

**GRADUATE STUDIES AND
POSTDOCTORAL FELLOWS**

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MEMORANDUM

ATTENTION Senate
FROM Wade Parkhouse, Chair of Senate
Graduate Studies Committee (SGSC)
RE: Faculty of Science

DATE December 9, 2015
No. GS2015.45 & 48

A handwritten signature in blue ink, appearing to read 'W Parkhouse', is written over the 'No.' field of the memorandum.

For information:

Acting under delegated authority at its meeting of December 7, 2015, SGSC approved the following curriculum revisions:

Department of Earth Science

Course reinstatement: EASC 606

New course: EASC 626 Applied Geochronology

effective Spring 2016

effective Fall 2016

MEMO

Faculty of Science

ATTENTION Wade Parkhouse, Dean of Graduate Studies**FROM** Carl Lowenberger, Associate Dean, Faculty of Science**RE** Request to Reinstate EASC 606:**DATE** November 25, 2015

TIME 3:59 PM

The graduate program in the Department of Earth Sciences seeks to reinstate the course, EASC 606: ~~Applied Geochronology~~. This course will complement material being offered other research courses and will provide another graduate course for students in Earth Sciences. This course would be effective in Spring 2016.

This is a highly specialized course and no overlaps or concerns have been reported to me. This new course has my approval and that of the Faculty of Science Graduate Committee.



Carl Lowenberger



MEMO

ATTENTION Carl Lowenberger	TEL
FROM Gwenn Flowers, EASC Graduate Committee Chair	
RE Request for reinstatement of EASC 606	
DATE 9 November 2015	TIME

The Graduate Studies Committee of the Department of Earth Sciences would like to request the reinstatement of EASC 606. The course would be offered in Spring Semester 2016. Students needing education in field geology will take the course. There is no alternative course.

A handwritten signature in black ink, appearing to read "Gwenn Flowers", is positioned above the printed name.

Gwenn Flowers
EASC Graduate Studies Committee Chair



MEMO

Faculty of Science

ATTENTION **Wade Parkhouse** Dean, Graduate Studies

FROM Carl Lowenberger, Associate Dean, Faculty of Science

RE New Course Request – EASC 626

DATE November 3, 2015

TIME 12:32:04
PM

The graduate program in the Department of Earth Sciences seeks to initiate a new course, EASC 626, "Applied Geochronology". The Department seeks to make the course available to graduate students for credit. This course is highly relevant should be very popular and successful.

I have sought comments from other Faculties and no overlaps or concerns have been reported to me. This new course has my approval and that of the Faculty of Science Graduate Committee.

A handwritten signature in black ink, reading "Carl Lowenberger". The signature is fluid and cursive, with the first name "Carl" being more prominent than the last name "Lowenberger".

C. Lowenberger

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DEPARTMENT OF EARTH SCIENCES

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GWENN E FLOWERS

E-MAIL: [GFLOWERS@SFU.CA](mailto:gflowers@sfu.ca)
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15 September 2015

MEMO: New Course Proposal: EASC 626

Please find enclosed a signed copy of a New Graduate Course Proposal and a course outline for EASC 626: Applied Geochronology. This proposal was presented to and approved by the Department of Earth Sciences on 14 September 2015. Please contact me if you require further information or documentation to proceed.

A handwritten signature in cursive script that reads "Gwenn Flowers".

Gwenn Flowers
Associate Professor and Graduate Program Chair
Department of Earth Sciences

New Graduate Course Proposal

Please save the form before filling it out to ensure that the information will be saved properly.

Course Subject (eg. PSYC)	EASC	Number (eg. 810)	626	Units (eg. 4)	3
Course title (max 100 characters including spaces and punctuation) Applied Geochronology					
Short title (for enrollment/transcript - max 30 characters) Applied Geochronology					
Course description for SFU Calendar * A review of the principles of geochronology and their application to geological problems will be offered. The course will cover a range of geochronological systems that can provide geological age constraints for a broad spectrum of geological investigations. An overview will be provided covering the techniques (conventional and state-of-the-art) currently available for undertaking geochronological analyses. Case studies that have applied the geochronological systems and analytical techniques will be covered.					
Rationale for introduction of this course This course enables graduate students whose research will include a component of geochronology to access this area of specialization of the instructor. The course is designed to provide a graduate level understanding of geochronology and its application to geological problems that is not met by any undergraduate or graduate courses currently offered by Earth Sciences or other departments at SFU.					
Effective term and year Fall, 2016			Course delivery (eg 3 hrs/week for 13 weeks) 3 hrs/week for 13 weeks (2 hrs lect. & 1 hr seminar)		
Frequency of offerings/year Every 2nd year			Estimated enrollment/offering 2-10		
Equivalent courses [These are previously approved courses that replicate the content of this course to such an extent that students should not receive credit for both courses.] No equivalent courses are currently available.					
Prerequisite and/or Corequisite ** Recommended: undergraduate courses in geochemistry and introductory chemistry (or permission of instructor)					
Criminal record check required? ☐ Yes ☒ No If yes, then add this requirement as a prerequisite.					
Campus where course will be taught ☒ Burnaby ☐ Surrey ☐ Vancouver ☐ Great Northern Way ☐ Off campus					
Course Components ☒ Lecture ☒ Seminar ☐ Lab ☐ Research ☐ Practicum ☐ Online ☐					
Grading Basis ☒ Letter grades ☐ Satisfactory/Unsatisfactory ☐ In Progress/Complete			Capstone course? ☐ Yes ☒ No		
Repeat for credit? *** ☐ Yes ☒ No		Total completions allowed? 1		Repeat within a term? ☐ Yes ☒ No	
Required course? ☐ Yes ☒ No		Final exam required? ☐ Yes ☒ No		Additional course fees? ☐ Yes ☒ No	
Combined with an undergrad course? ☐ Yes ☒ No If yes, identify which undergraduate course and what the additional course requirements are for graduate students:					

* Course descriptions should be brief and should never begin with phrases such as "This course will..." or "The purpose of this course is..." If the grading basis is satisfactory/unsatisfactory include this in the description.

** If a course is only available to students in a particular program, that should be stated in the prerequisite.

*** This mainly applies to a Special Topics or Directed Readings course.

RESOURCES

If additional resources are required to offer this course, the department proposing the course should be prepared to provide information on the source(s) of those additional resources.

Faculty member(s) who will normally teach this course Dan Gibson
Additional faculty members, space, and/or specialized equipment required in order to offer this course Dan Marshall; Derek Thorkelson

CONTACT PERSON

Department / School / Program Earth Sciences	Contact name Dan Gibson	Contact email hdgibson@sfu.ca
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DEPARTMENTAL APPROVAL

REMINDER: New courses must be identified on a cover memo and confirmed as approved when submitted to FGSC/SGSC. Remember to also include the course outline.

Non-departmentalized faculties need not sign

Department Graduate Program Committee Gwenn Flowers	Signature	Date 10 November 2015
Department Chair Brent Ward	Signature Dr. Brent Ward, P.Geo. Digitally signed by Dr. Brent Ward, P.Geo. DN: cn=Dr. Brent Ward, P.Geo., o=SFU, ou=Earth Sciences, email=bward@sfu.ca, c=US Date: 2015.11.13 00:07:58 -0700	Date November 13, 2015

LIBRARY REVIEW

Library review done? ☒ YES

Course form, outline, and reading list must be sent by FGSC to lib-courseassessment@sfu.ca for a review of library resources.

OVERLAP CHECK

Overlap check done? ☒ YES ☐ N/A

The course form and outline must be sent by FGSC to the chairs of each FGSC (fgsc-list@sfu.ca) to check for an overlap in content. An overlap check is not required for some courses (ie. Special Topics, Capstone, etc.)

FACULTY APPROVAL

This approval indicates that all the necessary course content and overlap concerns have been resolved, and that the Faculty/Department commits to providing the required Library funds and any other necessary resources.

Faculty Graduate Studies Committee (FGSC) Carl Lowenheyer	Signature 	Date Nov 20/2015
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SENATE GRADUATE STUDIES COMMITTEE APPROVAL

Senate Graduate Studies Committee (SGSC) Wade Parkhouse	Signature 	Date Dec 10, 2015
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ADMINISTRATIVE SECTION (for DGS office only)

Course Attribute: _____
Course Attribute Value: _____
Instruction Mode: _____
Attendance Type: _____

If different from regular units:
Academic Progress Units: _____
Financial Aid Progress Units: _____



**EASC 626
APPLIED GEOCHRONOLOGY**

Course Outline

General:

A review of the principles of geochronology and their application to geological problems will be offered. The course will examine a range of geochronological systems that can provide geological age constraints for a broad spectrum of geological investigations. An overview will be provided covering the techniques (conventional and state-of-the-art) currently available for undertaking geochronological analyses. Case studies that have applied the geochronological systems and analytical techniques will be covered.

Recommended courses: undergraduate courses in geochemistry and introductory chemistry (or permission of instructor)

Course Topics:

1. Introduction to geochronology and its geological applications
2. Dating methods used for geochronology
3. Radiogenic isotope geochemistry
4. Long-lived and short-lived isotopic systems and their application to geological problems
5. Thermochronology – high and low temperature geochronometers and their applications
6. Analytical techniques for geochronology

Course Organization:

1 two-hour lecture per week, and weekly 1 hour seminars presenting an overview of assigned journal readings interspersed with homework assignments

Course Materials:

Selected readings of journal articles supplemented with *Isotopes – Principles and Applications* (Faure, G. and Mensing, T.M., 2005, Wiley Publishing, 897 pp.).

Additional Resources:

Allégre, C.J., 2008. *Isotope Geology*. Cambridge University Press, 512 pp.

Course Grading:

- | | |
|--------------------------------|-----|
| 1. Seminars and Assignments | 50% |
| 2. Research Term Paper | 40% |
| 3. Research Paper Presentation | 10% |