



Faculty of Science

Office of the Dean
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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 24, at 1:00 p.m. by WebEx and in-person (Room: C- 2045).

AGENDA

1. **Regrets**
2. **Adoption of the Minutes of February 21, 2024** (pages 2-17)
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 Earth Sciences – Calendar Changes, Amended program, Paper 5 A. a. (pages 18-32)
 - b) Department of Earth Sciences- Calendar changes, EASC 2906, New course proposal, Paper 5 A. b. (pages 33-49)
 - B. **Graduate Studies Committee:**

Presented by Adrian Fiench, Chair, Graduate Studies Committee

 - a) Department of Computer Science - Calendar Changes (MSc), New regulations: Program requirements, Consistent regulation regarding program termination, removing the Work-term route, Adding two new courses for approval – COMP 611W and COMP 612W, Paper 5 B. a. (pages 50 - 80)
 - C. **Library Committee:** No business
6. **Report of the Dean:**
7. **Question Period**
8. **Adjournment**

Travis Fridgen, Ph.D.
Interim Dean of Science



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FACULTY OF SCIENCE FACULTY COUNCIL OF SCIENCE Minutes of Meeting of February 21, 2024

A meeting of the Faculty Council of the Faculty of Science was held on Wednesday, February 21, 2024 at 1:00 p.m. using a hybrid model of WebEx and in-person (C-2045).

FSC 3057 Present

Biochemistry

M. Berry, R. Bertolo, V. Booth, S. Christian

Biology

A. Chaulk, D. Harvey

Business Administration

M. Eghbali-Zarch

Chemistry

C. Bottaro, H. Grover, E. Merschrod, S. Pansare, B. Power, H. Reader, S. Smith, J. Stockman, M. Katz, H. Therien-Aubin

Computer Science

S. Bungay, A. Fiech, C. Hyde

Economics

K. Chu

Mathematics & Statistics

J. Alam, R. Haynes, J.C. Loredano-Osti, A. Solomon, T. Stuckless, S. Sullivan, A. Variyath

Ocean Sciences

P. Gagnon, C. Parrish

Physics & Physical Oceanography

M. Evstigneev, E. Hayden, J. LeBlanc, I. Saika-Voivod, L. Zedel

Psychology

S. Blandford, K. Hourihan, C. Thorpe

Dean of Science Office

J. Bowering, S. Dufour, T. Fridgen, L. Frizzell, S. Garasym, C. Hussey, G. Jackson, J. Kavanagh, P. MacCallum, V. MacNab, J. Major, T. Mackenzie, R. Newhook, D. Nichols, R. Temple

Student Representatives

W. Kinden, I. Omeh, A. Ullah, N. Vadood

Regrets

A. Lang

Guest Speakers

S. Arnott, N. Clark, A. Farrell, P. Price, C. Squires

- FSC 3058 Adoption of Minutes**
Moved: Minutes of the meeting of December 6, 2023, be adopted. (Loredo-Osti/Bungay) **One Abstention. Carried.**
- FSC 3059 Business Arising:** No Business
- FSC 3060 Correspondence:** No Report
- FSC 3061 Reports of Standing Committees:**
- A. Undergraduate Students Committee:**
Presented by Shannon Sullivan, Chair, Undergraduate Studies Committee,
 - a. Department of Biochemistry – Calendar Changes, HUBI 4241, Approved by Undergraduate Studies Committee and presented to Faculty Council for information only.
 - B. Graduate Studies Committee:**
Presented by Adrian Fiech, Chair, Graduate Studies Committee
 - a. Department of Psychology, Special Topics Course, PSYC 6122, approved by the Graduate Committee and present to Faculty Council for information only.
 - C. Library Committee:** No Business

FSC 3062 **Presentation – Security and Data Management – Active Data Storage Solutions available to Memorial Researchers**

Alison Farrell discussed the types of active data storage available to Memorial.

Craig Squires explained that ACENET has three clusters with 100 GB of storage in the home directory, and for research groups there is an additional 1 TB of storage.

There is also the Globus Portal with is a fast and reliable way to transfer terabytes of data between two locations.

For more information, contact Craig Squires at craig.squires@ace-net.ca.

Paul Price with [Centre for Analytics, Informatics and Research \(CAIR\)](#) explained that CAIR offers large amounts of data and secure storage on and off campus. The approximate cost of 120 TB of storage would be \$120. For more information contact Paul Price at pprice@mun.ca.

Sarah Arnott with the Office of the Chief Information Office shared information on Microsoft 365, with a large amount of services including One Drive, Teams, Outlook and much more. All employees of Memorial have access to these services. OneDrive and Teams are stored in the Canadian Microsoft data bank.

Those with concerns about Microsoft services for storage might want to consider using CAIR Services or Aliant Services which are held within the university itself or in Canada.

There was further discussion on Microsoft services, and it was suggested by Sarah Arnott to have a separate meeting about using the services. For more information, contact Sarah Arnott at sarnott@mun.ca.

Alison Farrell offered to visit each department to answer any questions. Please contact Alison Farrell at alisonr@mun.ca.

Please see the links below for more information.

<https://alliancecan.ca/en/services/advanced-research-computing/national-services/storage>

<https://alliancecan.ca/en/services/advanced-research-computing/national-services/data-movement-globus>

<https://alliancecan.ca/en/services/advanced-research-computing/national-services/cloud>

<https://alliancecan.ca/en/services/advanced-research-computing/accessing-resources/resource-allocation-competition>

<https://www.mun.ca/cio/it-services/email-and-collaboration/microsoft-365/>

FSC 3063 International Graduate Students – Immigration Regulations

Natasha Clark from the Internationalization Office gave a presentation on two major announcements about international graduate students. Presentation attached (Changes to the International Student Program (ISP)). For more information contact immigrationadvising@mun.ca.

FSC 3064 Report of Dean:

Associate Dean's Remarks

On February 14, 2024 the federal government announced the new policy on *Sensitive Technology Research and Affiliations of Concern* ([STRAC](#)). The STRAC will come into effect May 1, 2024. Procedures (e.g., risk assessments, attestations) are also expected at that time. Under STRAC: two lists, which are **not static**, must be considered together – the [Sensitive Technology Research Areas](#) and [Named Research Organizations](#). [Due diligence](#) to protect your sensitive research is expected, even in the absence of affiliations of concern. This applies to tri-agency funding programs only, though other federal government agencies may follow. Training available with Research Security Centre (Workshops) has been circulated.

Dean's Remarks

The registrar's office is asking faculties, departments, faculty, and staff to remind students to apply for convocation. The deadline will be announced in March.

It is budget season and the Dean's office is busy preparing a budget plan and seeking input from heads with regards their teaching and future staffing plans. We are being asked to plan for a scenario of potential base budget cuts in anticipation of the government continuing to claw back the grant in lieu of a tuition freeze, but none of this is known. Further exacerbating this is the new TAUMUN collective agreement that produces an unfunded increase in costs associated with graduate student teaching assistants.

FSC 3065 Question Period:

Erika Merschrod suggested the faculty be very clear that cutting TA hours because they negotiated an increase in pay of their recent agreement is very wrong. The Dean agreed with this statement and said we are exacerbating the budget planning to find the funding to pay the TA hours. Erika Merschrod said it was her understanding to cut the TA hours next year because of that increase. The Dean

stated that we are looking to fund the number of TAs that a department requires and the Departments were asked to stay within their budget.

FSC 3066

Adjournment:

Meeting adjourned at 2:11pm.

Changes to the International Student Program (ISP)

Internationalization Office
Memorial University of Newfoundland

Winter 2024

WHAT IS HAPPENING WITH THE INTERNATIONAL STUDENT PROGRAM (ISP)?

- IRCC underwent review of ISP in 2023
- 4 Pillars of Modernized ISP
 - Recognized Institution Framework
 - To be implemented for Fall 2024
 - Memorial was part of test group in 2023
 - Program Integrity
 - LOA verification December 1, 2023
 - Equitable Access
 - Compatible work Pathways
 - Planning to review and reform PGWP

WHAT IS HAPPENING WITH THE INTERNATIONAL STUDENT PROGRAM (ISP)?

- Two major recent announcements:
 - **December 7, 2023**
 - Reforms to increase financial requirement January 1, 2024 (to be revised annually)
 - Temporary public policy related to off campus work hour restriction extended to April 30, 2024
 - Those who applied for study permit on or after December 7, 2023 can work unlimited hours off campus
 - PGWP distance learning facilitative measures extended to August 31, 2024
 - Distance learning and study outside of Canada can be counted towards PGWP eligibility (in some circumstances)

WHAT IS HAPPENING WITH THE INTERNATIONAL STUDENT PROGRAM (ISP)?

- Two major recent announcements (cont):
 - **January 22, 2024**
 - Cap on study permit applications – temporary measure for 2 years
 - Requirement of provincial attestation letter for some (effective January 22, 2024)
 - Changes to spousal open work permit (in coming weeks)
 - Restricted to spouses of Masters, PhD and professional program students
 - Change to PGWP
 - Masters students eligible for 3 year PGWP from February 15, 2024
 - Private-Public-Partnerships no longer eligible from September 1, 2024

FINANCIAL REQUIREMENT

Number of family members (including the applicant)	Amount of funds required per year (not including tuition)
1	CAN\$20,635
2	CAN\$25,690
3	CAN\$31,583
4	CAN\$38,346
5	CAN\$43,492
6	CAN\$49,051
7	CAN\$54,611
If more than 7 people, each additional family member	CAN\$5,559

CAP ON STUDY PERMIT APPLICATIONS

- Cap of a maximum of 606 250 study permit applications for those who require a PAL
- A 35% reduction in study permit applications

PROVINCIAL ATTESTATION LETTER (PAL)

- As of 8:30 am ET on January 22, 2024, most students must include a provincial attestation letter (PAL) from the province or territory where they plan to study with their study permit application.
- In most cases, if you apply without a PAL, your application will be returned with fees.
- You do **not** need a PAL when applying for a study permit if you
 - are applying to study in a preschool, primary school or secondary school (up to grade 12)
 - are applying to study in a master's **degree** or doctoral **degree** program **or**

PROVINCIAL ATTESTATION LETTER (PAL)

- You do **not** need a PAL when applying for a study permit if you
 - have entered Canada **and** one of the following situations applies to you:
 - You're applying for a study permit extension.
 - You have a work permit.
 - You're a temporary resident who is a visiting or exchange student studying at a designated learning institution (DLI).
 - You're a temporary resident who has completed a course or program of study that is a prerequisite to you enrolling at a DLI.
 - You're under a removal order, but can't be removed from Canada at this time.
 - You have a [temporary resident permit](#) valid for at least 6 months.
 - You're the family member of a foreign national who lives in Canada and is one of the following:
 - a study permit holder
 - a work permit holder
 - a temporary resident permit holder with a permit that's valid for at least 6 months
 - a member of armed forces in another country under the [Visiting Forces Act](#)
 - an [accredited foreign government representative](#)
 - a participant in [certain sports activities or events](#)
 - a worker in Canada who is a [member of a foreign news company](#)
 - a [religious worker](#)

REFERENCES

- News Release, December 7, 2024- <https://www.canada.ca/en/immigration-refugees-citizenship/news/2023/12/revised-requirements-to-better-protect-international-students.html>
- Financial Requirement- IRCC public facing website- <https://www.canada.ca/en/immigration-refugees-citizenship/services/study-canada/study-permit/get-documents.html#financial-reqs>
- Temporary Public policies on of campus work:
 - <https://www.canada.ca/en/immigration-refugees-citizenship/corporate/mandate/policies-operational-instructions-agreements/public-policies/off-campus-work-2023-update.html>
 - <https://www.canada.ca/en/immigration-refugees-citizenship/corporate/mandate/policies-operational-instructions-agreements/public-policies/off-campus-work-2023-update-2.html>
- News Release, January 22, 2024- <https://www.canada.ca/en/immigration-refugees-citizenship/news/2024/01/canada-to-stabilize-growth-and-decrease-number-of-new-international-student-permits-issued-to-approximately-360000-for-2024.html>
 - Backgrounder- <https://www.canada.ca/en/immigration-refugees-citizenship/news/2024/01/making-canadas-international-student-program-sustainable.html>
- Cap ministerial instructions, February 3, 2024 in Gazette - <https://www.gazette.gc.ca/rp-pr/p1/2024/2024-02-03/html/notice-avis-eng.html#na1>
- Notice, February 5, 2024 <https://www.canada.ca/en/immigration-refugees-citizenship/news/notices/international-student-program-reform-more-information.html>
- IRCC public facing website: Attestation Letters- <https://www.canada.ca/en/immigration-refugees-citizenship/services/study-canada/study-permit/get-documents.html#attestation>

IMMIGRATION SUPPORT @ MEMORIAL

Empathy. Knowledge. Responsiveness.



ABU ARIF MA, RISIA
ADVISOR: IMMIGRATION AND
SPECIAL PROJECTS



NATASHA CLARK MA, RCIC
ADVISOR: IMMIGRATION AND
HEALTH INSURANCE



PANIZ SAREMIRAD, RISIA
ADVISOR: IMMIGRATION

Ways Students can Connect with an Immigration Advisor

- 1. Book an appointment for one on one consultation:** Download Navigate for Students in the Apple App Store or Google Play.
- 2. Drop-in for virtual one-on-one Drop in Hours:** Check Navigate for a schedule of drop in hours, or see www.mun.ca/international/programming/immigrationadvising/
- 3. Attend an Information Session:**
Special Topics - held in Brightspace every Tuesday and Thursday at 12pm NLT
- 4. Email:** You can email immigrationadvising@mun.ca

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):
- New program(s):
 - × Amended or deleted program(s): Earth Sciences**
- 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

Within the Memorial University St. John's campus university calendar for the faculty of science, the following undergraduate programs are available in Earth Sciences:

120 credit hour programs

1. Chemistry and Earth Sciences Joint Honours
2. Earth Sciences and Geography Joint Honours
3. Earth Sciences and Physics Joint Honours
4. Earth Sciences and Physics Joint Major
5. General or Honours degrees in Earth Sciences
6. Geophysics and Physical Oceanography Joint Honours

135 credit hour program

1. Biology and Earth Sciences Joint Honours

24 credit hour program

1. Minor in Earth Sciences

REVISED PROGRAM TITLE

There are no changes to the above listed programs.

RATIONALE

The required field school course EASC 3905 has more than 36 contact hours, therefore the course should be a 3 credit hour (CH) course (currently listed as 1 CH). Making this change will require our students to take over 120 CH for our program. To rectify this, we proposed to remove both EASC 3905 and 3420 as a required courses for our program (these were the only 2, 3rd year

courses required for our program) and added an additional three credit hours to the 3rd/4th year course requirement.

ANTICIPATED EFFECTIVE DATE

Fall 2025

CALENDAR CHANGES

Changes are required for section 10 (Joint Program Regulations), section 11.5 (Program regulations, Earth Sciences), and section 13.5.3 (Third Year).

Sections, subsections and clauses are displayed below.

13.5.3 (Third Year)

EASC 3905 Field Methods in Structural Geology and Stratigraphy

is based on approximately 5 days of geological mapping in Precambrian rocks near St. John's. Emphasis is placed on application of techniques of structural analysis. Evenings will be dedicated to data analysis and preparation of structural maps and sections. Students are advised to complete this course immediately following EASC 2401. This course will be offered during a special session immediately following the examination period in a given semester.

AR: attendance for all of the field school days is required. Failure to attend may result in a failing grade or withdrawal from the course.

CH: 4

OR: field based course

PR: EASC 2401 and 2905 and an application to the Head of the Department

11.5.4.1 Common Block of Required Courses

All majors in Earth Sciences must successfully 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. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses, 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.

Students who intend or are required to successfully complete higher level Physics courses must successfully complete Physics 1051 as well, since it is a prerequisite for higher level Physics courses. Students should review the Department of Physics Calendar entry for these courses.

2. Earth Sciences 2030, 2031, 2401, 2502, 2702, 2905, ~~3420, 3905~~.
3. Mathematics 2000 or Statistics 2550.

4. Either Biology 2120 (or Biology 1001 and 1002); or both Physics 2055 and Physics 2820.

Students must ensure that the prerequisites for Earth Sciences courses are fulfilled. Great difficulties in timetabling may be encountered if the required first-year courses are not successfully completed before the beginning of second year.

11.5.5 Honours B.Sc. Degree in Earth Sciences

Geoscientific careers vary widely in required background. The Honours B.Sc. program is designed with considerable choice in order that students may personalize their programs based on career goals. Note that the flexibility afforded by this program is not without limits. Some courses have prerequisites, and it is ultimately the student's responsibility to ensure that these prerequisites are satisfied. Students should consult faculty members and the departmental Student Handbook for guidance in selecting courses appropriate to particular career paths.

In addition to the Common Block of Required Courses listed under Major Programs in Earth Sciences, the following requirements must be successfully completed to qualify for the Honours B.Sc. degree in Earth Sciences:

Earth Sciences 499A and 499B.

At least ~~27~~30 additional credit hours from Earth Sciences courses at 3000 and/or 4000 levels with a minimum of 12 credit hours from courses at the 4000 level. Credit hours from Earth Sciences 4310 and 4950 cannot be used to fulfill this requirement.

Six credit hours from the Faculty of Science courses numbered 2000 or higher. Credit hours from Earth Sciences courses, courses that are cross-listed with Earth Sciences courses, and the former Physics 2050 are excluded. However, Physics 2820 is permitted.

Additional credit hours selected to conform with regulations for the Honours Degree of Bachelor of Science so as to achieve a total of 120 credit hours. Students are encouraged to complete a minor in another department.

Three of the credit hours used to fulfill either requirement 3. or 4. above must be from Biology, Chemistry, Computer Science, Statistics or Physics. They may be from Mathematics only if Mathematics 2000 has not been taken as part of the Common Block of Required Courses.

11.5.6 General B.Sc. Degree in Earth Sciences

In addition to the Common Block of Required Courses listed under Major Programs in Earth Sciences, the following requirements must be completed to qualify for the General B.Sc. degree in Earth Sciences:

~~Eighteen~~ Twenty-one additional credit hours from Earth Sciences courses at 3000 and/or 4000 levels with a minimum of 9 credit hours from courses at 4000 level. Credit hours from Earth Sciences 4310, 4950 and 499A/B cannot be used to fulfill this requirement.

Six credit hours from Science Faculty courses numbered 2000 or higher. Credit hours from Earth Sciences courses, courses that are cross-listed with Earth Sciences courses, and the former Physics 2050 are excluded. However, Physics 2820 is permitted.

Additional credit hours selected to conform with the Regulations for the General Degree of Bachelor of Science so as to achieve a total of 120 credit hours. Students are encouraged to complete a minor in another department.

Students are advised that this is the minimum requirement for the General B.Sc. in Earth Sciences. Many provinces, including Newfoundland and Labrador, have legislation requiring registration of professional geoscientists. A basic requirement for registration is, in most cases, the course equivalent of an Honours B.Sc. degree. Students intending to make a career in Earth Sciences should consider taking the Honours Degree program of courses, regardless of whether honours standing is maintained.

10.1.9 Earth Sciences and Physics Joint Major

This program was formerly in the Earth Sciences section of the Calendar as a Bachelor of Science in Geophysics. The following courses will be required:

1. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
2. Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or 1200 and 1001), Physics 1050 (or 1020) and 1051.
3. Earth Sciences 2030, 2401, 2502, 2702, 2905, 3170, 3172, ~~3420, 3905~~; plus a 3 credit hour course in Earth Sciences 4100 series.
4. At least 30 credit hours in Physics courses at the 2000 level or higher, including Physics 2055, 2056 or 2750, 2820, 3220, 3500.
5. Mathematics 2000, 2050 and 3202.
6. Other courses to complete at least a minimum requirement of 120 credit hours in courses for the General Degree.

Any change in the program of study must have the prior approval of the Heads of the two Departments concerned.

10.2.13 Chemistry and Earth Sciences Joint Honours

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

1. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
2. Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or 1010, the former 1011 and the former 1031) (or 1200 and 1001) or their equivalents, Physics 1050 (or 1020) and 1051 (or 1021).
3. Earth Sciences 2030, 2031, 2401, 2502, 2702, 2905, ~~3420, 3600~~; plus 6 additional credit hours in 3000-level Earth Sciences courses, and 9 additional credit hours in 4000-level Earth Sciences courses.
4. Chemistry 2100, 2210, 2301, 2302, 2400, 2401 and 3110; and at least 6 additional credit hours in 3000-level and 6 credit hours in 4000-level Chemistry courses.
5. Mathematics 2000 and 2050.
6. Biology 2120 and Human Biosciences 2001 or the former Biochemistry 2101 or 2201.
7. An Honours Dissertation (Earth Sciences 499A/B or Chemistry 490A/B). The topic of the Honours Dissertation must have the prior approval of the Heads of the two Departments. A faculty member of either Department may act as supervisor.
8. Other courses to complete the prescribed minimum of 120 credit hours.

Any change in the program of study must have the prior approval of the Heads of the two Departments concerned.

10.2.21 Earth Sciences and Physics Joint Honours

This program was formerly in the Earth Sciences section of the Calendar as an Honours Degree of Bachelor of Science in Geophysics. The following courses will be required:

1. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
2. Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or 1200 and 1001), Physics 1050 (or 1020) and 1051.
3. Earth Sciences 2030, 2401, 2502, 2702, 2905, 3170, 3172, ~~3420, 3905~~, 4171, 4173, 4179.
4. Physics 2055, 2750 or 2056, 2820, 3220, 3230, 3500, 3820, 4820; plus 9 other credit hours in Physics courses at 3000 level or higher.

5. Mathematics 2000, 2050, 2260, and 3202.
6. Either Earth Sciences 499A/B or Physics 490A/B.
7. Other courses to complete at least a minimum of 120 credit hours.

Any change in the program of study must have the prior approval of the Heads of the two Departments concerned.

CALENDAR ENTRY AFTER CHANGES

13.5.3 (Third Year)

EASC 3905 Field Methods in Structural Geology and Stratigraphy

is based on approximately 5 days of geological mapping in Precambrian rocks near St. John's. Emphasis is placed on application of techniques of structural analysis. Evenings will be dedicated to data analysis and preparation of structural maps and sections. Students are advised to complete this course immediately following EASC 2401. This course will be offered during a special session immediately following the examination period in a given semester.

AR: attendance for all of the field school days is required. Failure to attend may result in a failing grade or withdrawal from the course.

OR: field based course

PR: EASC 2401 and 2905 and an application to the Head of the Department

11.5.4.1 Common Block of Required Courses

All majors in Earth Sciences must successfully 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.

5. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses, 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.

Students who intend or are required to successfully complete higher level Physics courses must successfully complete Physics 1051 as well, since it is a prerequisite for higher level Physics courses. Students should review the Department of Physics Calendar entry for these courses.

6. Earth Sciences 2030, 2031, 2401, 2502, 2702, 2905.
7. Mathematics 2000 or Statistics 2550.

8. Either Biology 2120 (or Biology 1001 and 1002); or both Physics 2055 and Physics 2820.

Students must ensure that the prerequisites for Earth Sciences courses are fulfilled. Great difficulties in timetabling may be encountered if the required first-year courses are not successfully completed before the beginning of second year.

11.5.5 Honours B.Sc. Degree in Earth Sciences

Geoscientific careers vary widely in required background. The Honours B.Sc. program is designed with considerable choice in order that students may personalize their programs based on career goals. Note that the flexibility afforded by this program is not without limits. Some courses have prerequisites, and it is ultimately the student's responsibility to ensure that these prerequisites are satisfied. Students should consult faculty members and the departmental Student Handbook for guidance in selecting courses appropriate to particular career paths.

In addition to the Common Block of Required Courses listed under Major Programs in Earth Sciences, the following requirements must be successfully completed to qualify for the Honours B.Sc. degree in Earth Sciences:

Earth Sciences 499A and 499B.

At least 30 additional credit hours from Earth Sciences courses at 3000 and/or 4000 levels with a minimum of 12 credit hours from courses at the 4000 level. Credit hours from Earth Sciences 4310 and 4950 cannot be used to fulfill this requirement.

Six credit hours from the Faculty of Science courses numbered 2000 or higher. Credit hours from Earth Sciences courses, courses that are cross-listed with Earth Sciences courses, and the former Physics 2050 are excluded. However, Physics 2820 is permitted.

Additional credit hours selected to conform with regulations for the Honours Degree of Bachelor of Science so as to achieve a total of 120 credit hours. Students are encouraged to complete a minor in another department.

Three of the credit hours used to fulfill either requirement 3. or 4. above must be from Biology, Chemistry, Computer Science, Statistics or Physics. They may be from Mathematics only if Mathematics 2000 has not been taken as part of the Common Block of Required Courses.

11.5.6 General B.Sc. Degree in Earth Sciences

In addition to the Common Block of Required Courses listed under Major Programs in Earth Sciences, the following requirements must be completed to qualify for the General B.Sc. degree in Earth Sciences:

Twenty-one additional credit hours from Earth Sciences courses at 3000 and/or 4000 levels with a minimum of 9 credit hours from courses at 4000 level. Credit hours from Earth Sciences 4310, 4950 and 499A/B cannot be used to fulfill this requirement.

Six credit hours from Science Faculty courses numbered 2000 or higher. Credit hours from Earth Sciences courses, courses that are cross-listed with Earth Sciences courses, and the former Physics 2050 are excluded. However, Physics 2820 is permitted.

Additional credit hours selected to conform with the Regulations for the General Degree of Bachelor of Science so as to achieve a total of 120 credit hours. Students are encouraged to complete a minor in another department.

Students are advised that this is the minimum requirement for the General B.Sc. in Earth Sciences. Many provinces, including Newfoundland and Labrador, have legislation requiring registration of professional geoscientists. A basic requirement for registration is, in most cases, the course equivalent of an Honours B.Sc. degree. Students intending to make a career in Earth Sciences should consider taking the Honours Degree program of courses, regardless of whether honours standing is maintained.

10.1.9 Earth Sciences and Physics Joint Major

This program was formerly in the Earth Sciences section of the Calendar as a Bachelor of Science in Geophysics. The following courses will be required:

7. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
8. Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or 1200 and 1001), Physics 1050 (or 1020) and 1051.
9. Earth Sciences 2030, 2401, 2502, 2702, 2905, 3170, 3172; plus a 3 credit hour course in Earth Sciences 4100 series.
10. At least 30 credit hours in Physics courses at the 2000 level or higher, including Physics 2055, 2056 or 2750, 2820, 3220, 3500.
11. Mathematics 2000, 2050 and 3202.
12. Other courses to complete at least a minimum requirement of 120 credit hours in courses for the General Degree.

Any change in the program of study must have the prior approval of the Heads of the two Departments concerned.

10.2.13 Chemistry and Earth Sciences Joint Honours

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

9. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
10. Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or 1010, the former 1011 and the former 1031) (or 1200 and 1001) or their equivalents, Physics 1050 (or 1020) and 1051 (or 1021).
11. Earth Sciences 2030, 2031, 2401, 2502, 2702, 2905; plus 6 additional credit hours in 3000-level Earth Sciences courses, and 9 additional credit hours in 4000-level Earth Sciences courses.
12. Chemistry 2100, 2210, 2301, 2302, 2400, 2401 and 3110; and at least 6 additional credit hours in 3000-level and 6 credit hours in 4000-level Chemistry courses.
13. Mathematics 2000 and 2050.
14. Biology 2120 and Human Biosciences 2001 or the former Biochemistry 2101 or 2201.
15. An Honours Dissertation (Earth Sciences 499A/B or Chemistry 490A/B). The topic of the Honours Dissertation must have the prior approval of the Heads of the two Departments. A faculty member of either Department may act as supervisor.
16. Other courses to complete the prescribed minimum of 120 credit hours.

Any change in the program of study must have the prior approval of the Heads of the two Departments concerned.

10.2.21 Earth Sciences and Physics Joint Honours

This program was formerly in the Earth Sciences section of the Calendar as an Honours Degree of Bachelor of Science in Geophysics. The following courses will be required:

8. Six credit hours in Critical Reading and Writing (CRW) courses, including at least 3 credit hours in English courses.
9. Mathematics 1000 and 1001, Earth Sciences 1000 and 1002, Chemistry 1050 and 1051 (or 1200 and 1001), Physics 1050 (or 1020) and 1051.
10. Earth Sciences 2030, 2401, 2502, 2702, 2905, 3170, 3172, 4171, 4173, 4179.
11. Physics 2055, 2750 or 2056, 2820, 3220, 3230, 3500, 3820, 4820; plus 9 other credit hours in Physics courses at 3000 level or higher.
12. Mathematics 2000, 2050, 2260, and 3202.

13. Either Earth Sciences 499A/B or Physics 490A/B.

14. Other courses to complete at least a minimum of 120 credit hours.

Any change in the program of study must have the prior approval of the Heads of the two Departments concerned.

SECONDARY CALENDAR CHANGES

[If the proposed Calendar changes result in additional changes to other sections of the Calendar, these should be listed here, in an underline and strikethrough format. If there are no secondary Calendar changes then this section can be deleted in its entirety.]

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Appendix Page

CONSULTATIONS SOUGHT

Department/Faculty/email	Reply
Science	
Ocean Sciences	
HSS	
Shannahan, Rachelle <rshannahan@mun.ca>	
Collett, Meghan <mcollett@mun.ca>;	
Engineering	yes
Rohr, Linda <lerohr@mun.ca>;	
Medicine	
Music	yes
Nursing	
adeanugradswk <adeanugradswk@mun.ca>;	
Library	
Academic Advising	
Furey, Edith <efurey@mun.ca>;	
HKR	
Ashlee Cunsolo <ashlee.cunsolo@mun.ca>;	
miugconsultations@mi.mun.ca;	
Pharmacy	
SSE Grenfell	
kjacobse@grenfell.mun.ca	

LIBRARY REPORT

n/a

RESOURCE IMPLICATIONS

n/a

ES_Credit_Hour_Consult

Morrill, Penny L

Dean of Science;Faculty of Humanities and Social Sciences;Shannahan, Rachelle;Collett, Meghan;Engineering Consult' <engrconsult@mun.ca>;Rohr, Linda;DeanofMedicine@med.mun.ca;School of Music;DeanNurse;adeanugradswk;Library Correspondence;Academic Advising Centre;Furey, Edith;HKR Dean;Ashlee Cunsolo;miugconsultations@mi.mun.ca;pharminfo@mun.ca;Dean - School of Science and the Environment <ssedean@grenfell.mun.ca>;kjacobse@grenfell.mun.caMiskell, Michelle
Feb. 14, 2024

Hi All,

I have attached a change of program proposal for the Earth Sciences Department.

In Short:

Earth Sciences has determined that our two of our field courses should be 3 credit hours each (currently they are 3 credit hours combined). Correcting this issue will require our students to take 123 credit hours for our program, 3 credit hours over the limit. To rectify this we propose to remove both EASC 3905 and 3420 as a required courses for our program and add an additional three credit hours to the 3rd/4th year course requirement. Such that the students can take EASC 3905 and/or EASC 3420 as part of their 3rd/4th year EASC courses. This decision will be guided by prerequisites for 4th year courses and the students interests.

Please email me your comments on this proposal.

Cheers,
Penny

--

Penny Morrill, Ph.D. (Pronouns: She/her)
Professor, and Deputy Head (Undergraduate)
Department of Earth Sciences
Memorial University of Newfoundland
St. John's, NL A1B 3X5
Canada
phone: (709) 864-6729
fax: (709) 864-2589
Webpage: <https://www.esd.mun.ca/wordpress/deltasresearch/>

I acknowledge that the lands on which Memorial University's campuses are situated are in the traditional territories of diverse Indigenous groups, and acknowledge with respect the diverse histories and cultures of the Beothuk, Mi'kmaq, Innu, and Inuit of this province.

Michelle Cheramy

Thu 2/22, 11:10 AM Morrill, Penny L

Dear Penny,

Thank you for the opportunity to review these calendar changes. On behalf of the School of Music **we see no impact on our students and have no concerns.**

The only minor piece of feedback I have is to double check that the document is consistent in its treatment of numbers, particularly in number of credit hours. Sometimes numbers are expressed in Arabic numerals (eg. 11.5.5 paragraph 4, "30") and sometimes they are written out in English prose (eg. 11.5.6 paragraph 2, "twenty-one").

Best wishes,

Michelle

Michelle Cheramy, DMA (she/her)

Professor and Acting Associate Dean (Academic)

School of Music

Memorial University of Newfoundland
St. John's, NL, Canada
mcheramy@mun.ca

Engineering Consult <enrconsult@mun.ca>

Wed 2/28, 10:38 AM

Thank you for the opportunity to comment on the proposed Calendar changes for field schools in the Department of Earth Sciences.

At its meeting on Wed. Feb. 21, the Committee on Undergraduate Studies for the Faculty of Engineering and Applied Science determined that the proposed changes have no impact on our programs.

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

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): EASC 2906 Geological Field Methods

- 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

EASC 2906 Geological Field Methods

REVISED COURSE NUMBER AND TITLE

N/A

ABBREVIATED COURSE TITLE

Field Methods

RATIONALE

Preamble: This course is a skills-focussed course delivered through field exercises, which introduces the students for the first time to the geology of the St. John's area. Bedrock geology in St. John's features nearly flat-lying and folded Proterozoic and Paleozoic sedimentary rocks as well as igneous volcanic and intrusive bodies. The skills learned through this course include field orienteering and navigation, field observation, identification and measurement of lithological units, geological structures, and recording of field data and sketches in notebooks and traverse maps, data analysis and synthesis of geological models and creation of geological maps, sections, and stratigraphic columns, basic structural and geophysical data analysis, and professional, integrated reporting of geological data and interpretations.

It is critical to emphasize that the cumulative subject matter of *field methods* requires multiple opportunities to learn and practice field skills through repetition and develop an integrated understanding of related concepts. This course will be delivered over the special session and the fall semester to allow for implementing and concretizing concepts over a longer time frame using multiple focused exercises. Students will be exposed to diverse rock types using applied field methods and they will receive feedback throughout the course with numerous deliverables in the form of weekly field reports thus, providing an opportunity to develop critical writing, thinking and synthesis skills that will be required in future courses.

This course replaces EASC 2905 because the newly developed EASC 2906 is pedagogically superior to EASC 2905, involves more credit hours (3) for students, and is much more physically accessible requiring only road-side walking (no multi-hour hikes).

CALENDAR CHANGES

~~EASC 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~~

EASC 2906 Geological Field Methods involves approximately seven field exercises and five indoor lab assignments that introduce students to the field study of surficial deposits, sedimentary and igneous rock types, and geological processes based on the geology of the Avalon Peninsula. This course will begin during a special session immediately preceding the fall semester and will be completed in the fall semester.

CR: EASC 2905

OR: field-based course

PR: EASC 1002 with a grade of at least 55%, and an application to the Head of the Department

CALENDAR ENTRY AFTER CHANGES

EASC 2906 Geological Field Methods involves approximately seven field exercises and five indoor lab assignments that introduce students to the field study of surficial deposits, sedimentary and igneous rock types, and geological processes based on the geology of the Avalon Peninsula. This course will begin during a special session immediately preceding the fall semester and will be completed in the fall semester.

CR: EASC 2905

OR: field-based course

PR: EASC 1002 with a grade of at least 55%, and an application to the Head of the Department

SECONDARY CALENDAR CHANGES

In the Memorial University St. John's campus university calendar under section 13.5 (Faculty of science, Earth Sciences), Earth Sciences course descriptions require updating. Any pre- or co-requisite (PR and CO) listed as EASC 2905 will now require

EASC 2906 (or the former EASC 2905). All instances of “EASC 2905” can be replaced with “EASC 2906 (or the former EASC 2905)”. Courses that are affected include EASC 2311, 2401, 3172, 3210, 3700, 3702, 3905, and 4912. The new credit restriction with EASC 2905 and 2906 needs to be added to the Credit Restriction Table (section 11.5.7). Below are the course calendar changes.

EASC 2311 Geoscience Communication

is an introduction to the fundamentals of preparation of written and oral geoscience reports, emphasizing organization, correct use of terminology, concise description, preparation of abstracts and introductions, integration of numerical data and publication-quality illustrations, and oral presentation skills. Topics for reports will be selected from the subject matter of other 2000 level Earth Sciences courses.

LC: 2

OR: tutorials three hours per week

PR: ~~Earth Sciences 2905~~ EASC 2906 (or the former EASC 2905) and 6 credit hours in English

EASC 2401 Structural Geology

provides an introduction to basic concepts; the physics of rock deformation, the classification and descriptive geometry of major and minor structures and their relationship to stress and strain. Laboratory work will concentrate on analysis of structural orientation data, and the analysis of structures in geological maps and cross-sections. Earth Sciences majors are advised to complete field course, EASC 3905, immediately following successful completion of this course.

CR: the former Geology 3120 or the former EASC 3120 or the former EASC 3400

LH: 3

PR: ~~Earth Sciences 2905~~ EASC 2906 (or the former EASC 2905) or (for students following a Minor in Earth Sciences) permission of the Head of the Department

EASC 3172 Environmental and Geotechnical Geophysics

is an introduction to geophysical methods used to investigate the shallow Earth, with particular application to environmental issues, including groundwater distribution and contaminant tracking, and delineation of buried infrastructure, artifacts, and waste materials. The laboratory component involves outdoor surveys, where students work in small teams using geophysical equipment, followed by analysis of collected data using modern software. Pertinent techniques will be covered, with an emphasis on electrical and electromagnetic methods.

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.

CO: ~~EASC 2905~~ EASC 2906 (or the former EASC 2905) or permission of the instructor for students not following a Major in Earth Sciences

LH: 3

PR: Physics 1051 (or 1021); Mathematics 1001; Mathematics 2000 or Statistics 2550; ~~EASC 2905~~ EASC 2906 (or the former EASC 2905) or permission of the instructor for students not following a Major in Earth Sciences; Science 1807 and Science 1808

EASC 3210 Economic Mineral Deposits

is an introduction to the study of mineral deposits and definition of the basic physio-chemical parameters of ore deposit formation. The course involves a systematic review of genetic models for the principal types of metallic mineral deposits, and links these models to a common theme of the relationship between lithosphere-hydrosphere-biosphere interactions and metallogeny. Laboratory exercises involve examination of representative suites of samples from different types of metallic mineral deposits and provide an introduction to the use of reflected light microscopy.

LH: 3

PR: EASC 2031, 2502 and 2906 (or the former 2905)

EASC 3700 Geomorphology

is a study of the relationships between geomorphic processes and landforms. Practical work will involve collection of data and samples in the field and analytical laboratory techniques.

EQ: Geography 3150

LH: 3

PR: ~~EASC 2905~~ EASC 2906 (or the former EASC 2905) or Geography 2102; Mathematics 1000

EASC 3702 Lithification, Diagenesis and Sedimentary Rock Properties

provides a conceptual and practical overview of the transformation of sediments into sedimentary rocks through compaction, cementation and mineral reactions, and the resultant modifications of rock composition, rock fabrics, and associated porous media characteristics (e.g. porosity). Both descriptive and analytical methods are integrated in laboratories that include carbonate and sandstone petrology (hand samples and thin sections), geological analysis of selected wireline logs, and the analysis of fluid reservoir properties.

LH: 3

PR: EASC 2031, 2702 and ~~2905~~ 2906 (or the former 2905)

EASC 3905 Field Methods in Structural Geology and Stratigraphy

is based on approximately 5 days of geological mapping in Precambrian rocks near St. John's. Emphasis is placed on application of techniques of structural analysis. Evenings will be dedicated to data analysis and preparation of structural maps and sections. Students are advised to complete this course immediately following EASC 2401. This course will be offered during a special session immediately following the examination period in a given semester.

AR: attendance for all of the field school days is required. Failure to attend may result in a failing grade or withdrawal from the course.

CH: 1

OR: field based course

PR: EASC 2401 and ~~2905~~2906 (or the former 2905) and an application to the Head of the Department

EASC 4912 Planetary Geology

is a classroom- and laboratory-based course that provides students with a basic knowledge of the geology of the Moon, Mars, asteroids and the moons of the satellites of the outer solar system; the petrology and geochemistry of meteorites and their importance to understanding the origin of the planets; impact cratering processes and rock products including those on Earth; and instrumentation for planetary exploration. The course combines lectures and laboratory exercises that examine data sets from planetary missions and specimens of extraterrestrial materials. Students learn how geological processes that have shaped Earth also have operated on other planets, moons and asteroids in our solar system.

PR: EASC 2031, 2702, ~~2905~~-2906 (or the former 2905), and 3420

11.5.7 Credit Restrictions for Present Earth Sciences (EASC) Courses with Former Courses

Credit Restrictions for Present Earth Sciences (EASC) Courses with Former Courses

Table

Present	Former Equivalent
EASC 2906	EASC 2905

Memorial University of Newfoundland Undergraduate Calendar Change Proposal Form Appendix Page

CONSULTATIONS SOUGHT

Department/Faculty/email	Reply
Science	
Ocean Sciences	Yes
HSS	Yes
Shannahan, Rachelle <rshannahan@mun.ca>	-
Collett, Meghan <mcollett@mun.ca>;	-
Engineering	Yes
Rohr, Linda <lerohr@mun.ca>;	-
Medicine	Yes
Music	Yes
Nursing	Yes
adeanugradswk <adeanugradswk@mun.ca>;	-
Library	
Academic Advising	
Furey, Edith <efurey@mun.ca>;	-
HKR	
Ashlee Cunsolo <ashlee.cunsolo@mun.ca>;	-
miugconsultations@mi.mun.ca;	-
Pharmacy	Yes
SSE Grenfell	
kjacobse@grenfell.mun.ca	-

LIBRARY REPORT

n/a

RESOURCE IMPLICATIONS

Field component and budget: In addition to the course's tuition, students will pay for travel costs as an additional participation fee; these resource commitments are identical to the course offering EASC 2905, which this course EASC 2906 is replacing. Transportation will be required for seven off-campus field trips during both the special session and the four-hour laboratory slot in the fall.

ADDITIONAL INFORMATION REQUIRED FOR NEW COURSE PROPOSALS

Course outline: 2906 Geological Field Methods

EASC 2906 Geological field methods involves seven field exercises and five indoor lab assignments that introduce students to the field study of surficial deposits, sedimentary and igneous rock types, and geological processes based on the geology of the Avalon Peninsula. This course will begin during a special session immediately preceding the fall semester and will be completed in the fall semester.

Learning Outcomes

- 1) Demonstrate that they can plan and conduct field investigations in a safe, ethical, socially, and environmentally responsible manner with scientific and academic integrity.
- 2) Demonstrate facility with basic field and lab techniques for reliable and meaningful measuring and characterizing of key geological parameters.
- 3) Categorize and compare the rocks in an area and be able to explain the variability of the characteristics of components in a natural system.
- 4) Demonstrate proficiency with basic principles of historical geology which they will be able to use to logically determine the sequence of geological events in an area.
- 5) Apply knowledge to solve geological problems with an incomplete or sparse data set in three dimensions.
- 6) Begin demonstrating spatial and temporal reasoning on all scales in real time during field work and during analysis of field data.
- 7) Select, analyze, synthesize, discuss (oral), and professionally report (written, visual) on geological data as presented on maps and cross-sections.
- 8) In groups and individually, critically evaluate geological data and related information from a variety of sources on specific topics in field geology, and report the results in a variety of formats.

Topics covered

The skills learned through this course include field orienteering and navigation, field observation, identification and measurement of lithological units, geological structures, and recording of field data and sketches in notebooks and traverse maps, data analysis and synthesis of geological models and creation of geological maps, sections, and stratigraphic columns, basic structural and geophysical data analysis, and professional, integrated reporting of geological data and interpretations.

Textbooks

- 1) Lab manual (provided by instructors)
- 2) Dictionary of Geological Terms: Third Edition

Instructors

This course could be led by numerous current Earth Sciences faculty with field experience. Given that Drs. Thiessen and Corlett have put in effort to create this course, they have agreed to deliver it in fall 2024.

Instruction method

A series of seven four-hour field excursions and three four-hour labs will be delivered for this course. Two field excursions will be delivered immediately before the regular fall semester begins.

Prerequisites

EASC 1002

Labs and Field trips

There will be a four-hour afternoon fieldtrip during the first five lab slots of the fall semester. Field stops and data collected on the field trip will be used in laboratory exercises. The remaining five weeks of term have indoor labs where the students transition from focussing on field observations, data collection, and preliminary analyses, to more advanced data analysis and synthesis of geological models.

Each field trip includes a deliverable such as submission of field notebooks, traverse maps, completed geological maps and sections, geology analysis, and stratigraphic sections. Developing skills in field data collection is emphasized such that students learn how to observe and record geological descriptions, basic structural measurements, and outcrop sketches, among other data types.

Example field excursions:

Field Trip 1 (Bacon Cove: 47° 29.183'N, 53° 10.029'W): Detailed field observations of Harbour Main volcanic rocks, Conception Gp siliciclastics and Cambrian angular unconformity. The primary focus is for students to engage with basic descriptive analysis of rock types and identification of primary geological structures.

Field Trip 2 (On-Campus): Initial learning of navigational field skills including pace and compass navigation and construction of a basic traverse map.

Field Trip 3 (Foxtrap: 47° 28.822'N, 53° 0.526'W): Rock identification, structural orientation measurements (plotting joints on Rose diagram), and age relationships of gently dipping Cambrian strata atop jointed Proterozoic granite. Students also make field sketches of intrusive phases in granite and get introduced to fossil identification in limestone. They will construct a stratigraphic column based on observations and plot rock type, contacts and structural measurements on a fully labeled map.

Field Trip 4 (Skerries Path: 47° 33.802'N, 52° 40.868'W): Scanline mapping of a coarsening upwards stratigraphic section in St. John's Gp. and Signal Hill Gp. siliciclastics.

Field Trip 5 (Marine Park: 47° 44.249'N, 52° 48.935'W): Scanline mapping of felsic intrusive phases and various felsic and mafic volcanic rocks with pristine primary volcanic structures.

Field Trip 6 (Flatrock: 47° 42.427'N, 52° 42.443'W): Construction of a properly measured stratigraphic section with easily identifiable bedforms. .

Field Trip 7 (Airport Heights: 47° 36.689'N, 52° 45.429'W): Identification and interpretation of surficial deposits (sediment type, facies analysis, ice flow direction) in the St. John's area.

Lectures

Two hours of lectures will occur each week that complement the lab exercises. The lectures include topics on geological processes, geological materials, relative ages of rock units, geological models and reporting, economic geology, and a variety of guest lectures from faculty and graduate students in the department to introduce students to the various applications of geological field methods. A summative group project uses field data collected by students around the St. John's area to create their own geological maps and sections and report on their interpretation of the geology, geological history, and stratigraphy of the St. John's area.

Method of Evaluation & Assessment

(45% Lab Work); (10% Oral Exam); (25% Term paper [individual]); (term presentation 20%)

Consultation email list

Dean of Science <deansci@mun.ca>;

Faculty of Humanities and Social Sciences <hss@mun.ca>;

Shannahan, Rachelle <rshannahan@mun.ca>;

Collett, Meghan <mcollett@mun.ca>;

Engineering Consult' <enrconsult@mun.ca>;

Rohr, Linda <lerohr@mun.ca>;

deanofmedicine@med.mun.ca;

School of Music <Music@mun.ca>;

DeanNurse <DeanNurse@mun.ca>;

adeanugradswk <adeanugradswk@mun.ca>;

Library Correspondence <univlib@mun.ca>;

Academic Advising Centre <advice@mun.ca>;

Furey, Edith <efurey@mun.ca>;

HKR Dean <hkrdean@mun.ca>;

Ashlee Cunsolo <ashlee.cunsolo@mun.ca>;

miugconsultations@mi.mun.ca;

pharminfo@mun.ca;

Dean - School of Science and the Environment <ssedean@grenfell.mun.ca>;

kjacobse@grenfell.mun.ca

Consultation request for a new Earth Sciences Course EASC 2906 Geological Field Methods

Morrill, Penny L

Engineering Consult <enrconsult@mun.ca>

Nov. 15, 2023

Dear Dr. Glyn George,

Thank you for noticing our deviation of word count from the guidelines. We have fixed this.

Cheers,

Penny

DeanNurse

Mon 11/6, 10:07 AM Morrill, Penny L

Good morning,

Dr. Pike, our interim dean at the Faculty of Nursing, tells me that she has no concerns or comments regarding this consultation request.

Thank you for your time,

Jane

Dold, Patricia

Fri 11/3, 4:04 PM Morrill, Penny L

HSS appreciates efforts to make courses more accessible. A good example here.

Patricia Dold (she/her)

Associate Professor, Religious Studies

Associate Dean, Curriculum and Programs

Humanities and Social Sciences

Memorial University

Consultation request for a new Earth Sciences Course EASC 2906 Geological Field Methods

medvicedean

Wed 11/8, 4:32 PM

Hi Penny,

On behalf of the Faculty of Medicine, there are no concerns with the proposed course. All the best with the new course.

Thanks, Danielle

DANIELLE O'KEEFE MD CCFP FCFP MSc | VICE DEAN, EDUCATION AND FACULTY AFFAIRS

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

Consultation request for a new Earth Sciences Course EASC 2906 Geological Field Methods

Morrill, Penny L

Penney, Shelli <shellip@grenfell.mun.ca>

Dear Shelli Penney,

Thank you for your email. Please send comments to me at pmorrill@mun.ca. I don't know the actual deadline for these, but any time in the next two weeks would be great.

Cheers,

Penny

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

From: Engineering Consult <enrconsult@mun.ca>

Sent: Friday, November 3, 2023 11:18 AM

To: Morrill, Penny L <pmorrill@mun.ca>; Dean of Science <deansci@mun.ca>

Cc: George, Glyn <glyn@mun.ca>; Edmunds, Jayde <edmundsj@mun.ca>; Qiu, Wei <qiuw@mun.ca>

Subject: Re: Consultation request for a new Earth Sciences Course EASC 2906 Geological Field Methods

Thank you for the opportunity to comment on the proposed Calendar change to replace EASC 2905 by EASC 2906 "Geological Field Methods". As Chair of Engineering's Committee on Undergraduate Studies, I can state that this change will have no impact on our programs.

However, I note that your proposed Calendar entry, at 82 words, exceeds the limit 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

Iain J Mcgaw <ijmcgaw@mun.ca>

Yesterday, 9:46 PM

This looks like an interesting course. Students seem to benefit more from doing field trips. All field trips look accessible to students and are based in the local area

--

Professor

Department of Ocean Sciences

0 Marine Lab Road
 Memorial University
 St John's, NL
 Canada
 A1C 5S7
 Tel: 709 864-3272
 Fax: 709 864-3220

McGrath, Gerona

Yesterday, 3:01 PM

Thank you for the opportunity to review the new Earth Sciences Courses 2906. There is no impact on the School of Pharmacy as a result of the change. Best of luck with the implementation of the new course.

Gerona

Gerona McGrath MBA, M.Ed.

Manager of Academic Programs
 School of Pharmacy

Memorial University of Newfoundland

3435 Health Sciences Centre
 St. John's, NL A1B 3V6 Canada

709-864-2013

Penney, Shelli <shellip@grenfell.mun.ca>

Yesterday, 2:08 PM

Hello Penny,

I received the attached calendar change proposal from Dr. Jacobsen.

I'm wondering whom feedback should be sent to and by what date?

Thank you,

Shellie Penney | Decanal Assistant for the School of Arts and Social Science (Grenfell Campus)

Memorial University of Newfoundland

Corner Brook, NL A2H 6P9

Phone: (709) 637-6202

Email: shellip@grenfell.mun.ca

Office No: AS303

Dean of Science

Yesterday, 2:04 PM

School of Music

Yesterday, 1:59 PM

Hello Penny,

Thank you for the opportunity to review this calendar change proposal. The School of Music has no feedback.

Cheers,

Annie

ANNIE CORRIGAN (she/her)

Academic Program Administrator

Adjunct Professor of Oboe

School of Music, Memorial University of Newfoundland and Labrador

St. John's, NL A1C 5S7

<https://www.mun.ca/music/>

@musicatmemorial

Hours: Monday through Friday, 9:00am-3:00pm (NST)

DeanofMedicine@med.mun.ca

Yesterday, 1:53 PM

PLEASE READ THE IMPORTANT MESSAGE BELOW: Please note that this email has changed and is no longer being monitored. To reach Dr. Dolores McKeen, Dean, Faculty of Medicine at Memorial University, please redirect your email to DeanOfMedicine@mun.ca Thank you.

Morrill, Penny L

Dean of Science;Faculty of Humanities and Social Sciences;Shannahan, Rachelle;Collett, Meghan;Engineering Consult' <engrconsult@mun.ca>;Rohr, Linda;DeanofMedicine@med.mun.ca;School of Music;DeanNurse;adeanugradswk;Library Correspondence;Academic Advising Centre;Furey, Edith;HKR Dean;Ashlee Cunsolo;miugconsultations@mi.mun.ca;pharminfo@mun.ca;Dean - School of Science and the Environment <ssedean@grenfell.mun.ca>;kjacobse@grenfell.mun.ca

Nov. 2, 2023

Hello All,

I have attached a new course proposal for the Earth Sciences Department (EASC 2906 Geological Field Methods). In short, we are proposing a new 2nd year field school course to replace our current field school. This course replaces EASC 2905. It involves more credit hours (3) for students, and is much more physically accessible requiring only road-side walking (no multi-hour hikes).

Cheers,

Penny

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Penny Morrill, Ph.D. (Pronouns: She/her)

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I acknowledge that the lands on which Memorial University's campuses are situated are in the traditional territories of diverse Indigenous groups, and acknowledge with respect the diverse histories and cultures of the Beothuk, Mi'kmaq, Innu, and Inuit of this province.

Computer Science – Calendar Changes (Master of Science)
Summary
2024-04-16

There are three major changes (the rest is rearranging/renumbering, removing unenforceable regulations and a clean-up):

- **Program Requirements**
 - Research Forum participation and thesis proposal seminar for the Thesis Route are no longer required.
 - **Rationale:** Participation difficult to track. Confusion, if a talk given during Research Forum counts as a proposal or exit seminar. The date of the Research Forum seldom aligns with the proposal or thesis completion.
 - Thesis Route students will be required to present seminars in the COMP 690A/B course (Research Methods in Computer Science).
 - **Rationale:** Students are still required to present seminar talks. Tracking much simpler, as the seminar is now a required part of COMP 690A/B (which is a core course in the thesis route).
 - COMP 6999 (Master's Project) is no more required in the Course-based Route.
 - **Rationale:** We are repeatedly not able to secure supervisors for the project and waive the requirement. In such cases students must take one additional COMP course.
- **Consistent regulation regarding program termination** due to grade below 65% for all programs offered in the Computer Science Department
 - **Rationale:** Currently we have 3 different rules for students enrolled in programs offered by the CS department. The change makes the termination rule identical for all programs (MSc thesis, MSc course and MAI)
- **Removing the Work-Term Route**
 - **Rationale:** Simplifying our program offering (only research- and course-based routes). Currently we are not allowing direct entry into work-term route. Later changes to route cause administrative overhead. Students are confused about rules and regulations which apply to them (30 CR vs 24 CR, specific courses in the work-term route). Under new rules, all course-based students require 30 CR. Students will still have the option to take work-term(s) (COMP 611W and COMP 612W), which will carry 3 CR each.

32.9 Computer Science

32.9.1 Admission Requirements

Admission into a ~~Master's~~ Master of Science program in Computer Science is restricted to students holding at least a Bachelor degree (major in Computer Science or Computer Engineering) with a minimum average of 75% overall, and/or an Upper ~~S~~second Class ~~Upper~~ or higher standing. When circumstances warrant, this requirement may be waived on the recommendation of the Head of the Department. Applicants should also refer to the [Qualifications for Admission](#) given under the [Regulations Governing the Degree of Master of Science](#) within the School of Graduate Studies section of the current Calendar. International applicants are strongly encouraged to submit results of the (general) Graduate Record Examination (GRE) test. Applicants may apply ~~initially~~ for [Option 1](#) or [Option 2](#) ~~only; students may apply for Option 3 toward the end of their first semester of study.~~

32.9.2 Programs

32.9.2.1 Option 1 - Thesis Route

1. Students are required to complete a minimum of 15 credit hours in graduate program courses, 9 credit hours which are Computer Science courses as follows: COMP 690A/B and 6 additional credit hours in Computer Science (excluding ~~COMP 601W~~ [COMP 611W](#), [COMP 612W](#) ~~and~~, [COMP 6999](#) ~~and~~ [COMP 7000](#)).
2. Full-time students are expected to complete their course work within their first year of studies. Part-time students are expected to complete their course work by the end of the seventh semester in their program.

~~3. Students must participate in the Research Forum at least once during their program. The Student Research Forum is organized by the Department of Computer Science and takes place each academic year.~~

~~4.3. Each student is required to submit an acceptable thesis. The thesis project may involve a theoretical investigation and/or the development of an original, practical system. Each student is required to present a tentative outline of the student's proposed research to the Supervisor, with a copy to the Department Committee on Graduate Studies, by the end of the student's third semester in the program (sixth semester for part-time students). A fifteen minute oral presentation of the proposal is to be scheduled and given within four weeks of the submission date.~~

~~5. Within 2 weeks of Prior to submission of a thesis, normally in the last semester of the program, students are required to present a seminar on the thesis topic, methods employed, and research results.~~

~~4.~~

32.9.2.2 Option 2 - Course-based Route

~~1. Students are required to complete a minimum of 30 credit hours in graduate program courses, of which at least 21 credit hours must be in Computer Science, whereas the remaining 9 could be Computer Science courses, other courses related to computer science and included in the list of Computer Science approved elective courses maintained by the [Graduate Studies Committee](#), or other courses previously approved by the Graduate Studies Committee, or its Chair.~~

~~2. Within the 30 credit hours requirement, students must take COMP 6999 (Master's Project).~~

~~3. Prior to graduation and as part of successfully completing COMP 6999, students are required to present a seminar on their project.~~

~~32.9.2.3 Option 3 – Work Term Route~~

~~The work term route provides an opportunity for graduate computer science students to learn valuable practical skills while working in fields related to computer science. Students complete a full-time, paid work term (COMP 601W) of four or eight months with a single employer as an essential component of their academic program. There is no direct entry into this program. Students may apply for admission into Option 3-Work Term Route towards the end of their first semester in Option 1—Thesis Route or Option 2—Course-based Route.~~

~~1. Admission Requirements~~

- ~~a. Admission to the work term route is limited, competitive, and selective.~~
- ~~b. The primary criteria used in reaching decisions on applications for admission is academic performance, relevant experience and motivation. Students may be required to participate in an interview as part of the selection process.~~
- ~~c. Applications are accepted each semester, approximately 4-5 months in advance of start of the work term. Students are informed of application deadlines by the Department of Computer Science.~~
- ~~d. Students must have completed 12 credit hours of program courses prior to the start of the work term. Students must have at least one required course remaining after the work term.~~

~~2. Program of Study~~

- ~~a. Students are required to complete a minimum of 24 credit hours in graduate program courses, of which at least 18 credit hours must be in Computer Science, whereas the remaining 6 should be either in Computer Science, related to computer science and included in the list of elective courses maintained by the Graduate Studies Committee, or previously approved by the Graduate Studies Committee, or its Chair.~~
- ~~b. Within this credit requirement, a student must take the following courses:
 - ~~i. COMP 6999 (Master's Project)~~
 - ~~ii. One course in Software Engineering (COMP 6905)~~
 - ~~iii. One course in Algorithms (COMP 6901, COMP 6902, or COMP 6980)~~~~
- ~~c. Additionally, students are required to complete one co-operative education work term (COMP 601W). The work term is a full-time, four- or eight- months duration paid work experience with one employer.~~
- ~~d. The work term job search takes place throughout the semester prior to the start of the intended work term. Students who are not successful in securing a work term job in their first search semester may continue their search for up to two additional semesters.~~
- ~~e. Prior to graduation and as part of successfully completing COMP 6999 (Master's Project), students are required to present a seminar on their project.~~

~~3. Work Term~~

- ~~a. Students will conduct job searches with an Academic Staff Member in Co-operative Education in cooperation with the Department of Computer Science. It is the student's responsibility to seek and obtain a work term placement and to communicate with all parties both within the University and beyond in a professional manner. While the student's job search is supported by the Academic Staff Member in Co-operative Education, it is the student's responsibility to secure a work term placement. Work term placements are not guaranteed. Work term placements obtained outside the job competition must be confirmed by letter from the employer and approved by an Academic Staff Member in Co-operative Education on or before the first day of the work term.~~
- ~~b. Work terms start in January, May and September; the start and end dates are available at www.mun.ca/coop.~~
- ~~c. Each work term placement will be supervised by the student's on-site workplace supervisor and the Academic Staff Member in Co-operative Education. The overall evaluation of the work term is the responsibility of the Academic Staff Member in Co-operative Education. The work term shall consist of two components:
 - ~~i. On-the-job Student Performance as evaluated by the workplace supervisor and the Academic Staff Member in Co-operative Education.~~
 - ~~ii. Assignment(s) graded by the Academic Staff Member in Co-operative Education.~~~~

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32.9.3 Other Regulations

- ~~1. Students from either Option 1 - Thesis Route or Option 2 - Course-based Route may request to transfer to a different route once during their~~

~~studies, after completing 4 courses (12 credit hours) in their original program upon admission to the School of Graduate Studies at this University.~~

~~All students are expected to take an active part in seminars and other aspects of the academic life of the Department of Computer Science.~~

32.9.3.1 Degree Completion

1. Full-time students are expected to complete all program requirements in two years. Part-time students are expected to complete all program requirements in four years. Each work-term extends these periods by one semester.
2. Students must obtain a grade of at least 65% in all program courses to receive credit for the course towards their program requirements. Any student who fails to receive 65% or more in a course must repeat the course in the case of core courses or must either repeat or replace the course with another program course in the case of elective courses. Any student who receives a grade of less than 65% in two courses or in a repeated course will be required to withdraw from the program.
3. Students taking COMP 690A/690B are required to present one seminar in each of these two courses to obtain course credit.

32.9.3.2 Route Change

1. Students from either Option 1 - Thesis Route or Option 2 - Course-based Route may request to transfer to a different route once during their studies, after completing 4 courses (12 credit hours) in their original program upon admission to the School of Graduate Studies at this University.

32.9.3.3 Admission to the Co-operative Education Work Term Courses

1. The work term courses (COMP 611W and COMP 612W) provide course-based students with a work-integrated learning opportunity to develop practical skills and to earn three credit hours toward their degree requirements for each of these courses.
2. Students can complete one full-time continuous paid work term with a single employer for four months (COMP 611W) or eight months (COMP 611W and COMP 612W).
3. Admission to the work term courses is limited, competitive and selective. Students are informed of application procedures and deadlines by the Department of Computer Science.
4. The primary criteria used in reaching decisions on applications for admission is academic performance in Memorial University graduate courses, relevant experience and motivation. Students may be required to participate in an interview as part of the selection process.
5. Students must have completed 12 credit hours of program courses prior to the start of the work term. Students must have 3 credit hours of program courses remaining after the work term.
6. The work term search takes place throughout the semester prior to the start of the intended work term.
7. Students are ultimately responsible for securing the work term and placement is not guaranteed. Academic Staff Member(s) in Co-operative Education provide support for the job search and inform students of potential job opportunities.
8. COMP 611W and COMP 612W will be supervised by the student's workplace supervisor and an Academic Staff Member in Co-operative Education, who is also responsible for overall evaluation.

2.——

- ~~3. Unless the work-term takes longer than one term, full-time students are expected to complete all program requirements in two years. Part-time students are expected to complete all program requirements in four years.~~
- ~~4. Students must obtain a grade of at least 65% in all program courses to receive credit for the course towards their program requirements. For the thesis route, the General Regulations for Evaluation of Graduate Students of the University Calendar applies. For non-thesis routes, any student who fails to receive 65% or more in a course must repeat the course in the case of required courses or must either repeat or replace the course with another program course in the case of other courses. Only two such repetitions/replacements shall be permitted in the student's program. Should a grade of less than 65% be obtained in a repeated or replacement course, the student shall be required to withdraw from the program.~~

32.9.4 Courses

A selection of the following graduate courses will be offered to meet the requirements of students, 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.

- 6101W Work Term I
- 612W Work Term II
- 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 Data Mining Techniques and Methodologies (*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 (*credit may be obtained for only one of 6726 and 6926*)
- 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 be obtained for only one of 6931, 6732, and CMSC 6910*) (*cross-listed with CMSC 6910*)
- 6932 Matrix Computations in Control (*credit may be obtained for only one of 6932 or 6738*)
- 6933 Nonlinear and Linear Optimization (*cross-listed with Mathematics 6202*)

- 6934 Introduction to Data Visualization (*credit may be obtained for only one of 6934 or 6774*)
- 6980-6998 Special Topics in Computer Science (*excluding 6982 and 6983*)
- 6982 Computer Vision (*credit may be obtained for only one of 4301, 6982, ECE 8410, and ENGI 9805*)
- 6983 Advanced Interaction techniques
- 6999 Master's Project I
- 7000 Master's Project II

32.9 Computer Science

32.9.1 Admission Requirements

Admission into a Master of Science program in Computer Science is restricted to students holding at least a Bachelor degree (major in Computer Science or Computer Engineering) with a minimum average of 75% overall, and/or an Upper Second Class or higher standing. When circumstances warrant, this requirement may be waived on the recommendation of the Head of the Department. Applicants should also refer to the [Qualifications for Admission](#) given under the [Regulations Governing the Degree of Master of Science](#) within the School of Graduate Studies section of the current Calendar. International applicants are strongly encouraged to submit results of the (general) Graduate Record Examination (GRE) test. Applicants may apply for [Option 1](#) or [Option 2](#).

32.9.2 Programs

32.9.2.1 Option 1 - Thesis Route

1. Students are required to complete a minimum of 15 credit hours in graduate program courses, 9 credit hours which are Computer Science courses as follows: COMP 690A/B and 6 additional credit hours in Computer Science (excluding COMP 611W, COMP 612W, COMP 6999 and COMP 7000).
2. Full-time students are expected to complete their course work within their first year of studies. Part-time students are expected to complete their course work by the end of the seventh semester in their program.
3. Each student is required to submit an acceptable thesis. The thesis project may involve a theoretical investigation and/or the development of an original, practical system. Each student is required to present a tentative outline of the student's proposed research to the Supervisor,

with a copy to the Department Committee on Graduate Studies, by the end of the student's third semester in the program (sixth semester for part-time students).

4. Within 2 weeks of submission of a thesis students are required to present a seminar on the thesis topic, methods employed, and research results.

32.9.2.2 Option 2 - Course-based Route

1. Students are required to complete a minimum of 30 credit hours in graduate program courses, of which at least 21 credit hours must be in Computer Science, whereas the remaining 9 could be Computer Science courses, other courses related to computer science and included in the list of Computer Science approved elective courses maintained by the [Graduate Studies Committee](#), or other courses previously approved by the Graduate Studies Committee, or its Chair.

32.9.3 Other Regulations

32.9.3.1 Degree Completion

1. Full-time students are expected to complete all program requirements in two years. Part-time students are expected to complete all program requirements in four years. Each work-term extends these periods by one semester.
2. Students must obtain a grade of at least 65% in all program courses to receive credit for the course towards their program requirements. Any student who fails to receive 65% or more in a course must repeat the course in the case of core courses or must either repeat or replace the course with another program course in the case of elective courses. Any student who receives a grade of less than 65% in two courses or in a repeated course will be required to withdraw from the program.

3. Students taking COMP 690A/690B are required to present one seminar in each of these two courses to obtain course credit.

32.9.3.2 Route Change

1. Students from either [Option 1 - Thesis Route](#) or [Option 2 - Course-based Route](#) may request to transfer to a different route once during their studies, after completing 4 courses (12 credit hours) in their original program upon admission to the School of Graduate Studies at this University.

32.9.3.3 Admission to the Co-operative Education Work Term Courses

1. The work term courses (COMP 611W and COMP 612W) provide course-based students with a work-integrated learning opportunity to develop practical skills and to earn three credit hours toward their degree requirements for each of these courses.
2. Students can complete one full-time continuous paid work term with a single employer for four months (COMP 611W) or eight months (COMP 611W and COMP 612W).
3. Admission to the work term courses is limited, competitive and selective. Students are informed of application procedures and deadlines by the Department of Computer Science.
4. The primary criteria used in reaching decisions on applications for admission is academic performance in Memorial University graduate courses, relevant experience and motivation. Students may be required to participate in an interview as part of the selection process.
5. Students must have completed 12 credit hours of program courses prior to the start of the work term. Students must have 3 credit hours of program courses remaining after the work term.

6. The work term search takes place throughout the semester prior to the start of the intended work term.
7. Students are ultimately responsible for securing the work term and placement is not guaranteed. Academic Staff Member(s) in Co-operative Education provide support for the job search and inform students of potential job opportunities.
8. COMP 611W and COMP 612W will be supervised by the student's workplace supervisor and an Academic Staff Member in Co-operative Education, who is also responsible for overall evaluation.

32.9.4 Courses

A selection of the following graduate courses will be offered to meet the requirements of students, 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.

- 611W Work Term I
- 612W Work Term II
- 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 Data Mining Techniques and Methodologies (*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
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- 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*)
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- 6924 Formal Grammars, Automata and Languages
- 6925 Advanced Operating Systems
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- 6932 Matrix Computations in Control (*credit may be obtained for only one of 6932 or 6738*)
- 6933 Nonlinear and Linear Optimization (*cross-listed with Mathematics 6202*)
- 6934 Introduction to Data Visualization (*credit may be obtained for only one of 6934 or 6774*)
- 6980-6998 Special Topics in Computer Science (*excluding 6982 and 6983*)
- 6982 Computer Vision (*credit may be obtained for only one of 4301, 6982, ECE 8410, and ENGI 9805*)

- 6983 Advanced Interaction techniques
- 6999 Master's Project I
- 7000 Master's Project II



Request for Approval of a Graduate Course

SCHOOL OF GRADUATE STUDIES

Adobe Reader, minimum version 8, is required to complete this form. Download the latest version: <http://get.adobe.com/reader>. (1) Save the form by clicking on the diskette icon on the upper left side of the screen; (2) Ensure that you are saving the file in PDF format; (3) Specify where you would like to save the file, e.g. Desktop; (4) 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.: COMP 611W

Course Title: Work Term I

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) Work-term

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 CR

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

See attached outline

G. Method of evaluation:	Percentage	
	Written	Oral
Class tests		
Assignments	See attached outline	
Other (specify):		
Final examination:		
Total		

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

Course instructor

Adrian Fiech

Digitally signed by Adrian Fiech
Date: 2024.04.16 20:11:01
+02'00'

Date

Approval of the head of the academic unit

Date

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

Secretary, Faculty/School/Council

Date

Computer Science 611W Work Term I

Course Outline

General Information	
Course Number/Name	COMP 611W Work Term I
Course Instructors	Academic Staff Members in Co-operative Education (ASM-CE)
Course Description	<p>Computer Science 611W Work Term I is a full-time, paid work-integrated learning opportunity related to the discipline of computer science that is of 4 months in duration.</p> <p>Credit hours: 3 Lecture hours per week: 0</p> <p>Pre-requisites: 12 credit hours in program of study</p> <p><i>A work term requires the same level of commitment as an academic course. Students are expected to approach the work term in a serious manner and take advantage of all opportunities for personal and professional learning.</i></p>
Course Objectives	<p>Through this course students will:</p> <ul style="list-style-type: none"> • develop an understanding of critical reflection¹ . • set learning objectives appropriate to the workplace and the level of study. • learn, develop and practice high standards of professional behavior and performance in the workplace. • observe, apply, analyze and/or evaluate concepts from courses and/or labs in the workplace. • connect theory to experience. • further their understanding of principles of computer science. • critically reflect on the processes and results of their work term
Expectations	<p>Students are expected to:</p> <ul style="list-style-type: none"> • submit all required documentation to the co-op office. • maintain regular communication with the co-op office through @mun.ca email, telephone and/or in-person. • respond promptly (within 24 hours) to email notices sent from the co-op office.

¹ Critical reflection focused on well-articulated learning objectives is an effective method for students to understand and document learning in an applied setting. Critical reflection generates and deepens learning by articulating questions, acknowledging bias, examining cause and effect, contrasting theory with practice and challenging assumptions. It is an examination of how your experience impacts your ways of thinking and understanding.

	<ul style="list-style-type: none"> • behave professionally and in a manner that ensures continued employment and enhances opportunities for future employment. • abide by the deadlines established by the co-op office.
Required Readings	There are no required readings for this course.
Resources	All resources for this course, work term forms, assignment guidelines and other relevant information, are available via Brightspace.
Method of Evaluation	<p>Students will receive a mark for COMP 611W at the end of the work term.</p> <p>Students are evaluated on two components: a series of written assignments and on-the-job performance.</p> <p>Component 1: Assignments</p> <ul style="list-style-type: none"> • Assignments must be completed according to the description and schedule provided in the Assignment Guidelines (Brightspace). • Assignments will be evaluated by an Academic Staff Member in Co-operative Education (ASM-CE). • Each assignment is evaluated based on four criteria: <ul style="list-style-type: none"> ○ fulfilling the brief (3 points) ○ clarity of expression (3 points) ○ reflection and thoughtfulness (3 points) ○ meeting the submission deadline (1 point) for a total of a maximum of 10 points per assignment. A detailed evaluation rubric for the assignments can be found in the guidelines. • Assignments are marked on a scale of <ul style="list-style-type: none"> ○ PWD (pass with distinction) [9-10 points] ○ PASS [5-8] ○ FAIL [<5] • A single overall grade of PWD, PASS or FAIL will be assigned for <u>all assignments collectively</u> at the end of the work term. <ul style="list-style-type: none"> ○ A grade of PWD will be awarded if at least half of the graded assignments are graded as PWD and the other half are graded as PASS. ○ A grade of PASS will be awarded if at least three-quarters of the graded assignments are graded as PASS. ○ A grade of FAIL will be awarded if more than a quarter of the graded assignments receive a grade of FAIL.

	<p>Component 2: On-the-job Student Performance</p> <ul style="list-style-type: none"> • Student on-the-job performance is assessed by the ASM-CE using information gathered during the work term and formal written input from the employer. • Evaluation of the job performance will result in one of the following classifications: PWD, PASS or FAIL. <p>Overall evaluation</p> <ul style="list-style-type: none"> • Overall evaluation of the work term will result in one of the following final grades on the transcript: <ul style="list-style-type: none"> ○ An overall grade of PWD (pass with distinction) means that the student has received a PWD on both the job performance and the assignments (i.e., PWD/PWD). ○ An overall grade of PASS means that the student has received at least a grade of PASS on one or both the job performance and the assignments (i.e., PASS/PASS or PWD/PASS). ○ FAIL means that the student has received a grade of FAIL on either or both the job performance and the assignments (i.e. PASS/FAIL or PWD/FAIL).
Work Term Policies and Procedures²	
Workplace Disruption	In the case of a work term disruption for reasons unrelated to student performance, students are advised to communicate immediately with the co-op office. We will work with your supervisor to determine next steps.
Workplace Policies	Students are responsible for understanding the policies of their employer and for acting in accordance with those policies. You must abide by company/organization rules and regulations, particularly with respect to safety, work habits and work hours.
Problems on the Job	If you encounter difficulties during your work term, you should initially try to solve the problem in consultation with your employer. If these difficulties cannot be resolved, then you should contact the co-op office for advice.
Labour Disputes and Other Work Disruptions	In the event of a labour dispute or other work disruption please contact the co-op office.
Harassment	If you experience any form of harassment at work, please contact the co-op office immediately to discuss the issue and a course of action.

² See Brightspace for in-depth information on policies and procedures for co-op students.

Quitting a Job	University regulations state that a student quitting a job without permission from the co-op office normally fails the work term (see Memorial University calendar)
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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.: COMP 612W

Course Title: Work Term 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) **Work-term**

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 CR

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

See attached outline

G. Method of evaluation:	Percentage	
	Written	Oral
Class tests		
Assignments	See attached outline	
Other (specify):		
Final examination:		
Total		

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

Course instructor

Adrian Fiech

Digitally signed by Adrian Fiech
Date: 2024.04.16 20:11:48
+02'00'

Date

Approval of the head of the academic unit

Date

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

Secretary, Faculty/School/Council

Date

Computer Science 612W Work Term II

Course Outline

General Information	
Course Number/Name	COMP 612W Work Term II
Course Instructors	Academic Staff Members in Co-operative Education (ASM-CE)
Course Description	<p>Computer Science 612W Work Term II is a full-time, paid work-integrated learning opportunity related to the discipline of computer science that is of 4 months in duration.</p> <p>Credit hours: 3 Lecture hours per week: 0</p> <p>Pre-requisites: COMP 611W</p> <p><i>A work term requires the same level of commitment as an academic course. Students are expected to approach the work term in a serious manner and take advantage of all opportunities for personal and professional learning.</i></p>
Course Objectives	<p>Through this course students will:</p> <ul style="list-style-type: none"> • develop an understanding of critical reflection¹ . • set learning objectives appropriate to the workplace and the level of study. • learn, develop and practice high standards of professional behavior and performance in the workplace. • observe, apply, analyze and/or evaluate concepts from courses and/or labs in the workplace. • connect theory to experience. • further their understanding of principles of computer science. • critically reflect on the processes and results of their work term
Expectations	<p>Students are expected to:</p> <ul style="list-style-type: none"> • submit all required documentation to the co-op office. • maintain regular communication with the co-op office through @mun.ca email, telephone and/or in-person. • respond promptly (within 24 hours) to email notices sent from the co-op office.

¹ Critical reflection focused on well-articulated learning objectives is an effective method for students to understand and document learning in an applied setting. Critical reflection generates and deepens learning by articulating questions, acknowledging bias, examining cause and effect, contrasting theory with practice and challenging assumptions. It is an examination of how your experience impacts your ways of thinking and understanding.

	<ul style="list-style-type: none"> • behave professionally and in a manner that ensures continued employment and enhances opportunities for future employment. • abide by the deadlines established by the co-op office.
Required Readings	There are no required readings for this course.
Resources	All resources for this course, work term forms, assignment guidelines and other relevant information, are available via Brightspace.
Method of Evaluation	<p>Students will receive a mark for COMP 612W at the end of the work term.</p> <p>Students are evaluated on two components: a series of written assignments and on-the-job performance.</p> <p>Component 1: Assignments</p> <ul style="list-style-type: none"> • Assignments must be completed according to the description and schedule provided in the Assignment Guidelines (Brightspace). • Assignments will be evaluated by an Academic Staff Member in Co-operative Education (ASM-CE). • Each assignment is evaluated based on four criteria: <ul style="list-style-type: none"> ○ fulfilling the brief (3 points) ○ clarity of expression (3 points) ○ reflection and thoughtfulness (3 points) ○ meeting the submission deadline (1 point) for a total of a maximum of 10 points per assignment. A detailed evaluation rubric for the assignments can be found in the guidelines. • Assignments are marked on a scale of <ul style="list-style-type: none"> ○ PWD (pass with distinction) [9-10 points] ○ PASS [5-8] ○ FAIL [<5] • A single overall grade of PWD, PASS or FAIL will be assigned for <u>all assignments collectively</u> at the end of the work term. <ul style="list-style-type: none"> ○ A grade of PWD will be awarded if at least half of the graded assignments are graded as PWD and the other half are graded as PASS. ○ A grade of PASS will be awarded if at least three-quarters of the graded assignments are graded as PASS. ○ A grade of FAIL will be awarded if more than a quarter of the graded assignments receive a grade of FAIL.

	<p>Component 2: On-the-job Student Performance</p> <ul style="list-style-type: none"> • Student on-the-job performance is assessed by the ASM-CE using information gathered during the work term and formal written input from the employer. • Evaluation of the job performance will result in one of the following classifications: PWD, PASS or FAIL. <p>Overall evaluation</p> <ul style="list-style-type: none"> • Overall evaluation of the work term will result in one of the following final grades on the transcript: <ul style="list-style-type: none"> ○ An overall grade of PWD (pass with distinction) means that the student has received a PWD on both the job performance and the assignments (i.e., PWD/PWD). ○ An overall grade of PASS means that the student has received at least a grade of PASS on one or both the job performance and the assignments (i.e., PASS/PASS or PWD/PASS). ○ FAIL means that the student has received a grade of FAIL on either or both the job performance and the assignments (i.e. PASS/FAIL or PWD/FAIL).
Work Term Policies and Procedures²	
Workplace Disruption	In the case of a work term disruption for reasons unrelated to student performance, students are advised to communicate immediately with the co-op office. We will work with your supervisor to determine next steps.
Workplace Policies	Students are responsible for understanding the policies of their employer and for acting in accordance with those policies. You must abide by company/organization rules and regulations, particularly with respect to safety, work habits and work hours.
Problems on the Job	If you encounter difficulties during your work term, you should initially try to solve the problem in consultation with your employer. If these difficulties cannot be resolved, then you should contact the co-op office for advice.
Labour Disputes and Other Work Disruptions	In the event of a labour dispute or other work disruption please contact the co-op office.
Harassment	If you experience any form of harassment at work, please contact the co-op office immediately to discuss the issue and a course of action.

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