@ml.mun.ca; cvardy@mun.ca; Sherry.caines@med.mun.ca;
Volk, Maureen; DeanNurse; pharminfo@mun.ca; Dean of Science; ada@anugradsuk;
Library Correspondence; Biochemistry Head; Marino, Paul; chemhead@mun.ca;
jhanchak@mun.ca; math-head@mun.ca; Fletcher, Garth; Lagowski, Jolanta;
psychology.head@mun.ca; wlocke@mun.ca; Catto, Norm; banshal@mun.ca
Subject: Re: Calendar Changes for Computer Science Program

Please find 4 of a total eight attachments for the following email. The remaining 4 will follow in the next email.

Quoting cs-chair <cs-chair@mun.ca>:

> Hello,
> The Department of Computer Science has undertaken a massive review of
> its current undergraduate program. The proposed changes incorporate
> recommendations of our latest APR report, and follow the newest (2013)
> ACH/IEEE guidelines for offering Computer Science curricula.
> We would appreciate receiving your comments by November 12.
> As a result of this process, your school/department/faculty may wish
> to consider this as an opportunity to include certain Computer Science
This message was written in a character set other than your own. If it is not displayed correctly, click here to open it in a new window.

-----Original Message-----
From: Elizabeth L Simms [mailto:lambert@mun.ca]
Sent: October-27-15 12:00 PM
To: Catto, Norm
Cc: Alvin Simms; Rodolphe Devillers
Subject: Re: Computer Science - Proposed Changes

Norm,

The change is acceptable to the DGISciences program course requirement to change CS 1710 by CS1001. I would appreciate that the Department of Computer Sciences includes the DGISciences section of the calendar to their package. Otherwise, we will have to wait for next year to make the change.

Thank you,
Elizabeth

Elizabeth L. Simms, PhD
Geographer, Remote Sensing
Department of Geography
Memorial University

Email: lambert@mun.ca

On 2015-10-26 12:37 PM, Alvin Simms wrote:
> Norm
> I would support Rodolphe on this especially since they are now
> including python as the programming language in this course and is
> better suited for our students..
> >
> > Alvin
>

https://webmail.mun.ca/munlogin/imp/message.php?index=19581
> Alvin Simms Ph.D.
> Geospatial Analysis/Economic Geography Dept. of Geography Memorial
> University
> Phone: 709-864-2512
> Fax: 709-864-3119
> E-Mail: asimms@mun.ca
> Web: http://www.mun.ca/geog/people/faculty/asimms.php
>
> On 2015-10-26 12:36 PM, Rodolphe Devillers wrote:
>> Hi Norm
>>
>> Thanks for this. As you know, CS-1710 is a core course for the
>> Diploma program in GISciences (i.e. not only a prerequisite but an
>> actual required course to complete the DGIS). I looked at the
>> proposed change (the table is very useful, thanks!) and think it is a
>> positive change. They change their focus from Java to Python (a more
>> relevant programming language in GIS). Also, the new course better
>> covers some interesting aspects.
>>
>> I'm supportive of this change and would be happy to see this new
>> course replace CS-1710 as a course to complete. Thanks,
>>
>> Rodolphe
>
> Rodolphe Devillers, PhD
> Associate Professor
> Department of Geography
> Memorial University of Newfoundland
> St. John's (NL) A1B 3X9
> Canada
> Tel: +1 (709) 864-8412
> Fax: +1 (709) 864-3119
> Email: rdeville@mun.ca
> Web pages: http://www.marineglis.com
> http://www.mun.ca/geog/people/faculty/rdevillers.php
> Twitter: seagmap

> On 2015-10-26, 11:49 AM, "James, Valarie" <vjames@mun.ca> wrote:
>>
>>> Hello Everyone,
>>> Please see the e-mail below and attachment forwarded for Norm.
>>> Thanks,
>>> Valarie
>>>
>>> -----Original Message-----
>>> From: Catto, Norm
>>> Sent: October-26-15 11:40 AM
>>> Subject: Computer Science - Proposed Changes
>>>
Dear all:

Computer Science is proposing substantial changes in their programmes. The complete files have been placed in the Dropbox.

One of the proposed changes is to replace CS-1710 (currently a prerequisite for the GIS programme) with CS-1001. As well, 1700 is to be replaced by CS-1000. Computer Science's initial proposal was that all courses that formerly had 1710 as a prerequisite would now have 1000 as a prerequisite.

After discussion with Wolfgang and Sharene on Friday, they have produced a chart showing how the new and old courses compare. This is attached (also in the Dropbox).

CS is trying to get this ready for the next calendar (via Science undergraduate) and therefore are asking for comments. If you have any comments on any aspects of this proposal, please let me know, and I will forward them to CS when received.

Best wishes
Norm

-----Original Message-----
From: Wolfgang Banzhaf [mailto:banzhaf@mun.ca]
Sent: October-26-15 11:20 AM
To: Catto, Norm
Cc: Sharene Bungay; Wolfgang Banzhaf
Subject: COMP-1710 vs 1001 Synopsis

Dear Norm,

please find attached our synopsis of COMP 1710 vs the new course 1001.

I would also want to inform you that we are considering to remove the prerequisite COMP-1000 from 1001. This would allow you to freely choose between COMP-1000 and COMP-1001 as your course. We currently have no such prerequisite for COMP-1710, so carrying this feature over to the new program is a good idea.

Since that has not been decided at the current time (but it will solve a couple of problems we have), maybe you could mention this problem in your comments?

Best
Wolfgang
Hi Wolfgang,

Thank you for the opportunity to review the package of calendar changes being proposed by the Department of Computer Science. Thank you, also, for the in-person meeting which cleared up some of this Department's concerns. However, subsequent to that meeting, additional issues were raised by some of our faculty members. These are described in the final two bullets, below.

Our comments are as follows:

1. This Department supports the proposed changes to the joint honours and joint majors involving Computer Science and (as applicable) Statistics, Pure Mathematics or Applied Mathematics.

2. This Department has no objection to the secondary change to Mathematics 2130 (regarding the deletion of the "UL" notation) requested by the Faculty of Arts. While we feel that such a change should originate in the first instance from the Faculty of Arts itself, we are content to have it reflected in the Computer Science package.

3. This Department has reviewed the proposed new course Computer Science 1002 ("Introduction to Logic for Computer Scientists"). While we are conscious of the overlap in topics with Mathematics 2320 ("Discrete Mathematics") we are satisfied that Computer Science 1002 will not exceed these topics to the same depth as Mathematics 2320, and that the focus on approaching the topics from the perspective of a computer scientist justifies the existence of Computer Science 1002 as a separate course. Indeed, we feel that Computer Science 1002 could serve as a suitable


1/6/2015
preparatory course for students who might otherwise struggle with the content of Mathematics 2320. As such, we advocate a unidirectional credit restriction in this case -- that is, Computer Science 1002 should have a notation "CR: Mathematics 2320", but Mathematics 2320 itself should have no such credit restriction.

* Concern was also expressed that there might be considerable overlap between Computer Science 1002 and content which is currently split between Mathematics 1050 ("Finite Mathematics I") and Mathematics 1051 ("Finite Mathematics II"). In the past, there has been discussion of resequencing the topics in Mathematics 1050/1051, and the resulting organisation might create a course which more strongly resembles the proposed Computer Science 1002. Our support for Computer Science 1002 should not be construed as precluding our right to potentially reorganise Mathematics 1050/1051 in such a manner, and we anticipate that the Department of Computer Science would not hold any objections to our doing so on this basis.

* The courses comprising the Scientific Computing program also created considerable discussion in this Department. We acknowledge that the proposed new course Computer Science 3500 ("Introduction to Scientific Computing") remains sufficiently distinct from Mathematics 3132 ("Introduction to Numerical Analysis") to warrant a credit restriction, but no stronger relationship. However, we are concerned that the new courses Computer Science 3501 ("Computational Linear Algebra with Applications") and Computer Science 4500 ("Numerical Optimization with Applications") overlap considerably with our existing courses Mathematics 4131 ("Numerical Linear Algebra") and Mathematics 4132 ("Introduction to Optimization"). We feel that there is, at minimum, a potential opportunity to cross-list these courses rather than duplicating content across two departments. We believe that a discussion about this possibility is warranted before we can support the proposed Computer Science package as a whole.

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 • www.ucb.mun.ca/~shannon

INBOX: Re: Fwd: RE: Calendar Changes for Computer Science... (41 of 498) 0

Date: Tue, 10 Nov 2015 15:39:38 -0330
From: Shannon Patrick Sullivan <shannon@mun.ca>
To: CS-Chair <cs-chair@mun.ca>
Cc: Sharena Bungay <sharena@mun.ca>, Math Head <math-head@mun.ca>, Math Undergrad Officer <mathgrad@mun.ca>, "George Minnins" <george@mun.ca>
Subject: Re: Fwd: RE: Calendar Changes for Computer Science Program

This message was written in a character set other than your own. If it is not displayed correctly, click here to open it in a new window.

Hi Wolfgang,

After considerable discussion with our numerical analysts, I’m afraid that our consensus is that, given the substantial overlap between the courses proposed for the Scientific Computing stream and several courses offered by this department, a period of closer consultation is necessary before we can support the proposal in its entirety.

Our numerical analysts feel that a cross-listing arrangement is warranted, and would allow these courses to be taught in an alternating fashion by our two departments. However, achieving such an arrangement might require (possibly modest) changes to the existing Mathematics courses and/or the proposed Computer Science courses. We believe that these changes should be identified and implemented before your proposal (or, at least, the Scientific Computing element of it) goes forward.

Regards,
Shannon

On 09/11/2015 1:00 PM, CS-Chair wrote:
> Hi Shannon,
> > thanks very much for your additional comments.
> > > We are happy with a unidirectional credit restriction
> > for COHP-1002 as you proposed.
> > > We shall not have any objections against your department

https://webmail.mun.ca/munlogin/imp/message.php?index=19694
11/23/2015
> revising MATH-1050 and -1051.
> In regard to the Scientific Computing stream: We are fine
> with cross-listing COMP-3501 with MATH-4131 and COMP-4500
> with MATH-4132. However, these MATH courses are currently
> listed as "inactive" in the calendar. A cross-listing requires
> deeper discussions between the department than can be
> achieved within the remaining weeks. We therefore propose
> to postpone cross-listing to the next cycle of calendar changes
> and for the moment to only credit-restrict between COMP-3501
> and MATH-4131 and COMP-4500 and MATH-4132. However,
> our goal would remain a cross-listing before these courses
> are offered the first time (presumably in Fall 2018).
> I hope these addresses the remaining issues between our
> departments and your department can support the proposed
> changes as a result.
> Best regards
> Wolfgang
>
> On 2015-11-04 4:35 PM, Shannon Patrick Sullivan wrote:
> Hi Wolfgang,
> Thank you for the opportunity to review the package of Calendar
> changes being proposed by the Department of Computer Science. Thank
> you, also, for the in-person meeting which cleared up some of this
> Department's concerns. However, subsequent to that meeting, additional
> issues were raised by some of our faculty members. These are described
> in the final two bullets, below.
> Our comments are as follows:
> • This Department supports the proposed changes to the joint honours
> and joint majors involving Computer Science and (as applicable)
> Statistics, Pure Mathematics or Applied Mathematics.
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> Mathematics 2130 (regarding the deletion of the "UL" notation)
> requested by the Faculty of Arts. While we feel that such a change
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> Science 1002 ("Introduction to Logic for Computer Scientists"). While
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> will not explore these topics to the same depth as Mathematics 2320,
> and that the focus on approaching the topics from the perspective of a
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> a separate course. Indeed, we feel that Computer Science 1002 could
> serve as a suitable preparatory course for students who might
> otherwise struggle with the content of Mathematics 2320. As such, we
> advocate a unidirectional credit restriction in this case — that is,
> Computer Science 1002 should have a notation "CR: Mathematics 2320",
> but Mathematics 2320 itself should have no such credit restriction.

Concern was also expressed that there might be considerable overlap between Computer Science 1002 and content which is currently split between Mathematics 1050 ("Finite Mathematics I") and Mathematics 1051 ("Finite Mathematics II"). In the past, there has been discussion of resequencing the topics in Mathematics 1050/1051, and the resulting organisation might create a course which more strongly resembles the proposed Computer Science 1002. Our support for Computer Science 1002 should not be construed as precluding our right to potentially reorganize Mathematics 1050/1051 in such a manner, and we anticipate that the Department of Computer Science would not hold any objections to our doing so on this basis.

The courses comprising the Scientific Computing program also created considerable discussion in this Department. We acknowledge that the proposed new course Computer Science 3500 ("Introduction to Scientific Computing") remains sufficiently distinct from Mathematics 3132 ("Introduction to Numerical Analysis") to warrant a credit restriction, but no stronger relationship. However, we are concerned that the new courses Computer Science 3501 ("Computational Linear Algebra with Applications") and Computer Science 4500 ("Numerical Optimization with Applications") overlap considerably with our existing courses Mathematics 4131 ("Numerical Linear Algebra") and Mathematics 4132 ("Introduction to Optimization"). We feel that there is, at minimum, a potential opportunity to cross-list these courses rather than duplicating content across two departments. We believe that a discussion about this possibility is warranted before we can support the proposed Computer Science package as a whole.

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 · www.ucs.mun.ca/~shannon
Hi Wolfgang,

> I would like to give you a call tomorrow to see how we
> can best solve this problem.

I believe George Himinis is planning to meet with Ron Haynes and Scott MacLachlan in the very near future about their concerns.

We can certainly still have a chat regardless, but perhaps it might make more sense to wait and see how their discussion goes?

Cheers,
Shannon

---

Ir. 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 • www.ucsf.mun.ca/~shannon

https://webmail.mun.ca/munlogin/imp/message.php?index=19705

11/23/2015
Hi Wolfgang,

On the advice of our numerical analysts, I understand that an agreement has been reached that, for the time being, relevant courses in the proposed Scientific Computing stream should be credit-restricted with the corresponding courses offered by this department, with the intention within the next Calendar cycle of developing a more formal cross-listing arrangement involving these courses.

Bearing in mind this and the other amendments to which we’ve already agreed, the Department of Mathematics and Statistics no longer has any objections to the proposed changes to courses and programs offered by the Department of Computer Science. We wish you luck as you embark upon this substantial overhaul.

Yours,
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 · www.mcs.mun.ca/ shannon
Hi Wolfgang and Shareene,

The department of Physics and Physical Oceanography approves the proposed changes to the joint Computer Science/Physics programs as indicated in the document entitled 'Calendar revised Nov10 Excerpt JointPrograms'.

Cheers,

Martin
Hi Wolfgang and Sharene,

We have not had time to digest fully the proposed changes but we do have some initial thoughts on the joint CS/Physics programs.

We currently have two (at least) students in the honors version of that program and they have expressed some degree of frustration in the total number of courses required and the fact the program is difficult to complete in four years.

My understanding is that the Faculty of Science has tried to gradually move all our undergrad programs to be 120 credit hours, five courses per semester, doable in four years.

It is not clear that the joint CS/Phys programs, past or proposed, satisfy those goals.

It seems that a useful exercise would be to construct an Recommended Schedule as we have in the Calendar

https://webmail.mun.ca/munlogin/imp/message.php?index=19529  

10/21/2015
for our pure honours physics program:
http://www.mun.ca/regoff/calendar/sectionNo SCI-1401#SCI-1519

Other points to note is that our 490A/B are each 3 credit hours - and PHYS3810 is inactive (since a long time).

An unrelated question: How are 1710 and 1001 different?

If you wish, we can meet to discuss the joint programs.

Martin

-----Original Message-----
From: Lagowski, Jolanta [mailto:jolanta@mun.ca]
Sent: October-16-15 4:34 PM
To: Martin Plumer
Subject: FW: Calendar Changes for Computer Science Program

Here is the rest of it.
J.

On 2015-10-16, 4:30 PM, "cs-chair" <cs-chair@mun.ca <mailto:cs-chair@mun.ca>> wrote:

The remaining 4 attachments are now attached.

--------------
Please find 4 of a total eight attachments for the following email.
The remaining 4 will follow in the next email.

Quoting cs-chair <cs-chair@mun.ca <mailto:cs-chair@mun.ca>>:

Hello,

The Department of Computer Science has undertaken a massive review
of
its

current undergraduate program. The proposed changes incorporate
recommendations of our latest APR report, and follow the newest

We would appreciate receiving your comments by November 12.

As a result of this process, your school/department/faculty may
wish

to consider this as an opportunity to include certain Computer Science course(s) in your curriculum. Please feel free to contact me to explore this opportunity.

Best regards,

Wolfgang Banzhaf
Department Head

Department of Computer Science
Memorial University
St. John's, NL A1B 3X5
Phone: (709) 864-8652
Fax: (709) 864-2009
<mailto:cs-chair@mun.ca>

-----

No virus found in this message.
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No virus found in this message.
Checked by AVG - www.avg.com <http://www.avg.com>
Version: 2015.0.6172 / Virus Database: 4447/10836 - Release Date: 10/17/15
Hi Wolfgang,

Thank you for the consultation. Psychology requests a very slight modification to one part of the proposal:

The original version in the current Calendar in 9.11.5 is:

3d. Computer Science: Any 2000, 3000, or 4000 level course except 2650 and 2801

Your proposal is to delete &e except 2650 and 2801.&f Could this be rephrased to the following:

3d. Computer Science: Any 2000, 3000, or 4000 level course except the former 2650 and 2801

The rationale is that for the next few years, at least, it is possible that some Behavioural Neuroscience majors may have taken 2650 and/or 2801 before they were deleted from your program.

https://webmail.mun.ca/munlogin/imp/message.php?index=19571

11/6/2015
If you have any concerns about this change, please let me know.

Other than that, your proposal will have no impact on the programs in the Psychology Department.

Best wishes,

-Ian

---

Office of the Head
Psychology Department
Memorial University of Newfoundland
St. John's, NL
Canada
A1B 3X9

Phone: (709) 864-8495
Fax: (709) 864-2430
Email: Psychology.Head@mun.ca
Web: http://www.mun.ca/psychology
Dear Dr. Banzhaf,

A tiny but perhaps important remark for your secondary changes.

For p. 520, the course 2130 Technical Writing in Mathematics includes "UL: qualifies as a Research/ Writing course in the Faculty of Arts". This needs to be struck. As you may be aware, all Faculty of Arts Research/Writing courses will cease to exist in the 2016-17 edition of the university calendar. Senate likely already approved the deletion of this remark, but to be on the safe side please strike it out in your proposal too.

Separately, I am arranging for comments from Economics and Geography, given that those programs are mentioned in your proposals.

Thank you for the opportunity to comment.

Alex

Alex Harland
Associate Professor, Political Science
Associate Dean (Undergraduate), Faculty of Arts
Arts & Administration Building, A-5015
Memorial University, St. John's, NL, Canada A1B 3X9
T (709) 864-8254  F (709) 864-2135
www.mun.ca/postc/people/Harland.php

https://webmail.mun.ca/munlogin/imp/message.php?index=19532

10/21/2015
Dear Dr. Banchaf,

Thank you for the opportunity to comment on the set of Calendar changes for the Computer Science program. The next regular meeting of the Engineering CUGS is tomorrow. I will invite comments from members of CUGS, to pass on to you before your deadline of Nov. 12.

In the meantime, I will comment on minor tweaks needed to the crosslisted course COMP 4301 / ENGI 8814 "Computer Vision". The versions of the Calendar description must match exactly (except for the interchange of Engineering and Computer Science references).

Replace "4301 Computer Vision studies ..." by "4301 Computer Vision (same as Engineering 8814) studies ..."

Replace "This course ..." by "The course ...

Replace "CR: ENGI-8814" by "CR: Engineering 8814" (abbreviations are used only within each department's section of the Calendar)

Replace "PR: COMP-3301" by "PR: COMP 3301 or Engineering 7854 or permission of the instructor"

For your records the Calendar proposal for ENGI 8814, as approved by the Engineering Faculty Council, is attached.

https://webmail.mun.ca/munlogin/imp/message.php?index=19526

11/6/2015
Yours sincerely,

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science
Memorial University of Newfoundland
St. John's NL Canada A1B 3X5
http://www. engr. mun. ca/~ggeorge

Quoting cs-chair <cs-chair@mun.ca>:

> Hello,
> The Department of Computer Science has undertaken a massive review of its
> current undergraduate program. The proposed changes incorporate
> recommendations of our latest APR report, and follow the newest (2013)
> ACM/IEEE
> guidelines for offering Computer Science curricula.
> We would appreciate receiving your comments by November 12.
> As a result of this process, your school/department/faculty may wish to
> consider
> this as an opportunity to include certain Computer Science course(s) in your
> curriculum. Please feel free to contact me to explore this opportunity.
> Best regards,
> Wolfgang Banzhaf
> Department Head
> --
> Department of Computer Science
> Memorial University
> St. John's, NL A1B 3X5
> Phone: (709) B64-8652
> Fax: (709) B64-2009
> cs-chair@mun.ca
> -------
Thank you Dr. Banzhof for your reply.

If Dr. Harvell, Dr. Peters or Prof. Fisher have any further comment, then I invite another "reply all" to your e-mail.

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

Quoting CS-Chair <cs-chair@mun.ca>:

> Dear Dr. George,
> > thank you very much for sending comments on our
> > proposals. I think they warrant an answer as they touch
> > on a number of topics in our program. Please find my
> > responses to your comments interspersed below.
> >
> > With best regards,
> > Wolfgang
> >
> > On 2015-11-06 9:16 AM, Engineering Consultations wrote:
> > > Dear Dr. Banzhof,
> > >
> > > > Thank you for the opportunity to comment on the proposed
> > > major changes to the undergraduate program of the

Department of Computer Science. These changes were on
the agenda of the meeting of our Committee on Undergraduate
Studies on October 21 and were circulated to all members of
the Department of Electrical and Computer Engineering.
The only comment that I have received to date from members
of the Committee on Undergraduate Studies is the detailed
e-mail from Dr. Theo Horvoll, Vice Chair of the Committee
and a faculty member in Computer Engineering, which follows
verbatim below.
The Head of the Department of Electrical and Computer
Engineering, Dr. Dennis Peters, may be providing a separate
reply at a later date.
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 Dr. Theodore S. Horvoll, 2015 11 04
Hi Glyn: I’ve quickly gone through the C.S. document proposal.
For lack of time I have focussed on the core of the program.
Below are my thoughts.

(0) Good time to revamp program

It is good that C.S. is revamping their undergraduate program.
The proposal is bold and far reaching. There is much in the
core that is good and interesting ideas in the options.
For example a complete course in Social Issues and
Professional Practice and a mandatory course in Software
Engineering.

(1) Comparison with CS2013
I compared the 85c in C.S. core courses (1000-1002, 2001-2008)
to the ACH/IEEE Computer Science Curricula 2013. I only
looked at what the IEEE and ACH call the “Core Tier 1” topics.
As they put it: “computer-science curricula should cover all
the Core Tier-1 topics”.

For the most part the new proposal follows the IEEE/ACH
Curriculum in this regard. I noted the following apparent
exceptions.

* OS/Graphs and Trees 3hrs. Seems to be missing. There
appears to be room in COMP-1002 for this. Yes
implementation of trees and graphs are in COMP-2002, but
here they correspond to AL/Fundamental Data Structures
and Algorithms.
As you observed, these topics are covered in COMP-2002.
But they are also covered in COMP-1002, though this is not
explicit. The Knowledge Area is covered under “other discrete
structures. Examples will be discussed (as they are the simplest)
in "Proof induction".

This is covered in COMP-1000 under "Selected CS subfields".

This is covered in COMP-2007 under "Security and Privacy" and "Defensive programming" respectively.

This is covered in COMP-2003 and COMP-2004.

(2) Fundamental concepts missing

It's a bit worrying that a graduate of MUN with a B.Sc. in C.S. might graduate without ever having heard of such concepts as race conditions, semaphores (or monitors), context-free grammars, functional programming, finite state automata, Turing Machines (or an equivalent formalism), to pick a few examples. I might be missing something, but I don't see any of these topics in the new core.

Race conditions, semaphores (or monitors) are covered in COMP-2004, "Process coordination".

Context-free grammars (ACH CS2013 AL-Tier 2) and Turing machine (ACH CS2013 AL-Elective) are covered in COMP-3602.

Finite state automata are covered in COMP 2003 "State machines"

The concept of functional programming can be conveyed in either 1001 or 2001.

(3) Parallel and functional programming.

There should be at least one course in the core on parallel, concurrent, and distributed computing. If need be, it could be combined with functional programming as a "paradigms of programming" course.

Note this is 2015. The world of computing long ago went parallel. Also functional programming, after years of neglect, is becoming very widely used in industry.

These facts are not unrelated.

See above. Tier-1 concepts in parallel and distributed computing are covered in COMP-2003 and COMP-2004.

(3) Math content

In light of the above, it seems to me a mistake that...
> core includes 3 courses in differential and integral
> calculus but only 1 in discrete math and logic.
> > MATH-2000 should be replaced by a second discrete math
> > course in the core. That course could include graph
> > theory, a deeper study of logic, and theoretical models
> > such as THMs, FSMs, lambda-calculus, CSP (or CCS).
> > Of course MATH-2000 would be required for certain
> > specializations.
> >
> > This is a topic orthogonal to our current program revisions:
> > Do we want to have more discrete mathematics in our program,
> > versus continuous mathematics? At the current time there is
> > no MATH course which would cover the topics interesting for
> > Computer Science. Due to the restriction in courses for Computer
> > Science, it would not fit into CS courses either. For the moment,
> > therefore, there is no better alternative.
> > > (4) Software Engineering Honours program
> > >
> > > In the Honours (Software Engineering) branch there is no
> > > group project (e.g. 4770). I think this is a serious
> > > mistake.
> > >
> > We agree. This is being remedied by keeping 4770 in the
> > Software Engineering (Honours) program.
> > > I also think that 4710 Survey of Software Engineering
> > > should be required for this option. As it stands a
> > > student could graduate with this degree having seen less
> > > than 4 hours on testing and formal verification. Again
> > > it's a serious mistake.
> > >
> > > 4710 has not been removed from the program, this is
> > a misunderstanding.
> > > I haven't had a chance to compare this program to the
> > > IEEE Software Engineering Body of Knowledge (SWEBOK) in
> > > detail, but I suspect it is missing a lot of what should
> > > be in such a program, especially in the absence of 4713
> > > and 4770.
> > >
> > > See above.
> > > In any case the whole S.E. option should be reviewed.
> > >
> > This is a different issue, see below.
> > > (5) Software Engineering non-Honours program
> > >
> > > Why leave S.E. out of the options for the non-Honours BSc?
> > > Since the courses are need to be put on for the Honours
> > > program there is little cost to making a non-Honours BSc.
> > > (Or replace the Honours in S.E. with a non-Honours in
> > > S.E.)
> > >
> > We agree that a major in software engineering, i.e. a stream
> > in SE would be highly desirable. Our program re-design is,
> > however, driven by individuals, and without a champion for
> > a SE specialization there simply is no revised set of courses
> > we could offer to justify a new stream. It is hoped that such
> > a stream could be formed in a collaboration between
> > Computer Engineering and Computer Science, but this will
> > have to wait until such an initiative can be formed.
> > I wonder how many graduates of C.S. are working in a job
> > that relates to their degree, but are not working as
> > software engineers (by some reasonable definition of
> > that term). I suspect the percentage is very small.
> > If the thinking is that no S.E. option is required since
> > all graduates of C.S. should be qualified to work as
> > software engineers (by some reasonable definition of
> > that term), then 4710 and 4770 should be core for all
> > C.S. graduates.
> > This is not the thinking. Instead, the philosophy of the new
> > program is to offer a core of C.S. programs in
> > the first and second year, after which students specialize
> > in one of the streams, or pick their courses from the new
> > offerings for a general degree.
> > (5) Credit exclusion needed.
> > There should be a credit exclusion between COMP-1002
> > and ENGI-4424.
> > Agreed.
> > (7) Workability
> > The idea of having options is fine. But with 6 options
> > and a low number of students it will be unworkable.
> > Courses that are core for one or two students will have
> > to be put on in order to be fair to those students who
> > are in the option. This will mean that there will be
> > very few electives available apart from these courses.
> > It is not clear that C.S. will be able to do this with
> > current staffing levels. Consider that the core courses
> > between the six options are 31 in number. Then a
> > reasonable number of elective courses needs to be put on
> > each year in addition to this core. And there are service
> > courses.
> > The offering of streams has resource implications. However,
> > we continue to uphold our principle, not to offer courses with
> > less than 5 students registered at the beginning of a term.
> > Streams are majors which need to be declared in the year prior
> > to expecting the courses being offered. If a sufficient number of
> > students cannot be found, a stream is simply not offered, i.e., students
> > are not signed in for a given year.
> > However, the plan is to offer sufficiently attractive courses
> > that we don't have that problem in the longer run.
> > It's a good plan for a large department that has a large
> > student population. I know that it is a "if we build it
> > they will come" strategy, but I am skeptical that it can
> > (let alone will) be a success.
> > Thanks for conveying this, but our APR has strongly recommended
> > decisive action. Our proposals are flowing from those recommendations
> > and we are planning to implement them in the most resource-efficient
> > way possible.
Dear Dr. Banzhaf,

The Faculty of Medicine understands that the Department of Computer Science has undertaken a massive review of its current undergraduate program. We support your proposed changes.

Sincerely,

Cathy Vardy, MD, FRCP(C)
Vice Dean
Faculty of Medicine
Health Sciences Centre, Room N2H319
Memorial University of Newfoundland
St. John's, NL, Canada, A1B 3V6
Tel: 709-864-6417 or Fax: 709-864-6336

-----Original Message-----
From: cs-chair [mailto:cs-chair@mun.ca]
Sent: October-16-15 4:24 PM
To: cs-chair
Cc: stacey@mun.ca; fba.ad.undergrad@mun.ca; shicks@mun.ca; bfraise@mun.ca; dpeters@mun.ca; engrconsult@mun.ca; associatevpooffice@grenfell.mun.ca; mehibey@mun.ca; miugconsultations@mi.mun.ca; Vardy, Cathy; Caines, Sherry; mvolk@mun.ca; deannNurse@mun.ca; pharminfo@mun.ca; deansci@mun.ca; adeanugrad@mun.ca; univlib@mun.ca; biohead@mun.ca; pmarino@mun.ca; chemhead@mun.ca; jhanchar@mun.ca; math-head@mun.ca; fletcher@mun.ca; jolantai@mun.ca; psychology.head@mun.ca; wlocke@mun.ca; ncatto@mun.ca; banzha@mun.ca
Subject: Re: Calendar Changes for Computer Science Program

Please find 4 of a total eight attachments for the following email. The

https://webmail.mun.ca/munlogin/imp/message.php?index=19579

11/3/2015
INBOX: calendar changes for computer science program (89 of 498)

Delete | Reply | Reply to All | Forward | Redirect | Blacklist | Whitelist | Message Source | Save as | Print

Date: Wed, 4 Nov 2015 18:28:24 +0000
From: "Rohr, Linda" <lerohr@mun.ca>
To: "cs-chair@mun.ca" <cs-chair@mun.ca>
Subject: calendar changes for computer science program

The proposed changes to the Computer Science program have no impact on the programs in the School of Human Kinetics and Recreation. We support the changes as presented.

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 lerohr@mun.ca
PE 2025
INBOX: RE: Calendar Changes for Computer Science Program (4 of 389)  

Date: Tue, 20 Oct 2015 13:40:40 +0000
From: "Maureen Volk" <mvolk@mun.ca>
To: CS-Chair <cs-chair@mun.ca>
Subject: RE: Calendar Changes for Computer Science Program

Oops, yes I did. We have no comments or concerns. Thanks!
Maureen

From: CS-Chair [cs-chair@mun.ca]
Sent: October 20, 2015 10:55 AM
To: Volk, Maureen
Cc: Computer Science Chair
Subject: Re: Calendar Changes for Computer Science Program

Dear Dr. Volk,

In order to avoid a misunderstanding: Did you mean 'no' comments or concerns?

Thanks,
Wolfgang Banzhaf

On 2015-10-19 8:16 PM, Volk, Maureen wrote:
> The School of Music has comments or concerns.
> Maureen Volk:
> -----Original Message-----
> From: cs-chair [mailto:cs-chair@mun.ca]
> Sent: October-16-15 4:30 PM
> To: cs-chair
> Cc: Hercer, Stacey; fba.ad.undergrad@mun.ca; Hicks, Sue; Fraize, Beverly;
> dpeters@mun.ca; engconsult@mun.ca; associatepoffice@grenfell.mun.ca; Hickey,
> Marie; miugconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@med.mun.ca;
> Volk, Maureen; DeanNurse; pharminfo@mun.ca; Dean of Science; adeanugradswk;
> Library Correspondence: Biochemistry Head; Harino, Paul; chemhead@mun.ca;

Hello Dr. Banchai,

The School of Pharmacy is supportive of the proposed calendar changes and commend the department on the work done. We have a couple of very minor editorial suggestions so it is in-line with the calendar format. In the calendar descriptions:
- remove the hyphens between the course abbreviation and number (e.g., "PR: COMP 2001" instead of "PR: COMP-2001").
- spell out the names of other departments (e.g., "PR: Statistics 1510" instead of "PR: STAT 1510")

Regards,

Csop Glew

--- Original Message ---

https://webmail.mun.ca/munlogin/imp/message.php?index=19763

11/23/2015
Greetings Wolfgang,

I have just completed my review of the proposed changes to your undergraduate program that you sent out for comments. I am new to the calendar change process, so I want to share my admiration for you and your team because you have completed such a significant project. Congratulations!

I am fine with your changes which, to my knowledge, do not impact the School of Social Work.

I hope this information is helpful to you.

Heather

Heather J. Haie, PhD, RMFT, RSW
Associate Dean Undergraduate Programs
School of Social Work, Memorial University
St. John's, NL, Canada, A1C 5S7
T: 709-864-2562 or 709-864-7349

-----Original Message-----
From: cs-chair [mailto:cs-chair@mun.ca]
Sent: October 16, 2015 4:30 PM
To: cs-chair
Cc: Mercer, Stacey; fba.ad.undergrad@mun.ca; Hicks, Sue; Fraize, Beverly; dpeters@mun.ca; engrconsult@mun.ca; associatevpoffice@grrenfell.mun.ca; Hickey, Marie; miugconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@nsd.mun.ca; Volk, Maureen; DeHorse; pharmacy@mun.ca; Dean of Science; adeanugradswk; Library Correspondence; Biochemistry Head; Marino, Paul; chemhead@mun.ca; jhanich@mun.ca; math-head@mun.ca; Fletcher, Garth; Lagowshi, Jo; anta; psychology.head@mun.ca; ulocke@mun.ca; Catto, Norm; banchaff@mun.ca

Dr. Banzhaf,

Thank you for the opportunity to review the Calendar changes to the Computer Science Program. These are indeed significant in scope and should serve the Computer Science Faculty well.

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 House

Derek House
Chair, Undergraduate Studies Committee
Marine Institute, Memorial University
TEL: 709-778-0586
FAX: 709-778-0394

https://webmail.mun.ca/munlogin/imp/message.php?index=19569
November 30, 2016

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

At a meeting held on November 29, 2016, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Computer Science
   (i) Proposals for thirteen new courses: COMP 2100, 2300, 3200, 3201, 3202, 3300, 3301, 3401, 4300, 4301, 4302, 4303, 4304
   (ii) Proposal for two new majors: Computer Science (Smart Systems) and Computer Science (Visual Computing and Games)

2. Department of Biology
   Calendar changes to amend the course description for Biology 4200

3. Department of Ocean Sciences
   (i) Amendment to the prerequisite for Ocean Sciences 2000
   (ii) Amendment to the minor program in Sustainable Aquaculture and Fisheries Ecology
   (iii) Proposal for new joint major program in Marine Biology

[Signature]
Joan Burry
Associate Registrar and
Secretary, Committee
on Undergraduate Studies,
Faculty of Science
Proposal
Calendar Change(s) to Existing Course(s)

Executive Summary

Biology 4200 (Immunology) is an introduction to the cells and organs of the innate and adaptive immune systems. The molecular and cellular basis of allergy, autoimmunity, vaccination and cancer immunology are discussed.

The lecture component of Biology 4200, Biochemistry 4105 (Immunology) and Pharmacy 3006 (Immunology) are taught in the same time slot and in the same room, by the same instructor. Biology students are required to attend a laboratory session every other week. There is no laboratory component for Biochemistry and Pharmacy students.

It is proposed that the laboratory component for Biology 4200 be removed for Biology students and that Biology 4200 be cross-listed with Biochemistry 4105 and Pharmacy 3006.

Resource Implications: Instructional Costs

There are no new resource implications as this course is taught annually by existing Faculty.

Consultations

Faculties of Humanities and Social Sciences, Biochemistry, Business, Education, Engineering, Human Kinetics and Recreation, Medicine, Music, Nursing, Pharmacy, Science and Social Work; Grenfell Campus; Marine Institute and MUN Library.

Library Holdings and/or Other Resources Required

No new library resources or costs are required or anticipated.

Signature of Unit Head (if appropriate): 

Date: 28-10-16

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

Date:
SUMMARY PAGE FOR SENATE

Approval Form

Biology 4200 - Immunology

Immunology

Calendar Change(s) - See attached

10.2 Biology

4200 Immunology (same as Biochemistry 4105 and Pharmacy 3006) is an introduction to the cells and organs of the innate and adaptive immune systems. The molecular and cellular basis of allergy, autoimmunity, vaccination and cancer immunology will also be discussed.

CR: Biochemistry 4105, Pharmacy 3006, and the former Pharmacy 4105

LH: 3
PR: Science 1807; BIOL 2060 BIOL 3050

Secondary Calendar Changes

10.1 Biochemistry

4105 Immunology (same as Biology 4200 and Pharmacy 3006 and the former Pharmacy 4105) is an introduction to the cells and organs of the innate and adaptive immune systems. The molecular and cellular basis of allergy, autoimmunity, vaccination and cancer immunology will also be discussed.

CR: Biology 4200, Pharmacy 3006, the former Pharmacy 3105, the former Pharmacy 4105

PR: BIOC 2101

15 Course Descriptions

3006 Immunology (same as Biochemistry 4105 and Biology 4200) is an introduction to the cells and organs of the innate and adaptive immune systems. The molecular and cellular basis of allergy, autoimmunity, vaccination and cancer immunology will also be discussed.

CR: Biochemistry 4105, Biology 4200, and the former PHAR 4105

PR: PHAR 2004

Calendar Entry After Changes

10.2 Biology

4200 Immunology (same as Biochemistry 4105 and Pharmacy 3006) is an introduction to the cells and organs of the innate and adaptive immune systems. The molecular and cellular basis of allergy, autoimmunity, vaccination and cancer immunology will also be discussed.

CR: Biochemistry 4105, Pharmacy 3006, and the former Pharmacy 4105

PR: Science 1807; BIOL 2060 BIOL 3050
10.1 Biochemistry

4105 Immunology (same as Biology 4200 and Pharmacy 3006 and the former Pharmacy 4105) is an introduction to the cells and organs of the innate and adaptive immune systems. The molecular and cellular basis of allergy, autoimmunity, vaccination and cancer immunology will also be discussed.

CR: Biology 4200, Pharmacy 3006, the former Pharmacy 3105, the former Pharmacy 4105
PR: BIOC 2101

15 Course Descriptions

3006 Immunology (same as Biochemistry 4105 and Biology 4200) is an introduction to the cells and organs of the innate and adaptive immune systems. The molecular and cellular basis of allergy, autoimmunity, vaccination and cancer immunology will also be discussed.

CR: Biochemistry 4105, Biology 4200, and the former PHAR 4105
PR: PHAR 2004

Rationale

The discrepancy in apparent work load created by the laboratory requirement for Biology 4200 students has fostered resentment among Biology 4200, Biochemistry 4105 and Pharmacy 3006 students. The course instructor, Dr. Sherri L. Christian of the Department of Biochemistry, has found this discrepancy and the attitude towards it disruptive for the course.

The removal of the Biology 4200 laboratory requirement would alleviate the above noted discrepancy. It should be noted that the immunology content and techniques covered in the Biology 4200 laboratory component are covered, to a certain extent, by laboratory exercises in other Biology courses, such as Biology 2060 (Cell Biology). The Department of Biology noted that the laboratory component of Biology 4200 is not critical and agree that its removal does not diminish the academic rigor of the course.

Consultations Sought From | Comments Received
--- | ---
Biochemistry | Yes
Business | No
Education | Yes
Engineering | Yes
Grenfell Campus | No
Human Kinetics and Recreation | Yes
Humanities and Social Sciences | No
Marine Institute | Yes
Medicine | Yes
Music | No
Nursing | No
Ocean Science | Yes
Pharmacy | Yes
Science | No
Social Work | 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: 
Appendix 1: Proof of Consultation
Hi Jody

Biochemistry is supportive of the proposed changes to Immunology.

Good luck

Mark

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

Associate Member
Beatrice Hunter Cancer Research Institute

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

---

From: Dean of Science
Sent: November 8, 2016 10:39 AM
To: Chris Racford, Math & Stats; Fletcher, Garth; Ian Neath, Psychology; John Hanchar, Earth Sciences; Jolanta Lagowski; Biochemistry Head; Minglun Gong, Computer Science; Marino, Paul; Travis Fridgen, Chemistry
Cc: Foster, Andy; Collins, Rosalind (Chemistry); Coombs, Donna Geraldine; Edwards, Regina (Computer Science); Gaslard, Betty Ann; Guzzwell, Diane (Earth Sciences); Kenny, Shirley; Morrissey, Leonce (Math & Stats); Psych Secretary; Sparkes, Winnie
Subject: FW: Consultation Request - Course Change Proposal

Please forward any comments to jodyb@mun.ca with a copy to deansci@mun.ca
Thanks,
Mary

---

From: Jody-Lynn Burke
Sent: November-08-16 10:03 AM
To: fba.ad.undergrad@mun.ca; Hicks, Sue; Mellor, Judith; engrconsult@mun.ca; associatevpooffice@grenfell.mun.ca; Hickey, Marie; Griffiths, Stacey; miugconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharinfo@mun.ca; Dean of Science; oceanugradswk; Library Correspondence
Subject: Consultation Request - Course Change Proposal
Importance: High

Dear colleagues,

Please find attached a course change proposal to remove the laboratory component for BIOLGY 4200 (Immunology).

Your feedback, at your earliest convenience, is appreciated. The next Science Faculty Council
meeting is November 16.

If you have any questions, please don’t hesitate to contact me.

**Jody Burke, BSc.(Hons), M.Ed, PGC(QM) — Academic Program Officer**
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca
Hello Jody:

We support your calendar change for this course and the cross listings in the calendar that will be made available. It will be much clearer for students.

Kind regards,
Judith

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

Dear colleagues,

Please find attached a course change proposal to remove the laboratory component for BIOLOGY 4200 (Immunclogy).

Your feedback, at your earliest convenience, is appreciated. The next Science Faculty Council meeting is November 16.

If you have any questions, please don’t hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 854 8021
E-mail: jodyb@mun.ca
Dear Ms. Burke,

Thank you for the opportunity to comment on the proposed Calendar change to remove the laboratory component for BIOL 4200 (Immunology).

I plan to present this consultation request to the next scheduled meeting of the Committee on Undergraduate Studies of the Faculty of Engineering and Applied Science, on Nov. 16. I will contact you again if any comments on this proposal arise at that meeting.

I anticipate no impact on the programs of the Faculty of Engineering and Applied Science.

---

Dr. Glyn George, Chair
Committee on Undergraduate Studies
Faculty of Engineering and Applied Science
Memorial University of Newfoundland
St. John's NL A1B 3X5

On 2016-11-08 10:03, Jody-Lynn Burke wrote:
> Dear colleagues,
> > Please find attached a course change proposal to remove the laboratory component for BIOLGY 4200 (Immunology).
> >
> > Your feedback, at your earliest convenience, is appreciated. The next Science Faculty Council meeting is November 16.
> >
> > If you have any questions, please don't hesitate to contact me.
> >
> > JODY BURKE, BSC.(HONS), M.ED, PGC(QM) - ACADEMIC PROGRAM OFFICER
> >
> > Department of Biology, Memorial University
> >
> > Office: (709) 864 8021
> >
> > E-mail: jodyb@mun.ca
Hi Jody

I have no concerns with the proposed changes to BIOL 4200.

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: jerohr@mun.ca
PE 202S

Subject: Consultation Request - Course Change Proposal
Importance: High

Dear colleagues,

Please find attached a course change proposal to remove the laboratory component for BIOLGY 4200 (Immunology).

Your feedback, at your earliest convenience, is appreciated. The next Science Faculty Council meeting is November 16.

If you have any questions, please don’t hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
Jody,

Thank you for the opportunity to review and comment on the proposed change to the course BIOL 4200 Immunology. This change will have no impact on the programs at the Marine Institute. We are happy to support this change 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

---

From: Jody-Lynn Eurke [mailto:jrotchford@mun.ca]
Sent: Tuesday, November 08, 2016 10:03 AM
To: fba.ad.undergrad@mun.ca; Hicks, Sue <shicks@mun.ca>; Mellor, Judith <jmellor@mun.ca>; engrconsult@mun.ca; associatevpoffice@grenfell.mun.ca; Hickey, Marie <mehickey@mun.ca>; Griffiths, Stacey <staceym@mun.ca>; MIUG Consultations <MIUGconsultations@mi.mun.ca>; cvardy@mun.ca; Sherry.caines@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeanNurse <DeanNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Subject: Consultation Request - Course Change Proposal
Importance: High

Dear colleagues,

Please find attached a course change proposal to remove the laboratory component for BIOLOGY 4200 (Immunology).

Your feedback, at your earliest convenience, is appreciated. The next Science Faculty Council meeting is November 16.

If you have any questions, please don’t hesitate to contact me.
Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca

This email is governed by the Terms and Conditions found in our Disclaimer.
Dear Ms. Burke

The Faculty of Medicine supports the proposed course change for Biology 4200 (immunology).

Regards

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

Dear colleagues,

Please find attached a course change proposal to remove the laboratory component for BIOLGY 4200 (Immunology).

Your feedback, at your earliest convenience, is appreciated. The next Science Faculty Council meeting is November 16.

If you have any questions, please don’t hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca
Dear Jody-Lynn: Ocean Sciences has no concerns regarding the proposed changes to Biology 4200.

Best regards

Garth

From: Dean of Science
Sent: November-08-16 10:40 AM
To: Chris Radford, Math & Stats <math-head@mun.ca>; Fletcher, Garth <fletcher@mun.ca>; Ian Neath, Psychology <Psychology.Head@mun.ca>; John Hanchar, Earth Sciences <jhanchar@mun.ca>; Jolanta Lagowski <physicshead@mun.ca>; Biochemistry Head <biochead@mun.ca>; Minglun Gong, Computer Science <gong@mun.ca>; Marino, Paul <pmarino@mun.ca>; Travis Fridgen, Chemistry <chemhead@mun.ca>
Cc: Foster, Andy <afoster@mun.ca>; Collins, Rosalind (Chemistry) <collinsr@mun.ca>; Coombs, Donna Geraldine <dcoombs@mun.ca>; Edwards, Regina (Computer Science) <redwards@mun.ca>; Gaslard, Betty Ann <elewis@mun.ca>; Guzzwell, Diane (Earth Sciences) <dguzzwell@mun.ca>; Kenny, Shirley <shirleyk@mun.ca>; Morrissey, Leonce (Math & Stats) <leonce@mun.ca>; Psych Secretary <psychsecretary@mun.ca>; Sparkes, Winnie <wsparkes@mun.ca>
Subject: FW: Consultation Request - Course Change Proposal
Importance: High

Please forward any comments to jodyb@mun.ca with a copy to deansci@mun.ca

Thanks,
Mary

From: Jody-Lynn Burke
Sent: November-08-16 10:03 AM
To: fba.ad.undergrad@mun.ca; Hicks, Sue; Mellor, Judith; engrconsult@mun.ca; associatevpoffice@grenfell.mun.ca; Hickey, Marie; Griffiths, Stacey; miguconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@med.mun.ca; Sutherland, Ian D; DeanNurse; pharminfo@mun.ca; Dean of Science; deeanugradswk; Library Correspondence
Subject: Consultation Request - Course Change Proposal
Importance: High

Dear colleagues,

Please find attached a course change proposal to remove the laboratory component for BIOLGY 4200 (Immunology).

Your feedback, at your earliest convenience, is appreciated. The next Science Faculty Council meeting is November 16.
If you have any questions, please don’t hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca
Hello Jody-Lynn

Dr. Dillon, Associate Dean (Undergraduate) and myself have reviewed the proposed change and would like to point out a couple of minor corrections:

- In the “Secondary Calendar Changes” section, the placement of the headings “10.1 Biochemistry” and “15 Course Descriptions” should be reversed.
- In the “Calendar Entry After Changes section, the course description for Immunology 4200 references Biochemistry 4150, when it should be 4105.

Csop

CSOP GLEW, Hon. B.A., M.U.P.  I  MANAGER OF ACADEMIC PROGRAMS
School of Pharmacy
Memorial University of Newfoundland
St. John’s, NL  A13 3V6
Health Sciences Centre  I  Room H3435
T  709 777 6963  I  F  709 777 7044
www.mun.ca/pharmacy

Please note: the deadline to apply for admission to the Doctor of Pharmacy (PharmD) program in September 2017 is February 1, 2017.

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Follow us: Facebook: www.facebook.com/schoolofpharmacy  Twitter: www.twitter.com/schoolofpharm

Medication Therapy Services Clinic
www.mtsclinic.ca

From: Jody-Lynn Burke [mailto:jrotchford@mun.ca]
Sent: October-31-16 10:04 AM
To: Biochemistry Head; pharminfo@mun.ca
Subject: Changes to Biology 4200
Importance: High

Dr. Berry and Ms. Glew,

Please find attached a proposal to modify Biology 4200, an existing course within the Department of Biology.
As this change affects Biochemistry 4105 and Pharmacy 3006, I would appreciate your feedback before I circulate it to the wider MUN community for consultation.

The Biology Department would like to submit this proposal to the Faculty of Science Undergraduate Studies Committee for their November 16, 2016 meeting.

If you have any questions, please don't hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca
Hi Jody,

Sorry about my delayed reply. I have reviewed your proposed calendar changes and I do not have any suggestions.

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

Regards

Heather

Heather J. Hair, PhD, RMFT, RSW
Associate Dean Undergraduate Programs
School of Social Work, Memorial University
St. John’s, NL, Canada, A1C 5S7
T: 709-864-2362 or 709-864-7349

From: Jody-Lynn Burke
Sent: November-08-16 10:03 AM
To: jba.ad.undergrad@mun.ca; Hicks, Sue <shicks@mun.ca>; Mellor, Judith <jmellor@mun.ca>; engrconsult@mun.ca; associatevpoffice@grenfell.mun.ca; Hickey, Marie <mehickey@mun.ca>; Griffiths, Stacey <staceym@mun.ca>; miugconsultations@mi.mun.ca; cvardy@mun.ca; Sherry.caines@med.mun.ca; Sutherland, Ian D <isutherland@mun.ca>; DeaNurse <DeaNurse@mun.ca>; pharminfo@mun.ca; Dean of Science <deansci@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; Library Correspondence <univlib@mun.ca>
Subject: Consultation Request - Course Change Proposal
Importance: High

Dear colleagues,

Please find attached a course change proposal to remove the laboratory component for BIOLOGY 4200 (Immunology).

Your feedback, at your earliest convenience, is appreciated. The next Science Faculty Council meeting is November 16.

If you have any questions, please don’t hesitate to contact me.

Jody Burke, BSc.(Hons), M.Ed, PGC(QM) – Academic Program Officer
Department of Biology, Memorial University
Office: (709) 864 8021
E-mail: jodyb@mun.ca
November 30, 2016

TO: All Members, Faculty Council of Science

FROM: Joan Burry, Secretary
Committee on Undergraduate Studies, Faculty of Science

SUBJECT: Calendar Changes, New Course and New Program Proposals

At a meeting held on November 29, 2016, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Computer Science

   (i) Proposals for thirteen new courses: COMP 2100, 2300, 3200, 3201, 3202, 3300, 3301, 3401, 4300, 4301, 4302, 4303, 4304

   (ii) Proposal for two new majors: Computer Science (Smart Systems) and Computer Science (Visual Computing and Games)

2. Department of Biology

   Calendar changes to amend the course description for Biology 4200

3. Department of Ocean Sciences

   (i) Amendment to the prerequisite for Ocean Sciences 2000

   (ii) Amendment to the minor program in Sustainable Aquaculture and Fisheries Ecology

   (iii) Proposal for new joint major program in Marine Biology

Joan Burry
Associate Registrar and
Secretary: Committee
on Undergraduate Studies,
Faculty of Science
Proposal
Calendar Changes to Existing Course OCSC 2000

Executive summary

OCSC 2000 (Introductory Biological Oceanography) is an elective course for the Minors offered by the Department of Ocean Sciences, and required for the recently developed Major in Ocean Sciences. In consultation with the instructors, we propose minor modifications to the prerequisites of the course to make sure students have sufficient background in science.

Resource implications

There will be no resource implications, no additional costs associated with this change and no change in library holdings.

Consultations

See Appendix I.

Library Holdings and/or Other Resources Required

The library can support this course with existing resources.

Signature of Unit Head

________________________________________

Date

________________________________________

Signature of the Dean

________________________________________

Date

________________________________________
SUMMARY PAGE FOR SENATE
Approval Form

Course number and title
OCSC 2000 Introductory Biological Oceanography

Proposed Calendar Changes under 10.9 Ocean Sciences

2000 Introductory Biological Oceanography provides a general understanding of the biological processes that occur in coastal and oceanic environments. It introduces students to the major groups of bacteria, phytoplankton, invertebrates and fish, emphasizing the biotic and abiotic factors controlling primary production and marine biomass. It shows how the physical, chemical, and geological environments interact with biology to define processes and patterns affecting nutrients and life in marine ecosystems.
CR: Biology 3710
PR: OCSC 1000 and a 1000 level course in one of Biology, Chemistry, Earth Sciences or Physics.

Clean Calendar Entry under 10.9 Ocean Sciences

2000 Introductory Biological Oceanography provides a general understanding of the biological processes that occur in coastal and oceanic environments. It introduces students to the major groups of bacteria, phytoplankton, invertebrates and fish, emphasizing the biotic and abiotic factors controlling primary production and marine biomass. It shows how the physical, chemical, and geological environments interact with biology to define processes and patterns affecting nutrients and life in marine ecosystems.
CR: Biology 3710
PR: OCSC 1000 and a 1000 level course in one of Biology, Chemistry, Earth Sciences or Physics.

Rationale for Change

Currently, the only prerequisite of OCSC 2000 is OCSC 1000. In consultation with the instructors involved, we propose to require a minimum of one additional course at the 1000 level in Biology, Chemistry, Earth Sciences or Physics to ensure that students taking OCSC 2000 have a stronger science background.
Change to OCSC 2000 – 29 Nov 2016

Consultations Sought From | Comments Received
--- | ---
1. Marine Institute | Yes
2. Grenfell campus | No
3. Department of Biochemistry | Yes
4. Department of Biology | Yes
5. Department of Chemistry | Yes
6. Department of Computer Sciences | No
7. Department of Earth Sciences | Yes
8. Department of Economics | No
9. Department of Geography | Yes
10. Department of Mathematics and Statistics | Yes
11. Department of Physics and Physical Oceanography | Yes
12. Department of Psychology | No
13. Faculty of Business Administration | No
14. Faculty of Engineering and Applied Science | Yes
15. Faculty of Education | No
16. Faculty of Arts | No
17. Library Report Received | NA

Approved by Dean, Associate Vice-President (Academic) or Vice President  Yes / No

Name

APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:

Secretary:

Date:
APPENDIX 1: CONSULTATIONS

REQUEST FOR FEEDBACK

Subject: Consultation Request: Calendar change for OCSC 2000
Date: Thu, 3 Nov 2016 19:16:06 -0000
From: Fletcher, Garth <fletcher@mun.ca>
To: Griffiths, Stacey <stacey.m@mun.ca>, Biochemistry Head <biohead@mun.ca>, Business <fba.ad.undergrad@mun.ca>, 'cs-chair@mun.ca' <cs-chair@mun.ca>, Locke, Wade <wlocke@mun.ca>, Hicks, Sue <shicks@mun.ca>, Engineering <engrconsult@mun.ca>, Fridgen, Travis <tfridgen@mun.ca>, 'Ian Neath' <psychology.head@mun.ca>, Jody-Lynn Burke <jrotchford@mun.ca>, 'John Hanchar, Earth Sciences' <jhanchar@mun.ca>, Lagowski, Jolanta <jolanta@mun.ca>, Marino, Paul <pmarino@mun.ca>, 'mathconsult@mun.ca' <mathconsult@mun.ca>, Gamsby, Meghan <mgamsby@mun.ca>, 'miugconsultations@mi.mun.ca' <miugconsultations@mi.mun.ca>, Catto, Norm <nncatto@mun.ca>, 'vpoffice@grenfell.mun.ca' <vpoffice@grenfell.mun.ca>
CC: amercier@mun.ca <amercier@mun.ca>

Colleagues, I have attached our proposal to change the calendar entry for OCSC 2000 (Introductory Biological Oceanography) to include an additional prerequisite.
Could you review and forward your comments to me (cc to Annie Mercier) at your earliest convenience please.

Best regards

Garth

Garth L. Fletcher
Professor Emeritus and Head
Department of Ocean Sciences
Memorial University
0 Marine Lab Road
St John's NL, Canada
A1K 3E2

Phone: 709-864-3276
Email: fletcher@mun.ca

FEEDBACK RECEIVED

From: Chemistry, Geography, Marine Institute, Biochemistry, Biology, Mathematics, Engineering, Physics, Earth Sciences

CHEMISTRY

From: Travis Fridgen [mailto:tfridgen@mun.ca]
Sent: November-03-16 9:20 PM
To: Fletcher, Garth <fletcher@mun.ca>; Martin, Paul J. <pmartin@mun.ca>; Chris Flinn <cgflinn@mun.ca>
Subject: Re: Consultation Request: Calendar change for OCSC 2000

Dear Garth,

We are supportive of the changes to OCSC 2000. However, chemistry since CHEM 1050 and 1051 are university level chemistry courses, we feel that the prerequisite should be CHEM 1050 (or 1200) or both CHEM 1050 and 1051 (or 1200 and 1001). CHEM 1010 (the only other option) is a preparatory course for CHEM 1050 (or 1200) for students who have not taken chemistry in high school. Students should take a University level chemistry course, much like they are required to take a university level biology/earth sciences/physics course as in the course description. I would be happy to discuss this with you at your convenience.

Take care,
Travis

Reply to Chemistry

Subject: Re: Consultation Request: Calendar change for OCSC 2000
Date: Tue, 8 Nov 2016 09:39:19 -0330
From: Annie Mercier <amercier@mun.ca>
To: Fridgen,Travis <tfridgen@mun.ca>
CC: Fletcher, Garth <fletcher@mun.ca>

Dear Travis:

Many thanks for your constructive feedback.

We acknowledge that CHEM 1010 is something that will need to be addressed; however the issue is not restricted to courses and programs in Ocean Sciences. Indeed, we are essentially aligning with the Chemistry requirements listed by most other units for their course PR and programs. Cases in point:

- Biology lists "CHEM 1010/1011 (or equivalent)" in program requirements. Earth Sciences lists "one of Chemistry 1050 or 1010 or 1200 and one of Chemistry 1051 or 1011 or 1001." Physics lists "CHEM 1050 and 1051 (or Chemistry 1010, 1011, and the former 1031)." As you know, we list all three pairs -- but we list CHEM 1050/51 as the primary choice.

We will likely need to undertake a broader revision of these chemistry requirements in consultation with the other units. But for now, we must keep a language that is consistent with the other units that are assisting us with our programs.

All the best,
Annie

On 09/11/2016 4:59 AM, Travis Fridgen wrote:
Hi Annie,
Yes, biology does list 1010/1011, but as I stated, they are working to change it. Also you may have seen the proposal from EASC that removes 1010 and 1011. I suppose you can look at changing it next year. We will discontinue 1011 once Biology makes their change official.
However, for OCSC 2000, you state "...an additional 1000 level course in Biology, Chemistry, Earth Sciences or Physics."
That means the prerequisite could be a university-level course in Biology, Earth Sciences or Physics or a preparatory (high-school level) course in Chemistry.
I am attaching the outline for CHEM 1010, as you can see, it starts off with topics like metric conversions. Surely students taking OCSC 2000 can handle a university level chemistry course as a prerequisite to this second year university course.
Take care,
Travis

On 09/11/2016 7:46 AM, Annie Mercier wrote:
Hi Travis:
Yes, I am aware of Biology's intent, as we have been working very closely (even exchanging on this very topic and deciding not to introduce any discrepancy in our requirements at this stage). So you can rest assured that we will adjust chemistry requirements in concert at the earliest opportunity.
All the best,
Annie

GEOGRAPHY

From: Catto, Norm
Sent: November-04-16 8:54 AM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: RE: Consultation Request: Calendar change for OCSC 2000

No problems 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

MARINE INSTITUTE

Subject: RE: Consultation Request: Calendar change for OCSC 2000
Date: Mon, 7 Nov 2016 13:05:24 +0000
From: MIUG Consultations <MIUGconsultations@mi.mun.ca>
To: Fletcher, Garth <fletcher@mun.ca>
CC: amercier@mun.ca <amercier@mun.ca>

Garth,
Thank you for the opportunity to review and comment on the change to OCSC 2000 (Introductory Biological Oceanography).

This change will have no impact on the programs at the Marine Institute and we are happy to support this change 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@ml.mun.ca

---

**BIOCHEMISTRY**

**Subject:** RE: Consultation Request: Calendar change for OCSC 2000  
**Date:** Thu, 10 Nov 2016 14:18:39 +0000  
**From:** Biochemistry Head <biochead@mun.ca>  
**To:** Fletcher, Garth <fletcher@mun.ca>  
**CC:** amercier@mun.ca <amercier@mun.ca>

Garth/Annie

All good from a Biochemistry perspective on this one.

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

Associate Member  
Beatrice Hunter Cancer Research Institute

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

Subject: RE: Consultation Request: Calendar change for OCSC 2000
Date: Tue, 15 Nov 2016 17:44:27 +0000
From: Jody-Lynn Burke <jrotchford@mun.ca>
To: Fletcher, Garth <fletcher@mun.ca>
CC: Annie Mercier <amercier@mun.ca>

Hi Garth,

Thank you for the opportunity to review and comment on the proposed changes to OCSC 2000.

The Department of Biology is happy to support the changes as presented.

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

MATHEMATICS

From: Fletcher, Garth [mailto:fletcher@mun.ca]
Sent: November-16-16 4:09 PM
To: Math Consult <mathconsult@mun.ca>
Cc: amercier@mun.ca
Subject: RE: Consultation request: Proposal for a new program -- Major in Marine Biology

Hi Tara: We were also hoping to get feedback on the calendar changes to one of our Minors and OCSC 2000 (Introductory Biological Oceanography). Sorry if you have already responded to these proposals. If you have I cannot find it.
A response by November 22 would be perfect.

Best regards

Garth

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: November-16-16 4:44 PM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: RE: Consultation request: Proposal for a new program -- Major in Marine Biology

Hello Garth,

Math & Stats has no comments on these two proposals.
Cheers,
Tara

ENGINEERING

Subject: Re: Consultation request: Proposal for a new program -- Major in Marine Biology
Date: Thu, 17 Nov 2016 09:52:51 -0330
From: Engineering Consult <engrconsult@mun.ca>
Organization: Memorial University of Newfoundland
To: Fletcher, Garth <fletcher@mun.ca>
CC: Annie Mercier <amercier@mun.ca>

Dear Dr. Fletcher,

Thank you for the opportunity to comment on the SAFE minor, OSCS 2000 and the new minor in Marine Biology.

At yesterday'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

PHYSICS

From: "Fletcher, Garth" <fletcher@mun.ca>
Date: Thursday, November 17, 2016 at 9:42 AM
To: Jolanta Lagowski <jolantal@mun.ca>, "John Hanchar, Earth Sciences" <jhanchar@mun.ca>
Cc: "amercier@mun.ca" <amercier@mun.ca>
Subject: New Major program and calendar changes

Dear Jolanta and John: Earlier this month we sent the attached new program proposal and calendar changes for your departments to comment on. Although you may have sent me your comments I cannot find them. Would it be possible for comments to be sent to me (cc Annie) by November 22. We are particularly interested in your feedback on the new major.
Best regards

Garth

Garth L. Fletcher
Professor Emeritus and Head
Department of Ocean Sciences
Memorial University
0 Marine Lab Road
St John's NL, Canada
A1K 3E2

Phone: 709-864-3276
Email: fletcher@mun.ca

From: Martin Plumer [mailto:plumer@mun.ca]
Sent: November-17-16 10:30 AM
To: Fletcher, Garth <fletcher@mun.ca>
Cc: Lagowski, Jolanta <jolantal@mun.ca>
Subject: FW: New Major program and calendar changes

Hi Garth,

Physics has no issues with these proposed changes.

Cheers,

Martin

---

EARTH SCIENCES

From: Penny L. Morrill [mailto:pmorrill@mun.ca]
Sent: November-28-16 3:55 PM
To: Annie Mercier <amercier@mun.ca>; Fletcher, Garth <fletcher@mun.ca>
Cc: John M. Hanchar <jhanchar@mun.ca>; Michelle Miskell <mmiskell@mun.ca>; Colin Farquharson <cgfarquh@mun.ca>
Subject: EASC response to your undergraduate calendar change proposals

Nov. 28, 2016

Dear Garth and Annie,

The Department of Earth Sciences has reviewed your proposed calendar changes for:
1. Proposal for a New Program Major in Marine Biology,
2. Minor in Sustainable Aquaculture and Fisheries Ecology (SAFE), and
3. Calendar Changes to Existing Course OCSC 2000
From the responses I have received thus far, we have no issues with the proposed changes.

Cheers,
Penny Morrill
Chair of the undergraduate matters committee Department of Earth Sciences

---

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
November 30, 2016

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

At a meeting held on November 29, 2016, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Computer Science
   (i) Proposals for thirteen new courses: COMP 2100, 2300, 3200, 3201, 3202, 3300, 3301, 3401, 4300, 4301, 4332, 4303, 4304
   (ii) Proposal for two new majors: Computer Science (Smart Systems) and Computer Science (Visual Computing and Games)

2. Department of Biology:
   Calendar changes to amend the course description for Biology 4200

3. Department of Ocean Sciences
   (i) Amendment to the prerequisites for Ocean Sciences 2000
   (ii) Amendment to the minor program in Sustainable Aquaculture and Fisheries Ecology
   (iii) Proposal for new joint major program in Marine Biology

Joan Burry
Associate Registrar and
Secretary, Committee
on Undergraduate Studies,
Faculty of Science
Proposal

Calendar Changes to Existing Program

Minor in Sustainable Aquaculture and Fisheries Ecology (SAFE)

Executive summary

A minor change is proposed to the calendar entry of the Minor in Sustainable Aquaculture and Fisheries Ecology (SAFE) offered by the Department of Ocean Sciences, to correct an oversight and ensure consistency among the Minor programs offered by the Department. The eligible substitution between OCSC 2000 and BIOL 3710 will be added to the calendar description, thereby mirroring the requirements of the Minor in Ocean Sciences. A suitable Biochemistry elective will also be added.

Resource implications

There will be no resource implications, no additional costs associated with this change and no change in library holdings.

Consultations

See Appendix I.

Library Holdings and/or Other Resources Required

The library can support this program with existing resources.

Signature of Unit Head

Date

Signature of the Dean

Date
SUMMARY PAGE FOR SENATE
Approval Form

Program Title

Minor in Sustainable Aquaculture and Fisheries Ecology

Proposed Calendar Changes under 9.9 Ocean Sciences

9.9.2 Minor in Sustainable Aquaculture and Fisheries Ecology
Students who take a minor in Sustainable Aquaculture and Fisheries Ecology will complete 24 credit hours as follows:
1. Ocean Sciences 1000, 2001, 3000, 3002;
2. Biology 4750 or Geography 4300;
3. One of Ocean Sciences 2000 (or Biology 3710), 3620, 3640, 4000, 4100, 4122, 4601;
4. One of Biology 2122, 3401, 3640, 3715, 4251, 4605; and
5. One of Biochemistry 2600, 3107, 3402, 4002, 4101, 4104, 4105, 4200, 4201.

Clean Calendar Entry under 9.9 Ocean Sciences

9.9.2 Minor in Sustainable Aquaculture and Fisheries Ecology
Students who take a minor in Sustainable Aquaculture and Fisheries Ecology will complete 24 credit hours as follows:
1. Ocean Sciences 1000, 2001, 3000, 3002;
2. Biology 4750 or Geography 4300;
3. One of Ocean Sciences 2000 (or Biology 3710), 3620, 3640, 4000, 4100, 4122, 4601;
4. One of Biology 2122, 3401, 3640, 3715, 4251, 4605; and
5. One of Biochemistry 2600, 3107, 3402, 4002, 4101, 4104, 4105, 4200, 4201.

Rationale for Proposed Change

It was recently brought to our attention that the requirements for our Minor in Sustainable Aquaculture and Fisheries Ecology did not indicate the possible substitution between OCSC 2000 and BIOL 3710, which was outlined in our Minor in Ocean Sciences. We propose to correct this oversight and align the requirements of our Minor programs by adjusting the calendar entry accordingly. We also take this opportunity to add a suitable Biochemistry elective, following a suggestion that we received during consultations.
### Consultations Sought From

<table>
<thead>
<tr>
<th></th>
<th>Consultations</th>
<th>Comments Received</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Marine Institute</td>
<td>Yes</td>
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<tr>
<td>2.</td>
<td>Grenfell campus</td>
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</tr>
<tr>
<td>3.</td>
<td>Department of Biochemistry</td>
<td>Yes</td>
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<td>4.</td>
<td>Department of Biology</td>
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<td>5.</td>
<td>Department of Chemistry</td>
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<td>6.</td>
<td>Department of Computer Sciences</td>
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<td>7.</td>
<td>Department of Earth Sciences</td>
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</tr>
<tr>
<td>8.</td>
<td>Department of Economics</td>
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<td>9.</td>
<td>Department of Geography</td>
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<td>10.</td>
<td>Department of Mathematics and Statistics</td>
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<td>11.</td>
<td>Department of Physics and Physical Oceanography</td>
<td>Yes</td>
</tr>
<tr>
<td>12.</td>
<td>Department of Psychology</td>
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<tr>
<td>13.</td>
<td>Faculty of Business Administration</td>
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</tr>
<tr>
<td>14.</td>
<td>Faculty of Engineering and Applied Science</td>
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<tr>
<td>15.</td>
<td>Faculty of Education</td>
<td>Yes</td>
</tr>
<tr>
<td>16.</td>
<td>Faculty of Arts</td>
<td>No</td>
</tr>
<tr>
<td>17.</td>
<td><strong>Library Report Received</strong></td>
<td>NA</td>
</tr>
</tbody>
</table>

**Approved by Dean, Associate Vice-President (Academic) or Vice President**  
Yes / No

**Name**  
________________________

**APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES**

**Chair:**  
________________________

**Secretary:**  
________________________

**Date:**  
________________________
APPENDIX 1: CONSULTATIONS

REQUEST FOR FEEDBACK

Subject: Consultation Request: Calendar change OCSC minor in Sustainable Aquaculture and Fisheries Ecology

Date: Thu, 3 Nov 2016 15:13:34 +0000

From: Fletcher, Garth <fletcher@mun.ca>

To: Griffiths, Stacey <stacey@mun.ca>, Biochemistry Head <biohead@mun.ca>, Business fba.ad.undergrad@mun.ca, 'cs-chair@mun.ca' <cs-chair@mun.ca>, Locke, Wade <wlocke@mun.ca>, Hicks, Sue <shicks@mun.ca>, Engineering <engrconsult@mun.ca>, Alcock, Erin <ekalcock@mun.ca>, Fridgen, Travis <tfridgen@mun.ca>, 'Ian Neath' <Psychology.Head@mun.ca>, 'John Hanchar, Earth Sciences' <jhanchar@mun.ca>, Lagowski, Jolanta <jolantaj@mun.ca>, Marino, Paul <pmarino@mun.ca>, 'mathconsult@mun.ca' <mathconsult@mun.ca>, 'mlugconsultations@mi.mun.ca' <mlugconsultations@mi.mun.ca>, Catto, Norm <ncatto@mun.ca>, 'vpoffice@grenfell.mun.ca' <vpoffice@grenfell.mun.ca>

CC: amercler@grenfell.mun.ca

Colleagues, please find attached our proposal to make a small change in the calendar entry for our minor in Sustainable Aquaculture and Fisheries Ecology. Could you review and forward your comments to me (cc to Annie Mercier) at your earliest convenience please.

Best regards

Garth

Garth L. Fletcher
Professor Emeritus and Head
Department of Ocean Sciences
Memorial University
0 Marine Lab Road
St John’s NL, Canada
A1K 3E2

Phone: 709-864-3276
Email: fletcher@mun.ca

FEEDBACK RECEIVED

From: Geogrophy, Marine Institute, Biochemistry, Education, Biology, Mathematics, Engineering, Physics, Earth Sciences

GEOGRAPHY

From: Catto, Norm
Sent: November-03-16 3:50 PM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: RE: Consultation Request: Calendar change OCSC minor in Sustainable Aquaculture and Fisheries Ecology

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

MARINE INSTITUTE

From: Dawn King [mailto:Dawn.King@mi.mun.ca] On Behalf Of MIUG Consultations
Sent: November-07-16 9:35 AM
To: Fletcher, Garth <fletcher@mun.ca>
Cc: amerrier@mun.ca
Subject: RE: Consultation Request: Calendar change OCSC minor in Sustainable Aquaculture and Fisheries Ecology

Garth,

Thank you for the opportunity to review and comment on this change to the Sustainable Aquaculture and Fisheries Ecology program.

This change will have no impact on the programs at the Marine Institute and we are happy to support this change 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

BIOCHEMISTRY

Subject: RE: Consultation Request: Calendar change OCSC minor in Sustainable Aquaculture and Fisheries Ecology
Date: Thu, 10 Nov 2016 14:17:27 +0000
From: Biochemistry Head <biochead@mun.ca>
To: Fletcher, Garth <fletcher@mun.ca>
CC: amercler@mun.ca <amercler@mun.ca>

Garth/Annie

Biochemistry is supportive. One friendly suggestion, any thought to including a nutrition course (e.g., Bloc2600) as an option for the students?

Mark

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

Associate Member
Beatrice Hunter Cancer Research Institute

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

Reply to Biochemistry

On 10/11/2016 11:14 AM, Fletcher, Garth wrote:

Hi Mark: Sounds like a good suggestion to me. Annie has already put the suggestion before our undergraduate studies committee.

Best regards

Garth

EDUCATION

From: Mellor, Judith
Sent: November-15-16 2:04 PM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: Consultation Request: Calendar change OCSC minor in Sustainable Aquaculture and Fisheries
Ecology

Dear Garth:
While this change to the OSC minor does not affect the Faculty of Education in any direct way, we do support the proposal and the clarity it provides around the indicated course.

Kind regards,
Judith

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

BIOLOGY

Subject: RE: Consultation Request: Calendar change OCSC minor in Sustainable Aquaculture and Fisheries Ecology
Date: Tue, 15 Nov 2016 17:45:04 +0000
From: Jody-Lynn Burke <jrotchford@mun.ca>
To: Fletcher, Garth <fletcher@mun.ca>
CC: amercler@mun.ca <amercler@mun.ca>

Hi Garth,

Thank you for the opportunity to review and comment on the proposed changes to the minor in Sustainable Aquaculture and Fisheries Ecology.

The Department of Biology is happy to support the changes as presented.

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

MATHEMATICS & STATISTICS

From: Fletcher, Garth <mailto:fletcher@mun.ca>
Sent: November-16-16 4:09 PM
To: Math Consult <mailto:mathconsult@mun.ca>
Cc: amercler@mun.ca
Subject: RE: Consultation request: Proposal for a new program -- Major in Marine Biology
Hi Tara: We were also hoping to get feedback on the calendar changes to one of our Minors and OCSC 2000 (Introductory Biological Oceanography). Sorry if you have already responded to these proposals. If you have I cannot find it. A response by November 22 would be perfect.

Best regards

Garth

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: November-16-16 4:44 PM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: RE: Consultation request: Proposal for a new program -- Major in Marine Biology

Hello Garth,

Math & Stats has no comments on these two proposals.

Cheers,
Tara

ENGINEERING

Subject: Re: Consultation request: Proposal for a new program -- Major in Marine Biology
Date: Thu, 17 Nov 2016 09:52:51 -0330
From: Engineering Consult <engrconsult@mun.ca>
Organization: Memorial University of Newfoundland
To: Fletcher, Garth <fletcher@mun.ca>
CC: Annie Mercier <amercler@mun.ca>

Dear Dr. Fletcher,

Thank you for the opportunity to comment on the SAFE minor, OSCS 2000 and the new minor in Marine Biology.

At yesterday'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

PHYSICS

From: "Fletcher, Garth" <fletcher@mun.ca>
Date: Thursday, November 17, 2016 at 9:42 AM
To: Jolanta Lagowski <jolantal@mun.ca>, "John Hanchar, Earth Sciences" <jhanchar@mun.ca>
Cc: "amercier@mun.ca" <amercier@mun.ca>
Subject: New Major program and calendar changes

Dear Jolanta and John: Earlier this month we sent the attached new program proposal and calendar changes for your departments to comment on. Although you may have sent me your comments I cannot find them. Would it be possible for comments to be sent to me (cc Annie) by November 22. We are particularly interested in your feedback on the new major.

Best regards

Garth

Garth L. Fletcher
Professor Emeritus and Head
Department of Ocean Sciences
Memorial University
0 Marine Lab Road
St John's NL, Canada
A1K 3E2

Phone: 709-864-3276
Email: fletcher@mun.ca

From: Martin Plumer [mailto:plumer@mun.ca]
Sent: November-17-16 10:30 AM
To: Fletcher, Garth <fletcher@mun.ca>
Cc: Lagowski, Jolanta <jolantal@mun.ca>
Subject: FW: New Major program and calendar changes

Hi Garth,

Physics has no issues with these proposed changes.

Cheers,
Martin
EARTH SCIENCES

From: Penny L Morrill [mailto:pmorrill@mun.ca]
Sent: November 28-16 3:55 PM
To: Annie Mercier <amercier@mun.ca>; Fletcher, Garth <fletcher@mun.ca>
Cc: John M. Hanchar <jhanchar@mun.ca>; Michelle Miskell <mmiskell@mun.ca>; Colin Farquharson <cgfarquh@mun.ca>
Subject: EASC response to your undergraduate calendar change proposals

Nov. 28, 2016

Dear Garth and Annie,

The Department of Earth Sciences has reviewed your proposed calendar changes for:
1. Proposal for a New Program Major in Marine Biology,
2. Minor in Sustainable Aquaculture and Fisheries Ecology (SAFE), and
3. Calendar Changes to Existing Course OCSC 2000

From the responses I have received thus far, we have no issues with the proposed changes.

Cheers,
Penny Morrill
Chair of the undergraduate matters committee Department of Earth Sciences

--
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
November 30, 2016

TO: All Members, Faculty Council of Science

FROM: Joan Burry, Secretary
Committee on Undergraduate Studies, Faculty of Science

SUBJECT: Calendar Changes, New Course and New Program Proposals

At a meeting held on November 29, 2016, the Undergraduate Studies Committee of the Faculty of Science agreed that the following items be forwarded to Faculty Council for approval:

1. Department of Computer Science
   (i) Proposals for thirteen new courses: COMP 2100, 2300, 3200, 3201, 3202, 3300, 3301, 3401, 4300, 4301, 4302, 4303, 4304
   (ii) Proposal for two new majors: Computer Science (Smart Systems) and Computer Science (Visual Computing and Games)

2. Department of Biology
   Calendar changes to amend the course description for Biology 4200

3. Department of Ocean Sciences
   (i) Amendment to the prerequisite for Ocean Sciences 2000
   (ii) Amendment to the minor program in Sustainable Aquaculture and Fisheries Ecology
   (iii) Proposal for new joint major program in Marine Biology

Joan Burry
Associate Registrar and
Secretary, Committee
on Undergraduate Studies,
Faculty of Science
Proposal for a New Program
Joint Major in Marine Biology

Executive Summary

The Major in Biology (Marine) has been offered by the Department of Biology, with support from the Ocean Sciences Centre, since 2011. The transition of the Ocean Sciences Centre (OSC) to the Department of Ocean Sciences provided a unique opportunity to jointly offer and restructure the existing Major in Biology (Marine) into a Joint Major in Marine Biology.

The proposed Joint Major in Marine Biology will replace the existing Major in Biology (Marine) and provide new and existing students with a solid foundation in oceanography and biological studies.

Resource Implications: Instructional Costs

New resources are not required.

Consultations

See Appendix I.

Library Holdings and/or Other Resources Required

The library can support this program with existing resources.

Signature of Unit Head (if appropriate):

Date:

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

Date:
New Joint Major in Marine Biology (30 November 2016)

SUMMARY PAGE FOR SENATE

Approval Form

Program Title

Bachelor degree with Joint Major in Marine Biology
B.Sc. (Marine Biology)

Course Additions

OCSC 2500 Practical Introduction to Ocean Sciences (approved)

Calendar Entry – 5.2 Joint Majors (new section)

5.2.13 Joint Major in Marine Biology

The Joint Major in Marine Biology is jointly administered by the Department of Ocean Sciences and the Department of Biology. It consists of core courses in oceanography and biology, and additional courses in various Science subjects. More information on recommended courses and time tables can be found in the Handbook of Undergraduate Studies available on both departmental websites.

Students who wish to enroll in the program should seek academic advising well in advance to ensure they have completed the appropriate prerequisites. Entry to required courses may be limited and determined by academic performance. Students are advised to consult with the Department of Ocean Sciences or the Department of Biology at the earliest opportunity. Each student registered in the program will be assigned a faculty advisor who should be consulted on academic issues, including course selection.

5.2.13.1 Entrance requirements

Admission to the program is based on academic standing. To be considered for admission to the program, students must normally have completed 33 credit hours with an overall average of at least 60%. The following courses must normally have been completed:

1. English 1080 and 1110 (or equivalent);
2. Mathematics 1000
3. Physics 1020 and 1021 (or 1050 and 1051);
4. Chemistry 1050 and 1051 (or 1010 and 1011) (or 1200 and 1001);
5. Earth Sciences 1000;
6. Biology 1001 and 1002 with an average grade of 65%;
7. Ocean Sciences 1000 with a minimum grade of 65%

Chemistry 1050 and 1051 (or 1010 and 1011) should be taken in the first year, as it is a prerequisite for other required courses in the programs, and delaying chemistry until second year may make it difficult to complete the program in the normal four years.
New Joint Major in Marine Biology (30 November 2016)

5.2.13.2 Program of Study

Students pursuing a Joint Major in Marine Biology are required to complete a minimum of 33 credit hours in Biology and 33 credit hours in Ocean Sciences as follows:

1. English 1080 and 1110 (or equivalent);
2. Mathematics 1000
3. Earth Sciences 1000
4. Statistics 2550 (or equivalent)
5. Physics 1020 and 1021 (or equivalent)
6. Chemistry 1050 and 1051 (or Chemistry 1010 and 1011) (or 1200 and 1001), and Chemistry 2440 (or Chemistry 2400 and 2401);
7. Biochemistry 2101 and 3106;
8. Biology 1001, 1002, 2060, 2122, 2250, 2600, 2900, 3710 (or Ocean Sciences 2000) and 3711;
9. Additional courses required to complete 33 credit hours in Biology, except Biology 2040, 2041, 2120, 3053, and 3820, making sure the program includes an overall minimum of 6 credit hours in Biology at the 3000/4000 level;
10. Ocean Sciences 1000, 2000 (or Biology 3710), 2001, 2100, 2500; and at least one of Ocean Sciences 2200 or 2300;
11. Additional courses required to complete 33 credit hours in Ocean Sciences, including a minimum of 12 credit hours at the 3000/4000 level;
12. Other courses as necessary to complete the minimum of 120 credit hours required for the General Degree of Bachelor of Science.

Note 1: Courses cross listed between Biology and Ocean Sciences can only count for one subject or the other.

Note 2: A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.

Note 3: Students currently enrolled in the former Major in Biology (Marine) have the option of continuing the program as listed previously, or switch to the new Joint Major in Marine Biology outlined above.

Calendar Entry – 9.2 Biology (changes)

9.2 Biology

www.mun.ca/biology

The following undergraduate programs are available in the Department:

1. Biochemistry and Cell Biology Joint Honours
2. Biology and Earth Sciences (Geology) Joint Honours
3. Biology and Psychology Joint Honours
4. Biology and Psychology (Behavioural Neuroscience) Joint Honours
5. Biology and Statistics Joint Honours
6. Joint Major in Marine Biology
7. Major or Honours in Biology
New Joint Major in Marine Biology (30 November 2016)

78. Major or Honours, or Major (Co-operative) or Honours (Co-operative), in Biology (Cell and Molecular)
89. Major or Honours, or Major (Co-operative) or Honours (Co-operative), in Biology (Ecology and Conservation)
90. Major or Honours, or Major (Co-operative) or Honours (Co-operative), in Biology (Marine)
10. Honours, or Honours (Co-operative), in Biology (Marine)
1140. Minor in Biology

Details of joint programs are given after the Regulations for the Honours Degree of Bachelor of Science.

Biology course descriptions are found at the end of the Faculty of Science section under Course Descriptions, Biology.

9.2.3.4 Major in Biology (Marine)

The Major in Biology (Marine) is no longer being offered. Students who have already declared this major may complete the program in accordance with General Academic Regulation 6.2.1, or may instead switch to the Joint Major in Marine Biology (see section 5.2.13) by completing a Change of Academic Program form.

All students majoring in Biology (Marine) are required to complete a minimum of 45 credit hours in courses from the Department of Biology offering. These 45 credit hours must include:
Biology 1001 and 1002 or their equivalents; the 15 credit hours in core courses listed below;
Biology 3710 and 3711; 6 credit hours from the recommended Biology courses for Biology (Marine) listed below; and 12 credit hours from Biology electives at the 3000, 4000 level except Biology 2040, 2041, 2120, 3053, and 3820.

Biology Core (15 credit hours): Biology 2060, 2250, 2600, 2900, plus one of Biology 3401, 3402, 4244 and 4404.

Recommended Biology courses for Biology (Marine)
are 3014, 3060, 3295, 3620, 3640, 3709, 3712, 3714, 3715, 3951, 4122, 4141, 4182, 4360, 4601, 460
5, 4607, 4620, 4630, 4710, 4750, 4810, 4912.

A maximum of 9 credit hours can be in Biology courses with no associated laboratory/seminar.
All majors must also successfully complete the following courses or their equivalents:
1. English 1080 and 1110 (or equivalent)
2. Physics 1020 and 1021 (or equivalent)
3. Mathematics 1000
4. Chemistry 1010 and 1011 (or equivalent), Chemistry 2440
5. Statistics 2550
6. Biochemistry 2101 and 3406
7. Extra Science courses as necessary to fulfill the requirement for 78 credit hours in Science as stipulated in Clause 3.a. of the Regulations for the General Degree of Bachelor of Science.

It is recommended, but not required, that a Computer Science course be included and the Department of Biology strongly recommends Computer Science 1000 or 1600.
New Joint Major in Marine Biology (30 November 2016)

(Note: To minimize timetabling problems, students on the St. John’s campus are advised to take Biology 2250 and 2600 in their third semester (Fall), and 2060 and 2000 in their fourth semester (Winter).

Calendar Entry – 9.2 Biology (after changes)

9.2 Biology

www.mun.ca/biology

The following undergraduate programs are available in the Department:

1. Biochemistry and Cell Biology Joint Honours
2. Biology and Earth Sciences (Geology) Joint Honours
3. Biology and Psychology Joint Honours
4. Biology and Psychology (Behavioural Neuroscience) Joint Honours
5. Biology and Statistics Joint Honours
6. Joint Major in Marine Biology
7. Major or Honours in Biology
8. Major or Honours, or Major (Co-operative) or Honours (Co-operative), in Biology (Cell and Molecular)
9. Major or Honours, or Major (Co-operative) or Honours (Co-operative), in Biology (Ecology and Conservation)
10. Honours, or Honours (Co-operative), in Biology (Marine)
11. Minor in Biology

Details of joint programs are given after the Regulations for the Honours Degree of Bachelor of Science.

Biology course descriptions are found at the end of the Faculty of Science section under Course Descriptions, Biology.

9.2.3.4 Major in Biology (Marine)

The Major in Biology (Marine) is no longer being offered. Students who have already declared this major may complete the program in accordance with General Academic Regulation 6.2.1, or may instead switch to the Joint Major in Marine Biology (see section 5.2.13) by completing a Change of Academic Program form.

Calendar Entry – 9.9 Ocean Sciences (changes)

9.9 Ocean Sciences

www.mun.ca/csc

The Department of Ocean Sciences is newest Department within the Faculty of Science. The faculty within this Department are the former faculty of the Ocean Sciences Centre, a research unit and facility that was first opened in 1967.
New Joint Major in Marine Biology (30 November 2015)

The Department’s mandate as an interdisciplinary unit is to focus on increasing our understanding of biological and chemical processes within the oceans, and with those associated with aquaculture. The Department offers undergraduate programs in Ocean Sciences and graduate programs in Marine Biology, and the following undergraduate programs:

1. Minor in Oceanography
2. Minor in Sustainable Aquaculture and Fisheries Ecology
3. Major in Ocean Sciences
4. Major in Ocean Sciences (Environmental Systems)
5. Joint Major in Marine Biology

Details of the Joint Major in Marine Biology can be found under Joint Majors.

Ocean Sciences course descriptions are found at the end of the Faculty of Science section under Course Descriptions, Ocean Sciences.

Calendar Entry – 9.9 Ocean Sciences (after changes)

9.9 Ocean Sciences

www.mun.ca/osc

The Department of Ocean Sciences is newest Department within the Faculty of Science. The faculty within this Department are the former faculty of the Ocean Sciences Centre, a research unit and facility that was first opened in 1967.

The Department’s mandate as an interdisciplinary unit is to focus on increasing our understanding of biological and chemical processes within the oceans, and with those associated with aquaculture. The Department offers graduate programs in Marine Biology and the following undergraduate programs:

1. Minor in Oceanography
2. Minor in Sustainable Aquaculture and Fisheries Ecology
3. Major in Ocean Sciences
4. Major in Ocean Sciences (Environmental Systems)
5. Joint Major in Marine Biology

Details of the Joint Major in Marine Biology can be found under Joint Majors.

Ocean Sciences course descriptions are found at the end of the Faculty of Science section under Course Descriptions, Ocean Sciences.

Secondary Calendar Changes
None.
Rationale for a Joint Major in Marine Biology

The departments of Biology and Ocean Sciences have a long history of collaboration in the delivery of the BSc degree in Biology (Marine). Through a phase-out process, the proposed Joint Major in Marine Biology would replace and update the existing degree, reflecting the fact that the Department of Ocean Sciences has recently transitioned from a research unit that helped support the program into a full-fledged department. While still relying on the existing strengths of the two units, the redesigned program would offer a more solid foundation in ocean-related topics, together with core biology courses, and ultimately provide a more complete coverage of marine biology. Offering solid undergraduate training in marine biology aligns perfectly with Memorial’s bid to become a leading ocean university, particularly in the context of the newly funded Ocean Frontier Institute.

Examples of Time Table for the Joint Major in Marine Biology

The two examples below illustrate that the new Joint Major in Marine Biology can be completed within four years and will be included in the Handbook of Undergraduate Studies issued by the Departments of Biology and Ocean Sciences.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>FALL SEMESTER</th>
<th>WINTER SEMESTER</th>
<th>INTERSESSION OR SPRING SEMESTER</th>
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<td>OCSC 4122 (elective)</td>
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<td>General elective</td>
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</tbody>
</table>

**Note:** Select courses may be offered outside the normal semester schedules or in the Spring semester. These courses include OCSC 2500 (May-June), OCSC 4122 (April-May), and courses offered at the Bonne Bay Marine Station.
Consultations Sought From                      Comments Received
Marine Institute                                Yes
Grenfell campus                                  No
Department of Biochemistry                       Yes
Department of Biology                            Yes
Department of Chemistry                          No
Department of Computer Sciences                   No
Department of Earth Sciences                     Yes
Department of Economics                          No
Department of Geography                          Yes
Department of Mathematics and Statistics          Yes
Department of Physics and Physical Oceanography  Yes
Department of Psychology                         No
Faculty of Arts                                  No
Faculty of Education                             Yes
Faculty of Engineering and Applied Science        Yes

Library Report Received                           NA

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

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FOR OFFICE USE ONLY

APPROVAL GRANTED BY SENATE COMMITTEE ON UNDERGRADUATE STUDIES

Chair:
Secretary:
Date:
APPENDIX 1: CONSULTATIONS

REQUEST FOR FEEDBACK

Subject: Consultation request: Proposal for a new program — Major in Marine Biology
Date: Thu, 3 Nov 2016 19:28:06 +0000
From: Fletcher, Garth <fletcher@mun.ca>
To: Griffiths, Stacey <staceym@mun.ca>, Biochemistry Head <biohead@mun.ca>, Business<br> <fba.ad.undergrad@mun.ca>, 'cs-chair@mun.ca' <cs-chair@mun.ca>, Locke, Wade<br> <wlocke@mun.ca>, Hicks, Sue <shicks@mun.ca>, Engineering <engrconsult@mun.ca>,<br> Fridgen, Travis <tfridgen@mun.ca>, 'Ian Neath' <Psychology.Head@mun.ca>, Jody-Lynn Burke<br> <jrotchford@mun.ca>, 'John Hanchar, Earth Sciences' <jhanchar@mun.ca>, Lagowski, Jolanta<br> <jolantal@mun.ca>, Marino, Paul <pmarino@mun.ca>, 'mathconsult@mun.ca'<br> <mathconsult@mun.ca>, Meghan Gamsby <mgamsby@mun.ca>,<br> 'miugconsultations@mi.mun.ca' <miugconsultations@mi.mun.ca>, Catto, Norm<br> <ncatto@mun.ca>, 'vpoffice@grenfell.mun.ca' <vpoffice@grenfell.mun.ca>
CC: amercier@mun.ca <amercier@mun.ca>

Colleagues: I have attached a proposal for a new major in Marine Biology that will be jointly administered by Ocean Sciences and Biology.

Could you review and forward your comments to me (cc to Annie Mercier) at your earliest convenience please—preferably before the next foSCUGS meeting.

Thank you.

Garth

Garth L. Fletcher
Professor Emeritus and Head
Department of Ocean Sciences
Memorial University
0 Marine Lab Road
St John’s NL, Canada
A1K 3E2

Phone: 709-864-3276
Email: fletcher@mun.ca

FEEDBACK RECEIVED

From: Geography, Mathematics, Biochemistry, Education, Biology, Engineering, Physics, Marine Institute, Earth Sciences

GEOGRAPHY

From: Catto, Norm
Sent: November-04-16 11:36 AM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: RE: Consultation request: Proposal for a new program -- Major in Marine Biology

Nothing from us at present.

Norm Catto
Head, Department of Geography
Memorial University
St. John’s NL A1B 3X9
Canada
1-709-864-7463
Fax 1-709-864-3119

MATHEMATICS & STATISTICS

From: Math Consult [mailto:mathconsult@mun.ca]
Sent: November-04-16 11:52 AM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: RE: Consultation request: Proposal for a new program -- Major in Marine Biology

Feedback:

I have two comments, but they may pertain to items already in the calendar, and not the proposed additions. I'll make them anyway in case these changes can be incorporated:

Under 9.9.4.1, 9.9.4.2, “2. Mathematics 1000 (or equivalent);” - I don’t think there are any Memorial courses that are equivalent, so perhaps the bracketed part should not be there?

Under 9.2.1, Math 1090 should NOT be listed as a requirement. It should be just MATH 1000. Math 1090 is a remedial course, equivalent to grade 12 advanced math. Since we don’t state high school requirements in program requirements, Math 1090 should not be there.

Cheers,
Tara

--
Tara Stuckless
Program Officer
Department of Mathematics and Statistics
Memorial University of Newfoundland
mathconsult@mun.ca; 8914; HH 3004

Reply to Mathematics

On 17/11/2016 1:15 PM, Annie Mercier wrote:

Dear Tara:
Many thanks for providing feedback. We have made the following adjustments to the proposal:

1- Under 9.9.4.1, 9.9.4.2, we have removed "(or equivalent)" as suggested.

2- As for 9.2.1, I have consulted with Jody Burke in Biology since this pertains to their section of the calendar. She indicated that the mention of MATH 1090 has been part of their calendar language since 2010, so they are currently looking into this. Because this is not a proposed change but an existing text, I will leave it for them to adjust at a later date, as appropriate.

All the best,
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
www.mun.ca/osc/amercier/bio.php

BIOCHEMISTRY

Subject: RE: Consultation request: Proposal for a new program -- Major in Marine Biology
Date: Thu, 10 Nov 2016 14:07:44 +0000
From: Biochemistry Head <biohead@mun.ca>
To: Fletcher, Garth <fletcher@mun.ca>
CC: amercier@mun.ca <amercier@mun.ca>

Hi Garth/Annie

Here is the input from Biochemistry.

First, Ocean Sciences is not listed as a subject area in 6.4.2.c (Regulations for General Degree of BSc). At the very least - pending a review of all regulations - Ocean Sciences does I think need to be added officially to the list. It might be possible to do this as a secondary Calendar Change.

Second, the new program is clearly described as a jointly administered major NOT as a joint major. As such, it is not in harmony with 6.4.2.a (Regulations for General Degree of BSc) which stipulate that "not fewer than 36 nor more than 45 credit hours in courses from the subject of the Major" shall be required. It could probably be listed as a Joint Major without problem.

This raises a question about whether an Honours degree is envisioned and what might it contain. The proposed program specifies 34 courses. A thesis course would bring the total to 36 leaving room for just 4 more courses. Would these be split 2+2 between Biology and OCSC? Does this leave enough room for an Honours degree to be different from a General degree. And, lastly, such a program would have
zero electives. (The proposed program allows for 6 electives which is, arguable, too few in a single major program)

Third, the entrance requirements list 11 courses whose completion is required for admission - i.e. 33 credit hours - which is not only more than the customary 30 but in disagreement with the stated requirement that "students must normally have completed 30 credit hours".

Mark

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

Associate Member
Beatrice Hunter Cancer Research Institute

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

Reply to Biochemistry

On 17/11/2016 1:19 PM, Annie Mercier wrote:

Dear Mark:

We thank you for providing valuable input on our proposal. We have examined and discussed your suggestions/concerns and here are our answers:

Regarding your first two comments related to section 6.4 of the calendar (Regulations for General Degree of BSc), there is a proposal from FoS under development which aims to regularize the situation. It will add Ocean Sciences as a subject and amend the requirements for the number of credit hours in the subject of the Major. We will therefore not address these questions in the present proposal.

Regarding a future Honours in Marine Biology. We will certainly take your arguments under consideration when we develop this program; however this will be a separate proposal, submitted at a later date.

Finally, with respect to the entrance requirements, we have discussed it with Biology and it is our shared feeling that the interdisciplinary nature of the program warrants the 33 credit hours of entrance. We have now adjusted the text to be consistent.

All the best,

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: amercler@mun.ca
www.mun.ca/osc/amercler/bio.php

EDUCATION

From: Mellor, Judith
Sent: November-15-16 2:08 PM
To: Fletcher, Garth <fletcher@mun.ca>
Subject: Consultation request: Proposal for a new program -- Major in Marine Biology

Dear Garth:

While the document does not affect the Faculty of Education in any direct way, we do support this proposal for the major in marine biology.

Best regards,
Judith

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

BIOLOGY

Subject: RE: Consultation request: Proposal for a new program -- Major in Marine Biology
Date: Tue, 15 Nov 2016 17:49:26 +0000
From: Jody-Lynn Burke <jrotchford@mun.ca>
To: Fletcher, Garth <fletcher@mun.ca>
CC: amercler@mun.ca <amercler@mun.ca>

Hi Garth,

Thank you for the opportunity to review and comment on the proposed Major in Marine Biology.

The Department of Biology is happy to support the proposal as presented. We also appreciate having the opportunity to work with Annie in responding to inquiries posed by other departments during the consultation process.
ENGINEERING

Subject: Re: Consultation request: Proposal for a new program -- Major in Marine Biology
Date: Thu, 17 Nov 2016 09:52:51 -0330
From: Engineering Consult <engrconsult@mun.ca>
Organization: Memorial University of Newfoundland
To: Fletcher, Garth <fletcher@mun.ca>
CC: Annie Mercier <amercier@mun.ca>

Dear Dr. Fletcher,

Thank you for the opportunity to comment on the SAFE minor, OSCS 2000 and the new minor in Marine Biology.

At yesterday'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

PHYSICS

From: "Fletcher, Garth" <fletcher@mun.ca>
Date: Thursday, November 17, 2016 at 9:42 AM
To: Jolanta Lagowski <jolantal@mun.ca>, "John Hanchar, Earth Sciences" <jhanchar@mun.ca>
Cc: "amercier@mun.ca" <amercier@mun.ca>
Subject: New Major program and calendar changes
Dear Jolanta and John: Earlier this month we sent the attached new program proposal and calendar changes for your departments to comment on. Although you may have sent me your comments I cannot find them. Would it be possible for comments to be sent to me (cc Annie) by November 22. We are particularly interested in your feedback on the new major.

Best regards

Garth

Garth L. Fletcher  
Professor Emeritus and Head  
Department of Ocean Sciences  
Memorial University  
0 Marine Lab Road  
St John's NL, Canada  
A1K 3E2

Phone: 709-864-3276  
Email: fletcher@mun.ca

From: Martin Plumer [mailto:plumer@mun.ca]  
Sent: November-17-16 10:30 AM  
To: Fletcher, Garth <fletcher@mun.ca>  
Cc: Lagowski, Jolanta <jolantal@mun.ca>  
Subject: FW: New Major program and calendar changes

Hi Garth,

Physics has no issues with these proposed changes.

Cheers,

Martin

---

MARINE INSTITUTE

From: Dawn King [mailto:Dawn.King@mi.mun.ca] On Behalf Of MIUG Consultations  
Sent: November-21-16 2:05 PM  
To: Fletcher, Garth <fletcher@mun.ca>  
Subject: RE: Consultation request: Proposal for a new program -- Major in Marine Biology

Garth,

Thank you for the opportunity to review and comment on the proposed new program which will see the creation of a new major in Marine Biology. I have circulated this proposal to our School of Fisheries for
comment. This new program will have no impact on the programs at the Marine Institute and we are happy to support this exciting new opportunity.

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

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EARTH SCIENCES

From: Penny L Morrill (mailto:pmorrill@mun.ca)  
Sent: November-28-16 3:55 PM  
To: Annie Mercier <amercier@mun.ca>; Fletcher, Garth <fletcher@mun.ca>  
Cc: John M. Hanchar <jhanchar@mun.ca>; Michelle Miskell <mmiskell@mun.ca>; Colin Farquharson <cgrfarquh@mun.ca>  
Subject: EASC response to your undergraduate calendar change proposals

Nov. 28, 2016

Dear Garth and Annie,

The Department of Earth Sciences has reviewed your proposed calendar changes for:
1. Proposal for a New Program Major in Marine Biology,  
2. Minor in Sustainable Aquaculture and Fisheries Ecology (SAFE), and  
3. Calendar Changes to Existing Course OCSC 2000

From the responses I have received thus far, we have no issues with the proposed changes.

Cheers,  
Penny Morrill  
Chair of the undergraduate matters committee Department of Earth Sciences

---

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
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; ICC-2012 (Bruneau Centre for Research and Innovation); St. John's, NL A1C 5S7 Canada Fax: 709.864.4702 eMail: tgs@mun.ca

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

Course No.: EASC
Course Title: Palaeobiology of early animal life

I. To be completed for all requests:

A. Course Type:
   [ ] Lecture course
   [ ] Laboratory course
   [ ] Directed readings
   [ ] Lecture course with laboratory
   [ ] Undergraduate course
   [ ] Other (please specify) 2 x field notes or 1 x term paper

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: 2 x day fieldtrips

D. Credit hours for this course: 3

E. Estimated number of contact hours per semester: 60

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

G. Method of evaluation:

   Written Percentage Oral
   Class tests 40
   Assignments 40
   Other (specify):
     2 x field notes or 1 x term paper
     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

Duncan McIlroy

Course instructor

Approval of the head of the academic unit

6.0

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

Secretary, Faculty/School/Council

Date

Updated October 2011
EASC focuses on the exploration of the conditions under which animal life evolved in the Ediacaran and Cambrian Periods, and paleontological evidence for the evolution of the major animal phyla.

The course will consider the integrated changes between the Geosphere and Biosphere at this critical time in the history of life on Earth.

Topics include:
The Cryogenian, cap carbonates and iceball vs slushball Earth
Evidence for oxygenation of the oceans Fe isotopes
Palaeobiology of the Ediacaran Biota
Spacio-temporal variability of the Ediacara Biota
Evolution of locomotion and bioturbation
Defining the Ediacaran-Cambrian boundary
Contrasts in nutrient cycling across the Ediacaran-Cambrian boundary
Evolution of new phyla in the Cambrian
Evidence for mass extinction in the Ediacaran and lower Cambrian
Palaeobiology, palaeogeography and evolution of the “small shelly fossils”

The course will typically include two day-long field excursions to sites of international importance in NL:
Ediacaran and Cambrian of Spaniards Bay and Conception Bay.
Ediacaran of Mistaken Point UNESCO World Heritage Site (southern Avalon Peninsula)

If no resources are available to support the fieldtrips the course can include an additional term paper and a visit to important material held at The Rooms in St. John’s.

Typical expense would be fuel recovery for the instructor’s vehicle (c. $75.00 per day) or vehicle hire and direct fuel cost.

Course Reading:

Several review papers in:
Department, Field Guide, 81 p.
Liu, A.G., Kenchington, C.G., & Mitchell, E.G., 2015, Remarkable insights into the
Liu, A.G., Matthews, J.J., Menon, L.R., McIlroy, D., & Brasier, M.D., 2014a, Haeootia
quadriiformis n.gen., n.sp., interpreted as a muscular cnidarian impression from the
late Ediacaran period (approx. 560 Ma): Proceedings of the Royal Society B:
Mangano, M.G. & Buatois, L.A., 2014, Decoupling of body-plan diversification and
ecological structuring during the Ediacaran–Cambrian transition: evolutionary and
geobiological feedbacks: Proceedings of the Royal Society B: Biological Sciences,
McIlroy, D., Crimes, T.P., & Pauley, J.C., 2005, Fossils and matgrounds from the
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v. 142, p. 441–455.
Menon, L.R., McIlroy, D., Liu, A.G., & Brasier, M.D., 2016, The dynamic influence of
microbial mats on sediments: fluid escape and pseudofossil formation in the
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1141–1144.
O’Brien, S.J. & King, A.F., 2005, Late Neoproterozoic (Ediacaran) stratigraphy of the
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Paleoenvironmental analysis of the late Neoproterozoic Mistaken Point and
Trepassey formations, southeastern Newfoundland: Canadian Journal of Earth
late Ediacaran metazoan ecosystems in the Nama Group, Namibia: Precambrian
Research, v. 261, p. 252–271,
24.11 Earth Sciences

24.11.2 Courses

A selection of courses will be offered to meet the requirements of candidates as far as the resources of the Department will allow.

- **Overview Courses**
  - 7110 Physics of the Solid Earth
  - 7120 Crustal Geophysics
  - 7300 Changes in Global Paleoenvironment
  - 7400 Tectonic Regimes
  - 7410 Engineering and Environmental Geology
  - 7500 Chemical Fluxes in the Earth
  - 7810 Paleocology (*same as the former 6810. credit may be obtained for only one of 7810 or 6810*)

- **General Courses**
  - 6070 Quantitative Techniques in Mineralogy and Metamorphic Petrology
  - 6105 Advanced Field Course in Applied Geophysics (*may be offered in accelerated format*)
  - 6141 Rotation of the Earth
  - 6142 Theory of Global Geodynamics
  - 6152 Paleomagnetism
  - 6171 Advanced Exploration Seismology
  - 6172 Borehole Seismic
  - 6175 Gravity and Magnetic Methods
  - 6177 Mathematical Formulations of Seismic Wave Phenomena
  - 6210 Genesis of Mineral Deposits
  - 6320 Marine Geology
  - 6400 Flow and Transport in Fractured Rock
  - 6410 Advanced Engineering and Environmental Geology
  - 6420 Deformation Mechanisms
  - 6500 Stable Isotope Geochemistry
  - 6510 Trace Element Geochemistry
  - 6520 Methods in Advanced Research in Geochemistry
  - 6540 Radiogenic Isotope Geochemistry
  - 6550 Biogeochemistry
  - 6600 Petroleum Geology
  - 6740 Modern and Ancient Sedimentary Environments
  - 6750 Sequence Stratigraphy
  - **6801 Palaeobiology of Early Animal Life**
  - 6820 Palynology and Paleobotany
  - 6900-6999 Special Topics in Earth Sciences
32.8 Earth Sciences

32.8.2 Courses

A selection of courses will be offered to meet the requirements of candidates as far as the resources of the Department will allow.

- **Overview Courses**
  - 7110 Physics of the Solid Earth
  - 7120 Crustal Geophysics
  - 7300 Changes in Global Paleoenvironment
  - 7400 Tectonic Regimes
  - 7410 Engineering and Environmental Geology
  - 7500 Chemical Fluxes in the Earth
  - 7810 Paleoeconomy *(same as former 6810. credit may be obtained for only one of 7810 or 6810)*

- **General Courses**
  - 6070 Quantitative Techniques in Mineralogy and Metamorphic Petrology
  - 6105 Advanced Field Course in Applied Geophysics *(may be offered in accelerated format)*
  - 6141 Rotation of the Earth
  - 6142 Theory of Global Geodynamics
  - 6152 Paleomagnetism
  - 6171 Advanced Exploration Seismology
  - 6172 Borehole Seismic
  - 6175 Gravity and Magnetic Methods
  - 6177 Mathematical Formulations of Seismic Wave Phenomena
  - 6210 Genesis of Mineral Deposits
  - 6320 Marine Geology
  - 6400 Flow and Transport in Fractured Rock
  - 6410 Advanced Engineering and Environmental Geology
  - 6420 Deformation Mechanisms
  - 6500 Stable Isotope Geochemistry
  - 6510 Trace Element Geochemistry
  - 6520 Methods in Advanced Research in Geochemistry
  - 6540 Radiogenic Isotope Geochemistry
  - 6550 Biogeochemistry
  - 6600 Petroleum Geology
  - 6740 Modern and Ancient Sedimentary Environments
  - 6750 Sequence Stratigraphy
  - **6801 Palaeobiology of Early Animal Life**
  - 6820 Palynology and Paleobotany
  - 6900-6999 Special Topics in Earth Sciences
Hi Gail,

The special topics course EASC-6917 has been approved with 9 votes in favour (Ron, Alison, Len, Carolyn, Christina, Yuanzhu, Stephanie, Bob and myself), none against. The Faculty Council can be notified of this decision.

-J

On 11/09/2016 02:03 PM, Kenny, Gail wrote:
> Hi JC,
> 
> For discussion and approval, please.
> 
> Gail
> 
> -----Original Message-----
> > From: Michelle Miskell
> > Sent: November-09-16 10:24 AM
> > To: Kenny, Gail <gkenny@mun.ca>
> > Subject: Proposal for new SPECIAL TOPICS grad course, EASC 6917
> > 
> > Good Morning Gail,
> > 
> > Please see attached a proposal for a new special topics graduate course, EASC 6917 Methods for Locating and Relocating Microseismic events.
> > Can you please forward this to the proper channel? We are hoping to offer it in the upcoming Winter 2017 semester.
> > 
> > Thank you so much,
> > Michelle
> > 
> > Ms. Michelle Miskell, BSc. (Hons)
> > Manager of Academic Programs
> > Department of Earth Sciences
> > Memorial University of Newfoundland
> > St. John's, NL A1B 3X5
> > (709) 864-4464
> > mmiskell@mun.ca
> > www.mun.ca/earthsciences
> > --
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: reg@mun.ca

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

Course No.: EASC 6917

Course Title: Methods for Locating and Re-Locating Microseismic Events

I. To be completed for all requests:

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

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

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

D. Credit hours for this course: 3

E. Estimated number of contact hours per semester: 40

F. Course description (reading list required):
   Read and understand the location methods described in the attached reading list. Students will carefully read each item and provide a one page summary. There will be approximately 3 problem sets throughout the semester, which will involve the implementation and testing of simple algorithms for source location. Students will give an oral presentation summarizing the state-of-the-art in the field for a subset of algorithms of their choosing.

G. Method of evaluation: Percentage

<table>
<thead>
<tr>
<th></th>
<th>Written</th>
<th>Oral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class tests</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Assignments</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Other (specify):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final examination</td>
<td>60</td>
<td>40</td>
</tr>
</tbody>
</table>

Total 60        40

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

Recommended for offering in the ☑ Winter ☐ Fall ☐ Spring 2017

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

Alison Malcolm A. Malcolm
Course instructor

Approval of the head of the academic unit

Nov. 9, 2016
Date

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

Secretary, Faculty/School/Council

Sept. 1, 2016
Date

Updated October 2011
• Traveltime Inversion
  – Chapter 5 of Peter Shearer’s “Introduction to Seismology Book”. Do Exercise 2.

• Imaging-based methods
  – Nori Nakata and Gregory C. Beroza Reverse-time migration for microseismic sources using the geometric mean as an imaging condition, 2016, Geophysics, 81(2), KS51-KS60.

• Full-waveform based methods
  – Kaderli, J., McChesney, M. D., and Minkoff, S. E., 2015, Microseismic event estimation in noisy data via full waveform inversion: SEG technical program expanded abstracts. SEG; SEG.
  – Shashin Sharan and Rongrong Wang and Tristan van Leeuwen and Felix J. Herrmann, 2016, Sparsity-promoting joint microseismic source collocation and source-time function estimation, SEG technical program expanded abstracts.

• Moment Tensor Physics
  – Chapter 9 of Shearer’s book. Write a computer program to solve exercise 2.
Wall, Mary

From: Abrahams, Mark
Sent: November-30-16 4:25 PM
To: Wall, Mary
Subject: Senate representation

Mary,

From my read the general response from departments are that they believe that senate seat allocation should approximate proportional representation to insure that all faculty, independent of academic affiliation, should have equal representation within Senate. For that reason the preference from the choices provided would be to either remain with the existing allocation or scenario 1.

So the proposed motion is:

The Faculty of Science prefers senate representation approximate proportional representation and that other mechanisms be pursued to fill vacant senate seats. For that reason, our preference for the distribution of senate seats is to retain the existing allocation, or scenario 1.

Mark

Mark Abrahams
Professor & Dean of Science
Memorial University
St. John’s, NL A1B 3X7
Tel: 709.864.8153
Good morning,

The email below should have been forwarded to you back late September but was overlooked. The deadline for us to reply has been extended to early December. In order for this to be included on our Council Agenda for the December 7 meeting, we require your feedback by November 29. Apologies for any inconvenience.

Thanks,
Mary

From: senate
Sent: September 27-16 3:53 PM
To: Zerbe, Wilfred < wzrve@mun.ca>; Anderson, Kirk D. < kirk.anderson@mun.ca>; Naterer, Greg < gater@mun.ca>
'M'bluehardt, Mary' <mbluehardt@grenfell.mun.ca>; lrobison@grenfell.mun.ca; mpierce-normore@grenfell.mun.ca; Phillips, Lynne < lphips@grenfell.mun.ca>; Clevy, Susan <sclevy@grenfell.mun.ca>; Glenn Blackwood <glenn.blackwood@mun.ca>
<Glenn.Blackwood@mun.ca>; dean.medicine@mun.ca; Gaudine, Alice <agaudine@mun.ca>
Dean of Science <deansci@mun.ca>
Cc: Singleton, Sheila <singles@mun.ca>; Osmond, Tracy A. <taosmond@mun.ca>; Hicks, Sue <shicks@mun.ca>; King, Yvonne < yvonne@mun.ca>; Randell, Golda <grandell@grenfell.mun.ca>; kenneddy@mun.ca; Squires, Cynthia <cpsquires@mun.ca>; Debbie Seaward@mun.ca; holly.cooper@mun.ca; Karen.Hayward@med.mun.ca; sherry.caines@med.mun.ca; Wall, Mary <marw@mun.ca>; 'Westcott-Stevens, Jane' <lwstevens@mun.ca>
Subject: Composition of Senate

Good Afternoon,

Please see attached.

Office of the Secretary of Senate
senate@mun.ca

This communication is intended for the use of the recipient to whom it is addressed, and may contain confidential, personal, and/or privileged information. Please contact the sender by reply email immediately if you are not the intended recipient of this communication, and do not copy, distribute, or take action relying on it. Any communication received in error should be deleted or destroyed.
September 26, 2016

TO: Councils of the Constituencies of Senate

FROM: Committee on Elections and Committees

SUBJECT: Composition of Senate

At its meeting of August 2014, the Executive Committee of Senate agreed that, in light of the ongoing University-wide efficiency review, and since a review had been last conducted ten years earlier, it would be timely to undertake a comprehensive review of Senate and its committees.

At its meeting of October 14, 2014, Senate considered and endorsed the composition and Terms of Reference proposed by Senate Executive for an ad hoc committee on Senate reform. The review by this committee would include the structure, operation, and types of committees of Senate.

Section 54 of the Memorial University Act stipulates that the number of elected senators shall be not less than twice the number of ex-officio members. These seats are distributed across the fifteen constituencies of Senate based upon the number of electors in each constituency, with each constituency having at least one elected senator. The number of elected senators per constituency ranges from one to ten. Because of this broad range in number of elected senators per constituency, and in light of the fact that it is traditionally difficult to fill all the elected seats in the larger constituencies, Senate included in the Terms of Reference of the ad hoc Committee on Senate Reform, “to examine the current membership composition and allocation of Senate seats”.

The introduction of three schools at the Grenfell Campus makes it especially timely to review the allocation of Senate seats. With the inclusion of three new Deans as ex-officio members of Senate, the number of elected seats increases from 44 to 50. Further, we assume that, when the constitutions of the new schools are approved, Senate will move to redefine its constituencies, replacing the Grenfell Campus with the three new schools. There is also an anomaly in the constituencies in that the Faculty of Humanities and Social Sciences, unlike any other Faculty or School, is divided into two constituencies, Humanities (Classics, English, History, Linguistics, Modern Languages, Literatures and Cultures, Philosophy and Religious Studies) and Social Sciences (Anthropology, Archaeology, Economics, Folklore, Geography, History, Political Science and Sociology). Should the two constituencies be combined?

The Senate Committee on Elections and Committees, responsible for the election of senators, offered the ad hoc Committee four potential models for the distribution of elected Senate seats:
1. Use the current allocation model
   a. The number of seats is divided into the total number of full-time electors in all
      constituencies. The figure obtained is then divided into the number of electors in
      each constituency to determine the number of representatives to which each
      constituency is entitled.
   b. Each constituency whose numbers do not warrant election of a single senator
      (using the formula above) shall, nevertheless, be entitled to elect one
      representative. The number of seats to which the remaining constituencies are
      entitled shall then be recalculated, omitting from the recalculation the number of
      electors of the constituencies entitled to a representative under this clause and the
      number of seats so taken.

2. Scenario One: Assign each constituency a minimum of two seats. Since the number of
   elected seats is twice the number of ex officio seats, and since each Dean is an ex officio
   member of Senate, this assigns the elected seats associated with the Dean to his/her
   constituency. The Faculty of Humanities and Social Sciences is an exception.

3. Scenario Two: Assign each constituency a minimum of one seat, but cap the number of
   seats assigned to any constituency at six seats.

4. Scenario Three: Assign each constituency a minimum of two seats, but cap the number of
   seats assigned to any constituency at six.

The distribution of seats for each of the three models, assuming 50 elected senators and the three
new Grenfell Schools as constituencies, is included in the following Table.

Possible Distributions of Senate Seats

<table>
<thead>
<tr>
<th>Constituency</th>
<th>Current Formula</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Education</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Engineering and Applied Science</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Grenfell Arts and Social Science</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Grenfell Science and Environment</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Grenfell Fine Arts</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Human Kinetics and Recreation</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Humanities</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Library</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Marine Institute</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Medicine</td>
<td>10</td>
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<td>Music</td>
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<td>2</td>
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<tr>
<td>Nursing</td>
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<td>2</td>
<td>2</td>
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<td>Pharmacy</td>
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<tr>
<td>Science</td>
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<td>Social Sciences</td>
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<td>3</td>
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<tr>
<td>Social Work</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Senate considered these options at its meeting of September 13th, 2016 and agreed that consultation with the Councils of the constituencies was necessary before any decision could be reached. Other questions were raised by senators that can be considered in the context of this review.

The Senate Committee on Elections and Committees has been tasked with undertaking this consultation, with a view to making recommendations when presenting to Senate its annual report on allocation of elected seats. The Committee is seeking input from the Councils of the constituencies of Senate on the following:

(i) Which of the four formulae should be used to calculate the allocation of elected seats to constituencies?
(ii) Should the Faculty of Humanities and Social Sciences be a single constituency, as are the other faculties and schools?
(iii) Should cooperative education coordinators be eligible to be elected as senators, representing the faculty/school in which they are embedded? At present, only full-time members of the academic staff who are tenured, and permanent full-time members of the academic staff of the Marine Institute as defined in the Constitution of its Academic Council, are eligible to be elected as senators.

The Committee would appreciate a reply no later than November 10, 2016.

Sheila M. Singleton  
Chair, Senate Committee on  
Elections and Committees