



Faculty of Science

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

MEETING OF THE FACULTY COUNCIL OF THE FACULTY OF SCIENCE

A regular meeting of the Faculty Council of the Faculty of Science will be held on Wednesday, April 16 at 1:00 p.m. by a hybrid model of WebEx and in-person (Room: C- 2039).

AGENDA

- 1. Regrets**
- 2. Adoption of the Minutes of March 19, 2025** (page 3-16)
- 3. Business Arising from the Minutes**
- 4. Correspondence:** No Correspondence
- 5. Reports of Standing Committees:**
 - A. Undergraduate Studies Committee:**

Presented by Shannon Sullivan, Chair, Undergraduate Studies Committee

 - a) Department of Computer Science – Calendar Change, COMP Concentrations, Paper 5.A.a (pages 18-26)
 - b) Department of Biology – Calendar Change, New special topics course, BIOL 4920 – Special Topics in Cellular & Molecular Biology of Cancer, For Information Only, Paper 5.A.b. (pages 27–31)
 - c) Department of Mathematics and Statistics – Calendar change, New Program, Minor in Data Analytics – Amended Program Minor Statistics, Paper 5.A.c. (pages 31-42)
 - B. Graduate Studies Committee:**

Presented by Adrian Fiech, Chair, Graduate Studies Committee

 - a) Departments of Mathematics and Statistics and Computer Science, Master of Data Science proposed calendar changes; Revision of capstone project (DSCI695A/695B) evaluation process – removal of evaluation by a faculty member other than the adviser, Paper 5.B.a (pages 43-45)
 - b) Departments of Mathematics and Statistics and Computer Science, Master of Data Science proposed calendar changes; Addition of existing COMP 6910 to MDSC elective courses, Paper 5.B.b. (pages 46-50)

- c) Department of Biochemistry, Special topics course, BIOC 6003, Critiquing Research II, approved by the Faculty of Science Graduate Committee and presented to Faculty Council for information only, Paper 5.B.c. (pages

C. Library Committee: No business

- 6. Report of the Dean**
- 7. Question Period**
- 8. Adjournment**

James Gauld, Ph.D.
Dean of Science



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FACULTY OF SCIENCE FACULTY COUNCIL OF SCIENCE Minutes of Meeting of March 19, 2025

A meeting of the Faculty Council of the Faculty of Science was held on Wednesday, March 19, 2025, at 1:00 p.m. using a hybrid model of WebEx and in-person (C-2045).

FSC 3101 Present

Biology

T. Chapman, A. Chaulk, L. Dunne, E. Edinger, C. Graves, A. Hurford, S. Leroux, D. Marshall, T. Miller, P. Trela, H. Volkoff, Y. Wiersma

Biochemistry

V. Booth, M. Berry, R. Bertolo, R. Brown, J. Brunton, S. Cheema, S. Christian, Z. Frank, S. Harding, P. Kakumani, S. Mayengbam, J. Park, K. Wilson, C. Yetman

Chemistry

C. Bottaro, J. Gillis, K. Jobst, M. Katz, F. Kerton, C. Kozak, M. Ou, H. Reader, N. Ryan, S. Smith, J. Stockmann, H. Therien-Aubin

Computer Science

S. Bungay, D. Churchill, A. Fiech, M. Hatcher, C. Hyde, C. McCarthy, O. Meruvia-Pastor, J. Rey-Goyeneche

Earth Sciences

L. Careen, Farquharson, K. Hull, A. Langille, A. Malcolm, S. Piercey, K. Waghorn

Mathematics & Statistics

I. Booth, D. Dyer, J. Greening, R. Haynes, J.C. Loredano-Osti, S. Sullivan, T. Stuckless

Ocean Sciences

I. Fleming, P. Gagnon, J. Wroblewski

Physics & Physical Oceanography

M. Bromberek, D. Coombs, S. Curnoe, M. Evstigneev, E. Hayden, M. Morrow, H. Neilson, I. Saika-Voivod, K. Shorlin, M. Strong, S. Wallin, L. Zedel

Psychology

D. Hallett, J. Hoskins, K. Hourihan, A. Swift-Gallant, C. Walsh

Dean of Science Office

J. Blundell, J. Bowering, T. Fridgen, M. Fitzpatrick, L. Frizzell, S. Hutcherson, C. Hussey, G. Jackson, J. Kavanagh, P. MacCallum, J. Major, T. Mackenzie, D. Nichols, R. Newhook, N. Squires, C. Sullivan, C. Thorpe

Representatives from other Faculties

B. Misiuk (HSS)

Student Representatives

D. Deshpande, E. Gnam, F. Probandno, E. Wiseman

Guest Speakers

J. French (CAIR), P. Price (CAIR)

FSC 3102 Adoption of Minutes

Moved: Minutes of the meeting of December 4, 2024, be adopted. *(Sullivan/Berry)* **Carried**

Moved: Minutes of the meeting of February 19, 2025, be adopted. *(Sullivan/Berry)* **Carried**

FSC 3103 Business Arising: No Business**FSC 3104 Correspondence: No Report****FSC 3105 Centre for Analytics, Informatics and Research (CAIR)**

Jacqueline French, CAIR Director and Paul Price, Systems Office, gave a presentation on what services Centre for Analytics, Informatics and Research (CAIR) is currently offering and the support they offer. (Presentation attached.)

FSC 3106 Other Business – Departmental Name Change Request

The Department of Biochemistry has requested to change the department's name to the Department of Human Biosciences. was approved, however, there was a lot of discussion regarding how this change will affect other departments and students. *(Harding/Berry)* **Carried**

In-favor: 16 in room, 12 online

Against: 4 in room, 5 online

Abstain: 9 in room, 8 online

FSC 3107 Reports of Standing Committees:

A. Undergraduate Students Committee: No Reports

B. Graduate Studies Committee: No Reports

C. Library Committee: No Business

FSC 3108 Dean's Report

Due to limited time, a special faculty council meeting will be scheduled on Wednesday, March 26 at 1:00pm for a budget update.

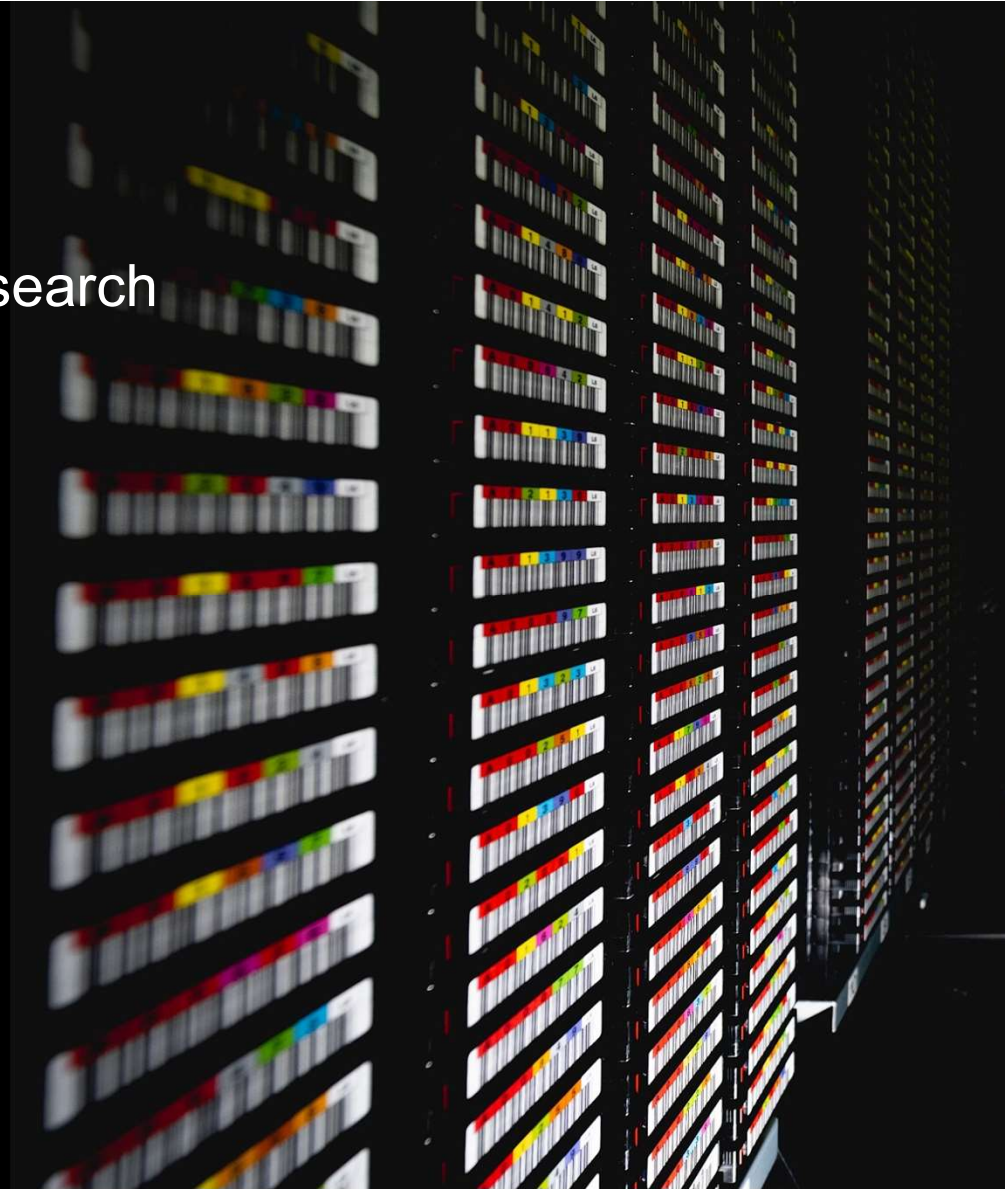
FSC 3109 Questions**FSC 3110 Adjournment:**

Meeting adjourned at 2:00 p.m.

CAIR

Centre for Analytics, Informatics and Research

Upgrade and Expand



Centre for Analytics, Informatics & Research

Upgrade and Expand



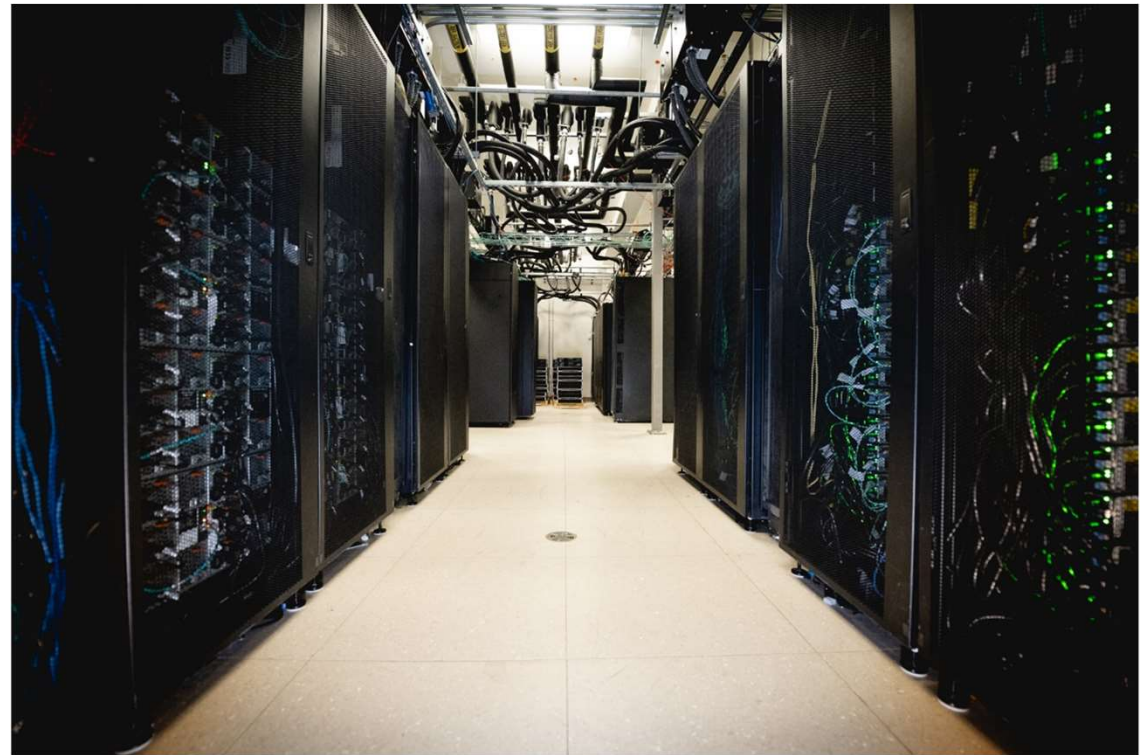
- CHIA (2014) becomes **CAIR (2021)**
- Funded through: R&D NL, Private In-kind, NL Gov't
- In **partnership with IBM**
- Significant investment opportunities to **Upgrade & Expand**
- Leading edge of timely, secure and accessible research IT services
- Integrated across the IT landscape of Memorial

Centre for Analytics, Informatics & Research



Current CAIR Service Offering

- High-performance computing centre
- Secure storage with off-site backups
- CAIR staff assist researchers with:
 - determining best analysis tools
 - troubleshooting issues
 - secure data transfer
 - back-up and data storage



Centre for Analytics, Informatics & Research

Upgrade and Expand



CAIR & ACEnet work in partnership ensuring community needs are met and resources are efficiently deployed.

- High performance computing, storage, large-scale file transfer capabilities.
- Training & expertise to develop algorithms, run large-scale simulations, and analytics.
- Co-located equipment. Co-located teams.

Nation-wide deficit in Compute Power exists.

Centre for Analytics, Informatics & Research

ACEnet Partnership

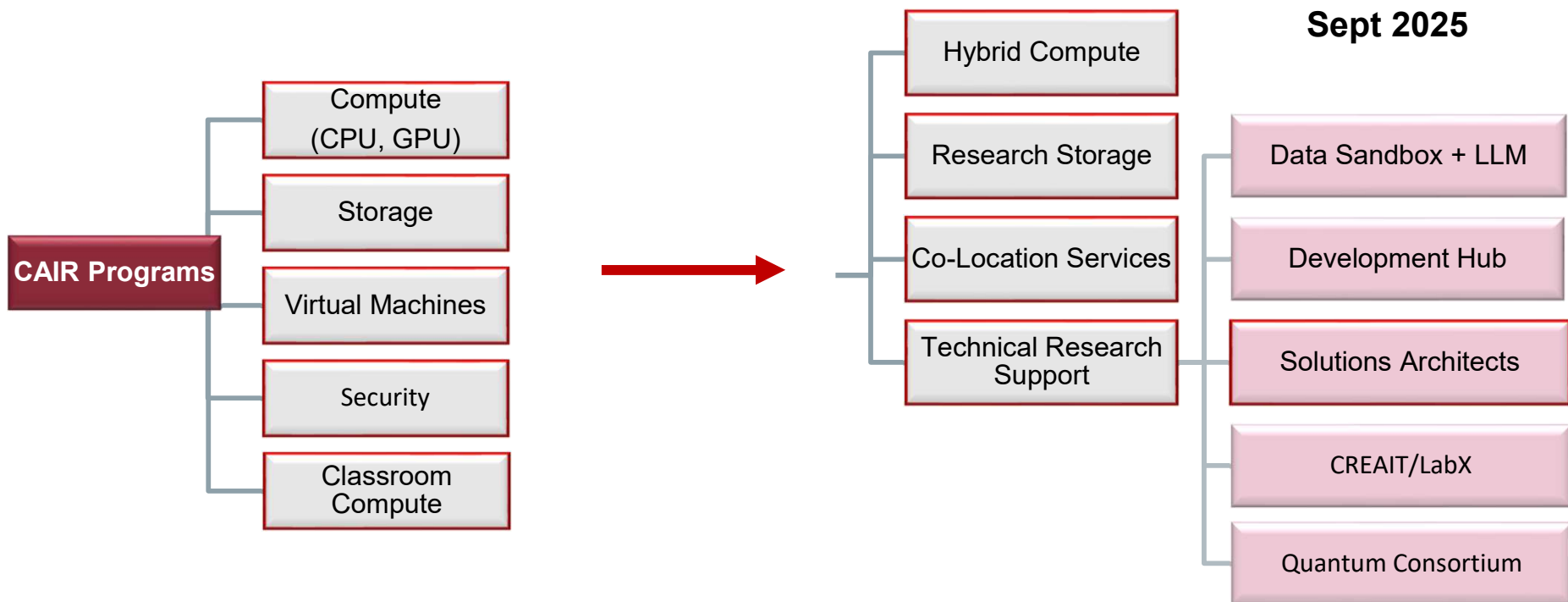


How does CAIR support?

- Rapid Priority Large Compute needs
- Classroom curriculum compute power
- Student storage/compute for capstone projects, entrepreneurial ventures (No PI)
- Data Drop-box to National/International collaborators
- Private/Sensitive long-term data storage
- Co-location of lab/research servers
- IBM partnership supplying research support with global subject matter experts

Centre for Analytics, Informatics & Research

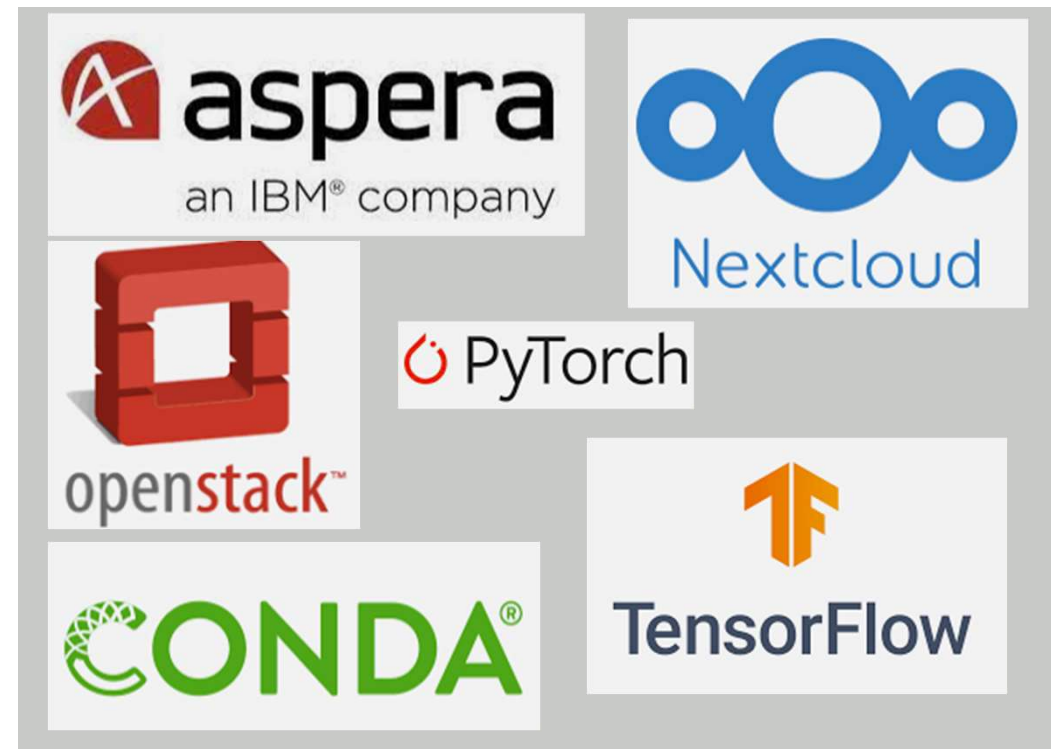
CAIR Planned Expansion



CAIR SaaS (Software/Service as a Service)



- Aspera
- Tensorflow
- Pytorch
- Conda
- Nextcloud
- Datalab

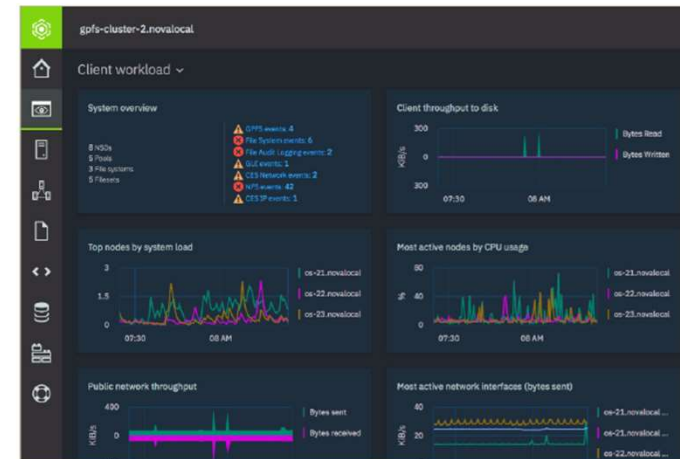


Hardware - Storage



Storage

- IBM ESS 5000 SC6 with 16 tb drives
- ~6546 TiB usable
- 2 x IBM CES / Protocol Nodes for NFS and SMB export access
- Extended Deep Rack



Hardware - HPC Cluster & Virtual Machines

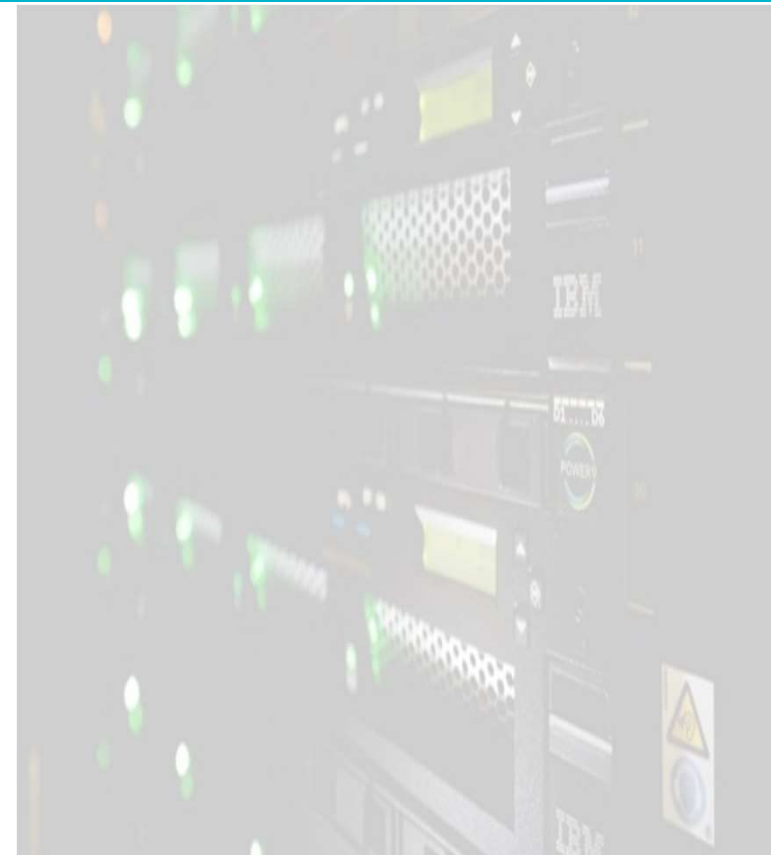


HPC Cluster

- 28 x IBM AC922 Compute 40 cores, 256 GB
- 4 x IBM AC922 Large Mem 40 cores, 1024 GB
- 6 x IBM AC922 GPU Compute 40 cores, 512 GB, 4 x NVIDIA Tesla V100 GPU

Virtual Machine Environment

- 736 x86 CPUs
- 2,355 GB RAM
- Multiple lanes of 54Gb/s connectivity to backend storage



Cybersecurity & Back-up



Cybersecurity

- Cisco Secure Firewall 3140, Firesight Management Console
- Cisco AnyConnect VPN, cisco ISE Radius server managed
- MUN controlled Arctic Wolf Sensor monitoring all traffic
- Connection: ISP via MUN including overarching Memorial Cybersecurity appliances and policies

Data Back-Up

- IBM 3584 Tape Library Storage w Tivoli Server Manager (upgrade on-going)
- 2.5TB LTO 6 Ultrium tapes upgrading to 18TB LTO 9 tapes
- 2 fire/flood proof safes (Health Sciences Med School + School of Pharmacy).
- Physical firewall protected.



Future CAIR



Project Plan

- Proposals submitted beginning Q2
- Funding in place by June 2025
- Staff identified and in-place
- **Launch Sept 2025**

Contacts:

Paul Price
Systems Officer
pprice@mun.ca

Jacqueline French
CAIR Director
jfrench13@mun.ca

Taking CAIR of your data...



Faculty of Science

Faculty of Science Undergraduate Committee (FoScUgs)

Memorial University, St. John's NL A1B 3X7

Tel: 709.864.8253

www.mun.ca

April 11, 2025

To: Faculty Council - Science
From: FOSCUGS
Subject: Transfer of Business

Good Day,

The following documents have passed through FOSCUGS:

Computer Science – Calendar Change COMP Concentrations

BIOL 4920 – Special Topics in Cellular & Molecular Biology of Cancer – For Information Only

New Program – Minor in Data Analytics – Amended Program Minor Statistics

Melanie Fitzpatrick
Secretary
Faculty of Science Undergraduate Committee (FoScUgs)

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Cover Page

LIST OF CHANGES

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

- New course(s):
- Amended or deleted course(s):
- X New program(s): Concentrations in Artificial Intelligence, Data-centric Computing, Theory of Computation, Visual Computing and Games
- X Amended or deleted program(s): 11.4.5 Major in Computer Science (Data-centric Computing), Major in Computer Science (Smart Systems), Major in Computer Science (Visual Computing and Games)
- New, amended or deleted Glossary of Terms Used in the Calendar entries
- New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- New, amended or deleted General Academic Regulations (Undergraduate)
- New, amended or deleted Faculty, School or Departmental regulations
- Other:

ADMINISTRATIVE AUTHORIZATION

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

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

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

PROGRAM TITLE

11.4.5 Major in Computer Science (Data-centric Computing) (B.Sc. only) -- REMOVE

11.4.6 Major in Computer Science (Smart Systems) (B.Sc. only) -- REMOVE

11.4.7 Major in Computer Science (Visual Computing and Games) (B.Sc. only) -- REMOVE

11.4.9 Computer Science Concentrations -- NEW

RATIONALE

We currently offer a “general” major in computer science and three “stream” majors, Data-centric Computing, Smart Systems and Visual Computing and Games. The streams are only available to BSc majors, not to BA majors or honours students. Students must formally declare at most one stream as their program. We propose to move from offering streams to offering concentrations. The motivation is to provide more program flexibility and to widen access whilst still allowing students to demonstrate specialization within computer science. Concentrations can be completed by BA and BSc majors, and by honours students. Students can complete more than one concentration. When applying to graduate, a student who has completed a concentration can expressly state to the Registrar in writing that they are also applying for a concentration designation. We also take this opportunity to add a concentration in a new area, the Theory of Computation.

ANTICIPATED EFFECTIVE DATE

Fall 2025

CALENDAR CHANGES

~~11.4.5 Major in Computer Science (Data-centric Computing) (B.Sc. only)~~

~~As a component of the Degree Regulations for the General Degree of Bachelor of Science a student must successfully complete the following courses:~~

- ~~1. Forty five credit hours in Computer Science courses are required for a major in Computer Science (Data-centric Computing):~~

- a. ~~Computer Science [1001](#), [1002](#), [1003](#), [2001](#), [2002](#), [2003](#), [2004](#), [2005](#), [2006](#), [2007](#), and [2008](#);~~
 - b. ~~Computer Science [3202](#), [3400](#), [3401](#) and [4304](#); and~~
 - c. ~~Six additional credit hours in Computer Science courses selected from Computer Science [3019](#), [4550](#), [4734](#), [4750](#), [4754](#), [4019](#). Some of these courses require the completion of prerequisites that are not themselves part of the major.~~
2. ~~Additional courses required are: Mathematics [1000](#), [1001](#), [2000](#), [2050](#), and Statistics [2500](#) or [2550](#).~~
- It is recommended, but not required, that students take Business [4720](#).

[11.4.6 Major in Computer Science \(Smart Systems\) \(B.Sc. only\)](#)

As a component of the [Degree Regulations for the General Degree of Bachelor of Science](#) a student must successfully complete the following courses:

- 1. ~~Forty five credit hours in Computer Science courses are required for a major in Computer Science (Smart Systems):~~
 - a. ~~Computer Science [1001](#), [1002](#), [1003](#), [2001](#), [2002](#), [2003](#), [2004](#), [2005](#), [2006](#), [2007](#), and [2008](#);~~
 - b. ~~Computer Science [3200](#), [3201](#), [3202](#) and one of [3301](#), [3401](#) or [3550](#); and~~
 - c. ~~Six additional credit hours in Computer Science courses selected from Computer Science [4301](#), [4303](#), [4750](#), [4766](#).~~
- 2. ~~Additional courses required are: Mathematics [1000](#), [1001](#), [2000](#), [2050](#), and Statistics [2500](#) or [2550](#).~~

[11.4.7 Major in Computer Science \(Visual Computing and Games\) \(B.Sc. only\)](#)

As a component of the [Degree Regulations for the General Degree of Bachelor of Science](#) a student must successfully complete the following courses:

- 1. ~~Forty five credit hours in Computer Science courses are required for a major in Computer Science (Visual Computing and Games):~~
 - a. ~~Computer Science [1001](#), [1002](#), [1003](#), [2001](#), [2002](#), [2003](#), [2004](#), [2005](#), [2006](#), [2007](#), and [2008](#);~~
 - b. ~~Computer Science [3300](#), [3301](#), and [4300](#);~~
 - c. ~~Six additional credit hours in Computer Science courses selected from Computer Science [3200](#), [4301](#), [4302](#), [4303](#), [4304](#); and~~
 - d. ~~Three additional credit hours in Computer Science courses selected from those listed in c. above, or Computer Science [4766](#), [4768](#).~~
- 2. ~~Additional courses required are: Mathematics [1000](#), [1001](#), [2000](#), [2050](#), and Statistics [2500](#) or [2550](#).~~

11.4.9 Computer Science Concentrations

While meeting the requirements for a majors or honours program in Computer Science, students may choose to select courses in one of the following formal concentrations which, if completed, will be noted on the student's transcript.

Particular attention should be paid to necessary prerequisites when scheduling courses. Students should consult with the Academic Officer regarding the availability of courses applicable to their chosen concentration.

11.4.9.1 Artificial Intelligence

Students selecting an Artificial Intelligence concentration are required to complete 18 credit hours as follows:

- a. Computer Science 3200, 3202
- b. Twelve additional credit hours selected from Computer Science 3201, 3401, 3766, 4301, 4303, 4750, 4766, Statistics 4486

11.4.9.2 Data-centric Computing

Students selecting a Data-centric Computing concentration are required to complete 18 credit hours as follows:

- a. Computer Science 3400, 3401, 4304, 4754
- b. Six additional credit hours selected from Computer Science 3202, 3550, 3730, 3731, 4550, 4734, 4750, Statistics 3530, 4411, 4486

11.4.9.3 Theory of Computation

Students selecting a Theory of Computation concentration are required to complete 18 credit hours as follows:

- a. Computer Science 3600, 3602, 4742
- b. Nine additional credit hours selected from Computer Science 4741, 4743, 4750, 499A/B (Note: 499A/B are only available to students who have been admitted to the Computer Science honours program), Mathematics 3240, 3300, 3320, 3340, 3370, 4252, 4320, 4321, 4331, 4340, 4341, 4370

11.4.9.4 Visual Computing and Games

Students selecting a Visual Computing and Games concentration are required to complete 18 credit hours as follows:

- a. Computer Science 3300, 3301, 4300
- b. Nine additional credit hours selected from Computer Science 3200, 3730, 3766, 4301, 4302, 4303, 4304, 4766, 4768

CALENDAR ENTRY AFTER CHANGES

11.4.9 Computer Science Concentrations

While meeting the requirements for a majors or honours program in Computer Science, students may choose to select courses in one of the following formal concentrations which, if completed, will be noted on the student's transcript.

Particular attention should be paid to necessary prerequisites when scheduling courses. Students should consult with the Academic Officer regarding the availability of courses applicable to their chosen concentration.

11.4.9.1 Artificial Intelligence

Students selecting an Artificial Intelligence concentration are required to complete 18 credit hours as follows:

- a. Computer Science 3200, 3202
- b. Twelve additional credit hours selected from Computer Science 3201, 3401, 3766, 4301, 4303, 4750, 4766, Statistics 4486

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Students selecting a Data-centric Computing concentration are required to complete 18 credit hours as follows:

- a. Computer Science 3400, 3401, 4304, 4754
- b. Six additional credit hours selected from Computer Science 3202, 3550, 3730, 3731, 4550, 4734, 4750, Statistics 3530, 4411, 4486

11.4.9.3 Theory of Computation

Students selecting a Theory of Computation concentration are required to complete 18 credit hours as follows:

- a. Computer Science 3600, 3602, 4742
- b. Nine additional credit hours selected from Computer Science 4741, 4743, 4750, 499A/B (Note: 499A/B are only available to students who have been admitted to

the Computer Science honours program), Mathematics 3240, 3300, 3320, 3340, 3370, 4252, 4320, 4321, 4331, 4340, 4341, 4370

11.4.9.4 Visual Computing and Games

Students selecting a Visual Computing and Games concentration are required to complete 18 credit hours as follows:

- a. Computer Science 3300, 3301, 4300
- b. Nine additional credit hours selected from Computer Science 3200, 3730, 3766, 4301, 4302, 4303, 4304, 4766, 4768

SECONDARY CALENDAR CHANGES

11.4.11.1 Admission Requirements

In order to be considered for admission to the CICS, an applicant:

1. must be a declared Computer Science Major;
2. must be registered as a full-time student at the time of application;
3. must have successfully completed Computer Science [1001](#), [1002](#), [1003](#), [2001](#), [2002](#), [2003](#), [2004](#), [2005](#), [2006](#), [2007](#), [2008](#) and 6 credit hours at the 3000 level or beyond prior to the start of the internship;
4. must have completed at least 75 credit hours prior to the start of the internship;
5. must have at least 15 credit hours remaining after the co-operative internship in order to satisfy degree requirements, as described under [Major in Computer Science](#) or [Honours in Computer Science](#), at least 3 credit hours of which must be in Computer Science courses. ~~Course requirements specific to the programs in Data-Centric Computing, Smart Systems, or Visual Computing and Games are not considered if the student would otherwise satisfy the requirements for the Major in Computer Science or the Honours in Computer Science; concentrations are not considered if the student would otherwise satisfy the requirements for the Major in Computer Science or the Honours in Computer Science; and~~
6. is expected to return to University as a full-time student after the co-operative internship.

In addition to the above, admission is also subject to academic performance.

15.4 Computer Science

www.mun.ca/computerscience

For Departmental Regulations and Course Descriptions, see [Faculty of Science](#) section of the Calendar.

The following undergraduate programs are available in the Department of Computer Science:

1. [Applied Mathematics and Computer Science Joint Major](#)
2. [Computer Internship Option \(CIIO\)](#)
3. [Computer Science Honours \(B.A., B.Sc.\)](#)
4. [Computer Science and Economics Joint Major](#)
5. [Computer Science and Geography Joint Honours](#)
6. [Computer Science and Geography Joint Major](#)
7. [Computer Science and Physics Joint Honours \(B.Sc. only\)](#)
8. [Computer Science and Physics Joint Major \(B.Sc. only\)](#)
9. [Computer Science and Pure Mathematics Joint Honours](#)
10. [Computer Science and Pure Mathematics Joint Major](#)
11. [Computer Science and Statistics Joint Honours](#)
12. [Computer Science and Statistics Joint Major](#)
13. [Computer Science \(Software Engineering\) Honours \(B.Sc. only\)](#)
14. [Major in Computer Science](#)
15. [Major in Computer Science \(Data-centric Computing\) \(B.Sc. only\)](#)
16. [Major in Computer Science \(Smart Systems\) \(B.Sc. only\)](#)
17. [Major in Computer Science \(Visual Computing and Games\) \(B.Sc. only\)](#)
18. [Minor in Computer Science](#)

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Appendix Page

CONSULTATIONS SOUGHT

Academic Advising Centre
Humanities and Social Sciences
Business Administration—no concerns
Education
Engineering and Applied Science—support change
Grenfell Campus (Arts & Social Sciences)
Grenfell Campus (Science and the Environment)
Grenfell Campus (Fine Arts)
Human Kinetics and Recreation
Library—no impact on Library
Marine Institute
Medicine—no concerns
Music
Nursing—no concerns
Pharmacy—no impact on Pharmacy
Social Work—support change
Science
<ul style="list-style-type: none"> • Biochemistry • Biology • Chemistry • Earth Sciences • Geography • Mathematics and Statistics • Ocean Sciences • Physics and Physical Oceanography • Psychology—change is reasonable

LIBRARY REPORT

No additional requirements.

RESOURCE IMPLICATIONS

There are no resource implications associated with this change

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Cover Page

LIST OF CHANGES

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

- New course(s): BIOL 4920 – Special Topics in Cellular & Molecular Biology of Cancer
- Amended or deleted course(s):
- New program(s):
- Amended or deleted program(s):
- New, amended or deleted Glossary of Terms Used in the Calendar entries
- New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- New, amended or deleted General Academic Regulations (Undergraduate)
- New, amended or deleted Faculty, School or Departmental regulations
- Other:

ADMINISTRATIVE AUTHORIZATION

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

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

Memorial University of Newfoundland

Undergraduate Calendar Change Proposal Form

Senate Summary Page for Courses

COURSE NUMBER AND TITLE

BIOL 4920 – Special Topics in Cell & Molecular Biology of Cancer

ABBREVIATED COURSE TITLE

Sp Top Cell & Mol Biol Cancer

RATIONALE

The proposed special topics course has been developed by Dr. Brian Staveley as a new avenue of undergraduate instruction for the biology department. Of the concentrations available to Biology majors, our 'Biology for Health Professions' option is most heavily subscribed. In recent years we have seen limited options for these students, and all courses offered in this concentration currently have an associated lab. The current proposal will be added as an option for students in this and other concentrations for the 2025-26 academic year, and will provide some additional scheduling flexibility for those who choose to take the course. The intent is to eventually regularize this course following 1-2 iterations.

CALENDAR CHANGES

No calendar change associated with a special topics course, however as the intention is to eventually regularize this course, below is a course description:

BIOL 4920 Special Topics in Cell & Molecular Biology of Cancer

is a modern and foundational view of the cellular and molecular biology of cancer with a focus on underlying principles and molecular mechanisms. In this, the identification of malfunctions in specific signal transduction pathways involved in carcinogenesis can help to provide sub-cellular and molecular targets with which to generate novel cancer treatments. The links between new fundamental and pre-existing concepts, the identification cancer-related components and the development of therapeutic strategies will be emphasized.

PR: BIOL2060 or HUBI3004

CALENDAR ENTRY AFTER CHANGES

No calendar change associated with a special topics course.

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Appendix Page

CONSULTATIONS SOUGHT

Academic Unit	Email Address	Response Received?
St. John's Campus		
Humanities and Social Sciences	hss@mun.ca	
Business Administration	eoldford@mun.ca	
Education	efurey@mun.ca	
Engineering and Applied Science	engrconsult@mun.ca	
Human Kinetics and Recreation	hkrdean@mun.ca	
Medicine	deanofmedicine@med.mun.ca	
Music	musicdean@mun.ca	
Nursing	deanNurse@mun.ca	
Pharmacy	pharminfo@mun.ca	
Science	deansci@mun.ca	
Social Work	adeanugradswk@mun.ca	
Library	univlib@mun.ca	
Grenfell Campus		
Arts and Social Science	kjacobse@grenfell.mun.ca	
Science and the Environment	ssedean@grenfell.mun.ca	
Fine Arts	pride@grenfell.mun.ca	
Marine Institute		
	miugconsultations@mi.mun.ca	
Labrador Institute		
Arctic and Subarctic Studies	ashlee.cunsolo@mun.ca	

[ENTER FEEDBACK HERE](#)

LIBRARY REPORT

[ENTER LIBRARY REPORT HERE](#)

RESOURCE IMPLICATIONS

The proposed special topics course will allow for greater flexibility in assigning teaching resources in our department without requiring any additional resources. It may also present opportunities for faculty in related departments (e.g., Medicine, Biochemistry) to share teaching out this course, which will likely be of interest to students in various programs.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

BIOL4920: Special Topics in Cellular & Molecular Biology of Cancer

Course Description: is a modern view of the molecular biology of cancer, mechanisms, targets, and therapeutics.

Course Expectations: Through active engagement in lecture, via quizzes and examinations, students will gain knowledge of the fundamentals of the molecular biology of cancer.

Textbook (required): Molecular Biology of Cancer: Mechanisms, Targets, and Therapeutics by Lauren Pecorino, 5th edition. MUN Bookstore Item#: XXXXXXXXXXXXX (~\$84.99); Ebook Ed: 5 (~\$XX)

Prerequisites: BIOL2060 or HUBI3004

Professor: Dr. Brian Staveley (bestave@online.mun.ca)

Location: XXX (lecture: MWF X:00 to X:50 PM)

The Molecular Biology of Cancer Subject Areas:

1. Introduction to the Molecular Biology of Cancer
2. The cancer genome
3. Regulation of gene expression
4. Growth factor signaling and oncogenes
5. The cell cycle
6. Tumor suppressor genes
7. Apoptosis
8. Cancer stem cells and the regulation of self-renewal and differentiation pathways
9. Metastasis
10. Angiogenesis
11. Reprogrammed metabolism and diet
12. Tumor immunology and immunotherapy
13. Inflammation, infection, and the microbiome
14. Strategies and tools for research and drug development

[In the event of disruption, due to illness, adverse weather, or otherwise, steps to ensure instructional continuity will be communicated via the Brightspace course pages.]

Evaluation:

Quizzes (5%):

Midterm Test 1 (20%):

Midterm Test 2 (20%):

Midterm Test 3 (20%):

Final Examination (35%): During final examination period

[Please note that dates are subject to change and that make-up evaluations due to absenteeism may be arranged with the instructor.]

Office Hours:

Tuesday 9:00-11:00 AM, Wednesday 1:00-3:00 PM by appointment (bestave@mun.ca)

Lands acknowledgement: *We acknowledge that the lands on which Memorial University's campuses are situated are in the traditional territories of diverse Indigenous groups, and we acknowledge with respect the diverse histories and cultures of the Beothuk, Mi'kmaq, Innu, and Inuit of these territories. Importantly, we pledge to support Indigenous peoples, now and in the future.*

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Cover Page

LIST OF CHANGES

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

- New course(s):
- Amended or deleted course(s):
- X New program(s): Minor in Data Analytics
- X Amended ~~or deleted~~ program(s): Minor in Statistics
- New, amended or deleted Glossary of Terms Used in the Calendar entries
- New, amended or deleted Admission/Readmission to the University (Undergraduate) regulations
- New, amended or deleted General Academic Regulations (Undergraduate)
- New, amended or deleted Faculty, School or Departmental regulations
- Other:

ADMINISTRATIVE AUTHORIZATION

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

Signature of Dean/Vice-President: _____

Date: _____

Date of approval by Faculty/Academic Council: _____

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

PROGRAM TITLE

1. **New Program:** Minor in Data Analytics
2. **Amended Program:** Minor in Statistics

RATIONALE

The Department of Mathematics and Statistics proposes the establishment of a new Minor in Data Analytics and recommends changes to the existing Minor in Statistics program.

1. Minor in Data Analytics:

Our department has observed a growing demand for the Data Science major program and Statistics courses. The proposed minor in Data Analytics is designed to equip students from other major programs with essential skills in data collection, data types, coding techniques, statistical programming, data analysis and visualization, predictive analytics, regression analysis, and statistical learning. Upon completing the Data Analytics minor, students will gain the expertise to analyze data, extract meaningful insights, and apply them to informed decision-making.

2. Minor in Statistics:

Since Statistics 2410 and 3411 are core courses in the Statistics undergraduate curriculum, they have now been added as required courses for the Minor in Statistics program (along with Math 2000, which is a prerequisite for Stat 2410). This change marks the primary distinction between the Minor in Statistics and the Minor in Data Analytics programs.

ANTICIPATED EFFECTIVE DATE

September 2026

CALENDAR CHANGES (Section 11.9)

11.9.9 Minor in Data Analytics

The courses required for a minor in Data Analytics are:

1. Mathematics 1000, 1001, 2050.

2. Statistics 2485, Statistics 2500 or 2550, Statistics 2530 or 2560, Statistics 3521 or 3530.
3. Three further credit hours in Statistics courses. Statistics 1500 is recommended.

11.9.10~~1~~ Minor in Statistics

The courses required for a minor in Statistics are:

- ~~1. Mathematics 1000, 1001; Statistics 1510 or 2500 or 2550, Statistics 2501 or 2560.~~
- ~~2. Twelve further credit hours in Statistics courses numbered 3000 or higher excluding Statistics 4581.~~

~~It is recommended that Mathematics 2000 and Mathematics 2050 be taken since they are prerequisite to several further Statistics courses.~~

1. Mathematics 1000, 1001, 2000; Statistics 2410, Statistics 2500 or 2550, Statistics 2560, Statistics 3411.
2. Three further credit hours in Statistics courses numbered 3000 or higher excluding Statistics 4581.

CALENDAR ENTRY AFTER CHANGES

11.9.9 Minor in Data Analytics

The courses required for a minor in Data Analytics are:

1. Mathematics 1000, 1001, 2050.
2. Statistics 2485, Statistics 2500 or 2550, Statistics 2530 or 2560, Statistics 3521 or 3530.
3. Three further credit hours in Statistics courses. Statistics 1500 is recommended.

11.9.11 Minor in Statistics

The courses required for a minor in Statistics are:

1. Mathematics 1000, 1001, 2000; Statistics 2410, Statistics 2500 or 2550, Statistics 2560, Statistics 3411.
2. Three further credit hours in Statistics courses numbered 3000 or higher excluding Statistics 4581.

SECONDARY CALENDAR CHANGES

11.9.910 Minor in Mathematics

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Appendix Page

CONSULTATIONS SOUGHT

Academic Unit	Response Received
Humanities and Social Sciences	
Business Administration	
Education	
Engineering and Applied Science	Yes on March 19, 2025
Human Kinetics and Recreation	
Marine Institute	
Medicine	Yes on March 3, 2025
Music	

Academic Unit	Response Received
Nursing	Yes on March 4, 2025
Pharmacy	
Science	
Biochemistry	
Biology	
Computer Science	
Earth Sciences	
Mathematics and Statistics	
Ocean Sciences	
Physics and Physical Oceanography	Yes on March 28, 2025
Psychology	Yes on March 26, 2025
Social Work	
Library	
Grenfell - Arts and Social Science	
Grenfell - Science and the Environment	
Grenfell - Fine Arts	Yes on March 1, 2025

Academic Unit	Response Received
Labrador Institute	

LIBRARY REPORT

No response has been received from the Library regarding the request for feedback that was sent along with the consulted academic units on February 27, 2025.

RESOURCE IMPLICATIONS

The courses in the proposed Minor program in Data Analytics, as well as those in the revised Minor program in Statistics, consist entirely of existing offerings. Consequently, the Department of Mathematics and Statistics does not anticipate any resource implications, provided that student enrollment levels do not require the addition of extra sections.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

No new courses are being proposed.

CONSULTATION RECEIVED

From: "Saika-Voivod, Ivan" <saika@mun.ca>

Subject: Re: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Date: March 28, 2025 at 11:13:33 NDT

To: "Booth, Ivan" <mathconsult@mun.ca>

Cc: Physics Academic Program Officer <physicsAPO@mun.ca>, Physics Head <physicshead@mun.ca>

Dear Ivan Booth,

Thank you for the opportunity to provide feedback on the new minor in Data Analytics and on the revision of the Statistics minor.

We look very favourably on this proposal. We will promote the new Data Analytics minor to our students and are reminded to promote the Statistics minor to our students as well. Both minors provide complementary skill sets to those provided by our programs.

Best regards,

Ivan Saika-Voivod, Professor

Deputy Head (Undergraduate Studies)

Department of Physics and Physical Oceanography, Memorial University of Newfoundland

Tel: 709-864-8886, Fax: 709-864-8739, Rm C3026, <http://www.physics.mun.ca/~saika/>

Hello Kathleen,

Thanks for the feedback. We are open to the possibility of removing the credit restriction between 2500/2550 and 2910 and have actually discussed this in a previous Stats/Math Undergrad Studies meeting. However, we would prefer to deal with that separately from this proposal.

Would there be any objection on the Psychology side to just removing the restriction?

Best,

Ivan

On Mar 26, 2025, at 13:59, Deputy Head, Department of Psychology <psychdeputyhead@mun.ca> wrote:

Hi Ivan,

The Psychology Department was intrigued by the new proposed Data Analytics minor. We realize that it's probably relatively uncommon for Psychology majors to choose a Statistics minor currently, but the term "Data Analytics" sounds like it could have potential to be a good fit. However, one of the requirements for this minor is either STAT 2500 (Statistics for Business and Arts Students) or STAT 2550 (Statistics for Science Students). These courses are both credit restricted with PSYC 2910, which is a core requirement for Psychology and Behavioural Neuroscience Majors. Therefore, with the current proposal, it would not be possible for a PYSC/BHNR major to complete this minor as written.

Relatedly, the proposed change to the Statistics Minor would also prevent a PSYC major from completing the minor. That is, you are proposing to change the requirement of "Statistics 1510 or 2500

or 2550" to just be "Statistics 2500 or 2550". This would have the same issue as above; these two courses are both credit restricted with PSYC 2910, which is required for all PSYC and BHNR majors.

Again, we're not sure whether many (or any) students have minored in Statistics in the past, but a Minor in Data Analytics sounds like it might be interesting for some of our Majors. Would it be possible to consider a revision that would allow for the possibility of PSYC/BHNR majors to choose this minor?

Thanks,

-Kathleen

Kathleen L. Hourihan, PhD (she/her)

Associate Professor

Department of Psychology

Memorial University of Newfoundland

(709) 864-8771

From: "CUGS Chair" <engrconsult@mun.ca>

Subject: RE: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Date: March 19, 2025 at 14:02:13 NDT

To: "'Booth, Ivan'" <mathconsult@mun.ca>

Thank you for the opportunity to comment on the proposed Calendar changes for

1. New Minor in Data Analytics
2. Amended Minor in Statistics.

At its meeting on March 19, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science expressed support for these changes.

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: DeanNurse <DeanNurse@mun.ca>

Subject: RE: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Date: March 4, 2025 at 09:47:16 NST

To: "Booth, Ivan" <mathconsult@mun.ca>

Good morning, Dr. Booth.

Dr. April Pike, our dean at the Faculty of Nursing, tells me that she has reviewed the documents and has no comments or concerns.

Thank you for your time,

Jane

From: medvicedean <medvicedean@mun.ca>

Subject: Re: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Date: March 3, 2025 at 11:23:05 NST

To: "mathconsult@mun.ca" <mathconsult@mun.ca>

Cc: "Dean of Medicine : McKeen, Dr. Dolores" <deanofmedicine@mun.ca>

Hi Ivan,

On behalf of the Faculty of Medicine, there are no concerns with the proposal.

Thanks,

Danielle

DANIELLE O'KEEFE MD CCFP FCFP MSc CCPE

Vice Dean, Education and Faculty Affairs

Associate Professor of Family Medicine

Faculty of Medicine

Memorial University of Newfoundland

Faculty of Medicine Building | Room M2M311

300 Prince Philip Drive
St. John's, NL, Canada A1B 3V6
T 709 864 6289 | F 709 864 6336

www.mun.ca/medicine

From: "Ride, Peter" <pride@mun.ca>

Subject: Re: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Date: March 1, 2025 at 22:00:03 NST

To: "Booth, Ivan" <mathconsult@mun.ca>

Cc: "Humphries, Linda S" <lindah@mun.ca>

Dear Ivan and committee members, Department of Mathematics and Statistics

As Dean of the School of Fine Arts I would like to give this proposal my support. This is not because I have direct involvement in mathematics, but my knowledge of the new technologies sector tells me that data analytics is increasingly important and offering a minor like this can be desirable for students seeking employment in a hugely competitive field.

I'd also like to add that data visualisation is increasingly significant within media and digital arts. Although this is currently a peripheral area to our teaching at the School of Fine Arts I can see that it will grow in future years. There would be potential for cross disciplinary learning opportunities with the proposed minor.

Yours,

Peter Ride

*** **

Dr Peter Ride

(he/him)

Dean of the School of Fine Arts,

Grenfell Campus, Memorial University of Newfoundland & Labrador
Corner Brook, Newfoundland & Labrador, Canada A2H 5G4
Tel: School Office 709 637-6223 or direct 709 637 6277

www.grenfell.mun.ca/

We acknowledge that Grenfell Campus is in traditional Mi'kmaw territory, and we acknowledge with respect the diverse histories and cultures of the Beothuk, Mi'kmaq, Innu, and Inuit of this province.

From: Booth, Ivan <mathconsult@mun.ca>
Sent: Thursday, February 27, 2025 2:06 PM
To: Faculty of Humanities and Social Sciences <hss@mun.ca>; Dean - Faculty of Business Administration <deanfba@mun.ca>; Dean of Education <educdean@mun.ca>; DeanNurse <DeanNurse@mun.ca>; enrconsult@mun.ca <enrconsult@mun.ca>; adeanugradswk <adeanugradswk@mun.ca>; HKR Dean <hkrdean@mun.ca>; Dean of Medicine : McKeen, Dr. Dolores <deanofmedicine@mun.ca>; Karen Bulmer <kbulmer@mun.ca>; pharminfo@mun.ca <pharminfo@mun.ca>; deanofsass <deanofsass@mun.ca>; Dean of Science <deansci@mun.ca>; University Librarian <univlib@mun.ca>; GC School of Arts and Social Science <gcsass@mun.ca>; miugconsultations@mi.mun.ca <miugconsultations@mi.mun.ca>; GC School of Science and the Environment <gcsse@mun.ca>; GC School of Fine Arts <gcssofa@mun.ca>
Cc: Yildiz Yilmaz <yyilmaz@mun.ca>
Subject: Dept of Math and Stats: New Minor in Data Analytics + Revision of Statistics Minor

Hello Everyone,

The Department of Mathematics and Statistics seeks consultation on a new Minor in Data Analytics and a revision of the course requirements for our current Minor in Statistics. The rationales for the changes are:

1) Minor Data Analytics (new Minor): Our department has observed a growing demand for the Data Science major program and Statistics courses. The proposed minor in Data Analytics is designed to equip students from other major programs with essential skills in data collection, data types, coding techniques, statistical programming, data analysis and visualization, predictive analytics, regression analysis, and statistical learning. Upon completing the Data Analytics minor, students will gain the expertise to analyze data, extract meaningful insights, and apply them to informed decision-making.

2) Minor in Statistics (revision of requirements): Since Statistics 2410 and 3411 are core courses in the Statistics undergraduate curriculum, they have now been added as required courses for the Minor in Statistics program (along with Math 2000, which is a prerequisite for Stat 2410). This change marks the primary distinction between the Minor in Statistics and the Minor in Data Analytics programs.

More detailed information can be found in the attached proposal. Please provide any feedback to this email address by Friday, March 28.

Best,

Ivan Booth

Deputy Head Mathematics

Department of Mathematics and Statistics

Master of Data Science Proposed Calendar Changes

The Master of Data Science Board of Study recommends the following two proposals:

1. Revision of capstone project (DSCI 695A/695B) evaluation process – removal of evaluation by a faculty member other than the adviser

Rationale:

The capstone project is graded on a pass/fail basis, which the adviser can determine. Requiring an external review adds unnecessary administrative burden, particularly as it is currently challenging to secure projects/faculty supervision for students.

2. Addition of existing COMP 6910 to MDSC elective courses

Rationale:

This course is titled "Services Computing Semantic Web and Cloud Computing." Since data scientists often work with cloud technologies, this is a natural elective choice for the program.

Course Summary:

Description - This course introduces Cloud and Services Computing, covering fundamental concepts, technologies, and applications. Topics include cloud service models (IaaS, PaaS, SaaS), virtualization, data centers, cloud resource management, cloud storage, and popular cloud applications and platforms. Emphasis is placed on exploring the underlying backend technologies that enable the construction and operation of efficient cloud environments. Additionally, the course examines how cloud infrastructures support applications to achieve on-demand computing. By the end of the course, students will gain the knowledge and skills needed to design, deploy, and manage cloud-based solutions effectively.

Prerequisites - Introductory courses in Computer Architecture, Operating Systems, and Computer Networks (equivalent to COMP 2003, 4721 and COMP 4759) are required.

Relevant Calendar Changes:

16.3 Evaluation

1. In order to qualify for the on-campus course enrolment, a student shall provide a self-declaration statement on successful completion of the three propaedeutic courses.
2. In order to continue in the Master of Data Science degree program, a student shall obtain an 'A' or 'B' for all regular program courses. In order to be considered for graduation, a student shall also pass DSCI 6690 and DSCI 695A/B and successfully complete the final project report requirement.
3. DSCI 695A/B progress after each semester will be evaluated by the student's academic adviser, while ~~the~~ the final applied data science project report will be evaluated by ~~a faculty member other than~~ the student's academic adviser ~~appointed by the Chair of the MDSc. program.~~

16.4.2 Data Science Elective Courses

Business

- BUSI 8025 Information Systems
- BUSI 9021 Data Management
- BUSI 9022 Information Systems Analysis and Design
- BUSI 9912 Probabilistic Models

Computer Science

- COMP 6907 Data Mining Techniques and Methodology
- COMP 6908 Database Technology and Applications
- COMP 6910 Services Computing, Semantic Web and Cloud Computing
- COMP 6917 Complex Networks
- COMP 6934 Introduction to Data Visualization

Data Science

- DSCI 6650 Reinforcement Learning

Mathematics

- MATH 6100 Dynamical Systems
- MATH 6201 Numerical Methods for Time-Dependent Differential Equations
- MATH 6202 Nonlinear and Linear Optimisation

- MATH 6204 Iterative Methods in Numerical Linear Algebra
- MATH 6210 Numerical Solutions of Differential Equations
- MATH 6351 Advanced Linear Algebra

Medicine

- MED 6260 Applied Data Analysis for Clinical Epidemiology
- MED 6278 Advanced Biostatistics for Health Research

Scientific Computing

- CMSC 6950 Computer Based Tools and Applications

Statistics

- STAT 6503 Stochastic Processes
- STAT 6505 Survival Analysis
- STAT 6530 Longitudinal Data Analysis
- STAT 6545 Computational Statistics
- STAT 6561 Categorical Data Analysis
- STAT 6563 Sampling Theory
- STAT 6564 Experimental Designs
- STAT 6571 Financial and Environmental Time Series
- STAT 6573 Statistical Genetics

**SCHOOL OF
GRADUATE STUDIES**

Adobe Reader, minimum version 8, is required to complete this form. Download the latest version: <http://get.adobe.com/reader>. (1) Save the form by clicking on the diskette icon on the upper left side of the screen; (2) Ensure that you are saving the file in PDF format; (3) Specify where you would like to save the file, e.g. Desktop; (4) Review the [How to create and insert a digital signature](#) webpage for step by step instructions; (5) Fill in the required data and save the file; (6) Send the completed form by email to: sgs@mun.ca.

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

Course No.: Bioc 6003

Course Title: Critiquing Research II

I. To be completed for all requests:

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

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

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

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

E. Credit hours for this course: 3

F. Course description (please attach course outline and reading list):

Bioc 6003 emphasizes critiquing research with an interdisciplinary lense. Via introductory lectures from instructors and work in small groups with diverse research areas, skill development will include literature searches, research critiquing, writing, contribution statements & oral presentations.

G. Method of evaluation:

	Percentage	
	Written	Oral
Class tests		
Assignments	51%	36%
Other (specify): Participation in discussions		13%
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:

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

Recommended for offering in the Fall Winter Spring 20 25

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

Valie Booth J.O. Park
Course instructor

March 20, 2025
Date

Sherri Christian Digitally signed by Sherri Christian
Date: 2025.03.20 17:01:13 -02'30'
Approval of the head of the academic unit

Date

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

Gene Jackson
Secretary, Faculty/School/Council

March 31, 2025
Date

Biochemistry 6003
Course Name: HUBI/Biochemistry Critiquing Research II
Semester: Spring 2025

Instructors:

	How to contact
Dr. Valerie Booth (co-coordinator) CSF 3237 vbooth@mun.ca	Drop in or email me for an appointment time
Dr. Jaeok Park (co-coordinator) CSF 3238 jaeokp@mun.ca	Drop in or email me for an appointment time
Dr. Rob Brown CSF 4240 rbrown@mun.ca	TBD
Dr. S. Cheema CSF 4237 skaur@mun.ca	Contact by email with Bioc6003 in the subject line

Course Description: Bioc 6003 emphasizes critiquing research with an interdisciplinary lense. Via introductory lectures from instructors and work in small groups of students with diverse research areas, skill development will include literature searches, research critiquing, writing, contribution statements & oral presentations.

Course Related Communications: Every effort will be made to respond to emails within 24h, with the exceptions of evenings, weekends and holidays.

Lectures Dates & Times: Class will be held in-person two times a week (Dates and times TBD).

Virtual Learning Environment: Students will be expected to attend class in person, but can also arrange to attend via Webex if they're unable to attend class due to illness, etc.

Course Format and Learning Skills: The course is designed with a format to develop skills in: a) Critical evaluation of scientific literature; b) Writing; c) Oral presentation; d) Codeveloping co-authorship statements e) Discussing science in an interdisciplinary group.

MARKS DISTRIBUTION & METHODS OF EVALUATION

Oral Presentation of the Scientific papers (9% X 4)	36%
Assigned Reader Questions	15%
Classroom Participation & Discussion	13%
Written Critique of Scientific papers (9% X 4)	36%

The course will be divided into segments with a different research area focus for each segment*: 1) Proteins, 2) Enzymes 3) General metabolism 4) Lipid metabolism. Students will select one paper per segment.

*Research area foci may vary with each offering

Selection of Scientific Paper to Critique: Students will search PubMed (<https://www.ncbi.nlm.nih.gov/pubmed/>) to find an appropriate scientific paper of interest that is at an intersection of their own research area and the research area of focus in each segment of the course. The instructors will work with the students, providing guidance on selecting the scientific papers to write a scientific critique. Papers should generally be recent (within the last 5 years). Students upload links to at least three (3) papers for each research topic to the appropriate Brightspace folder; one paper will be approved by the instructor.

Oral Presentation of the Scientific papers: Students will present their chosen paper in class in a journal club format. The oral presentation will be no more than 20 min, providing critique of the paper, followed by 10 minutes for discussion. The presentation should provide: 1) background information on the topic; 2) only give details on methodology if you will not be able to explain data without methodology; 3) present highlights of the findings; 4) conclude by summarizing any controversies and why the information may/may not be of significance; 5) provide a critique and justify your opinion.

Assigned Reader Questions and Discussion: Approved papers will be available on Brightspace; students will be assigned as readers for specific papers and must read the assigned paper to prepare for classroom discussion. At least 3 questions must be uploaded into Brightspace by **11:59pm 24 hours** before the journal club presentations for grading. The student will ask questions in class for classroom discussion.

Classroom Participation & Discussion: All other students must read the abstract of each paper to be presented to have a general understanding of the study to participate in classroom discussions. In addition to participating in discussion of the research papers, students are also expected to participate in the instructional classes on literature searching, critiquing, etc.

Written Critique: The written critique should contain: 1) Title page with your name, citation of the paper including title, journal, volume, page numbers and year of publication; 2) overview of the study, followed by specific critiques (positives and negatives) of the paper; 3) an overall conclusion based on your critique and 4) A co-authorship statement that provides the details of each team member's contributions to each component of the critique (including the oral presentation). Pay attention to grammar, style and layout. The written critique will be no more than 4 pages, double spaced, 12 point font (not counting the co-authorship statement). Details on how to critique a scientific paper will be discussed in class, and shared on Brightspace.

NOTE: In the event of class cancellation due to unforeseen circumstances (i.e. weather), a make-up class will have to be scheduled to accommodate oral presentations. Moreover, depending on the number of students enrolled in this course, we may need extra days or have longer class time in order to accommodate presentations.

Policies and Other Relevant Information

Please familiarize yourself with the relevant Memorial University policies:

Learning Accommodations: *Memorial University of Newfoundland is committed to supporting inclusive education based on the principles of equity, accessibility and collaboration. Accommodations are provided within the scope of the University Policies for the Accommodations for Students with Disabilities (www.mun.ca/policy/site/policy.php?id=239). Students who may need an academic accommodation are asked to initiate the request with the Glenn Roy Blundon Centre at the earliest opportunity (www.mun.ca/blundon).*

Academic Integrity: *Students are expected to adhere to those principles which constitute proper academic conduct. A student has the responsibility to know which actions, as described under Academic Offences in the University Regulations, could be construed as dishonest or improper. Students found guilty of an academic offence may be subject to a number of penalties commensurate with the offence including reprimand, reduction of grade, probation, suspension or expulsion from the University. For more information regarding this policy, students should refer to the University Regulations for Academic Misconduct (Section 6.12) in the University Calendar.*

Recording of Lectures: *Please ask permission before recording lectures or active learning classes. Any approved recordings (video or audio) are to be used as study aids in the same course offering, recordings are not to be shared, distributed or posted on any websites (other than the course Brightspace page). Copyright for all lectures remains with the lecturer and cannot be reused for other purposes without the expressed permission of that lecturer.*

Equity and Inclusion: *Please assist in creating a learning environment that supports equity and the provision of a safe learning environment regardless of religious, linguistic and economic backgrounds, lifestyle choices, gender, nationality, physical ability or learning differences.*

Memorial University's Land Acknowledgement: *We respectfully acknowledge the territory in which we gather as the ancestral homelands of the Beothuk, and the island of Newfoundland as the ancestral homelands of the Mi'kmaq and Beothuk. We would also like to recognize the Inuit of Nunatsiavut and NunatuKavut and the Innu of Nitassinan, and their ancestors, as the original people of Labrador. We strive for respectful partnerships with all the peoples of this province as we search for collective healing and true reconciliation and honour this beautiful land together.*