



MEMO

Dean of  
Graduate Studies

STREET ADDRESS  
Maggie Benston Student  
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Burnaby BC V5A 1S6  
Canada

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Burnaby BC V5A 1S6  
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TO: Senate

TEL  
*W Pallouse*

FROM Wade Parkhouse, Dean, Graduate Studies

RE Faculty of Science [GS2009.30]

CC Derek Bingham

DATE November 18, 2009

**For information**

Acting under delegated authority at its meetings of 19 October 2009, the SGSC approved the following curriculum revisions:

New courses:

**Molecular Biology and Biochemistry**  
MBB 566-3 Host-Microbe Interactions [GS2009.30]

Senators wishing to consult a more detailed report of curriculum revisions may do so on the Web at [http://www.sfu.ca/senate/Senate\\_agenda.html](http://www.sfu.ca/senate/Senate_agenda.html) following the posting of the agenda. If you are unable to access the information, please call 778.782.3168 or email [bgrant@sfu.ca](mailto:bgrant@sfu.ca).



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**TO: Senate**

TEL

**FROM** Wade Parkhouse, Dean, Graduate Studies

*per [signature]*

**RE** Faculty of Science **[GS2009.37]**

**CC** Derek Bingham

**DATE** December 17, 2009

**For information**

Acting under delegated authority at its meetings of 14 December 2009, the SGSC approved the following curriculum revisions:

New courses:

**Department of Earth Sciences** **[GS2009.37]**  
EASC 601-3 Advanced Groundwater Geochemistry  
EASC 602-3 Environmental Isotopes

Senators wishing to consult a more detailed report of curriculum revisions may do so on the Web at [http://www.sfu.ca/senate/Senate\\_agenda.html](http://www.sfu.ca/senate/Senate_agenda.html) following the posting of the agenda. If you are unable to access the information, please call [778.782.3168](tel:778.782.3168) or email [bgrant@sfu.ca](mailto:bgrant@sfu.ca).

**NEW GRADUATE COURSE PROPOSAL FORM**Department MBB Course Number MBB 566-3Course Title Host-Microbe Interactions (max. 80 char.)Short Title (appears on transcripts etc.) Host-Microbe Interactions (max. 25 char.)

Course Description for Calendar: (append a course outline as a separate document)

Infectious pathogens (viruses, bacteria, fungi, protozoa, helminths), their life cycle including vectors of transmission, the biological mechanisms by which they establish infection and cause disease in humans. Pathogenic and protective aspects of the human response to infection; roles of vaccines and chemotherapy in reducing disease transmission. Impact of environmental, ecological and social/behavioral factors, including health-care financing and policy, on the host-pathogen relationship.

Credit Hours 3 Vector hour \_\_\_\_\_ Lecture \_\_\_\_\_ Seminar 3 Lab \_\_\_\_\_Prerequisites (if any) Admission to the graduate program, or permission of the instructor.Estimated Enrolment 20 when the course will first be offered Spring 2010Frequency of course offering annuallyGrading: regular grading or satisfactory/unsatisfactory? Regular

**Justification:** Facilitates interdisciplinary discussion in Infectious Diseases in areas associated with the recent appointments in FHS. Strengthens our offerings in infectious disease courses for students across campus.

**Resources:**

Faculty member(s) who will normally teach this course: J.K. Scott  
(Append information about their competency to teach the course)

Number of additional faculty members required in order to offer this course NoneAdditional space required in order to offer this course (append details) None

Additional specialized equipment required in order to offer this course: (append details)

None

Additional Library resources required: (append details) Annually \$ 0 One-time \$ 0

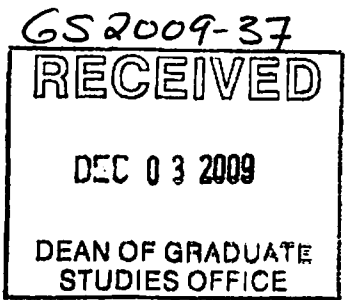
If additional resources are required to offer this course, the department proposing the course should be prepared to provide information on the source(s) of those additional resources.



FACULTY OF SCIENCE  
Earth Sciences Department

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MEMORANDUM

ATTENTION Wade Parkhouse, Dean of Graduate Studies  
DATE November 26, 2009

FROM Dan Gibson, Earth Sciences Graduate Program Chair  
PAGES 1/1

RE: Amended EASC 601 & 602 course proposals

Dear Wade,

The accompanying graduate course proposals for EASC 601 and EASC 602 have been amended to address the issues that were raised, and subsequently brought to my attention by you. Below is a summary of the issues raised (to my knowledge) and our response:

1) *Potential content overlap with undergraduate courses in Chemistry (CHEM 371) and Nuclear Science (NUSC 341-344):*

- Both EASC 601 & 602 course outlines and justification sections have been modified to highlight the advanced Graduate level topics of groundwater (subsurface) and isotope geochemistry that will be offered in each course. Advanced concepts that will be covered include Earth Science specific topics that are not covered in undergraduate Chemistry/Nuclear Science courses. To name a few, these include groundwater-rock interactions, acid mine drainage, diagenesis (chemical and physical changes undergone by a sediment after its initial deposition as it turns into rock), silicate weathering, isotopes and Water-Rock Interactions, Geochemical Modeling, etc.
- Students enrolled in the EASC 601 & 602 Graduate level courses will be expected to already have a good understanding of basic Chemistry principles (e.g. radiogenic & stable isotopes; oxidation-reduction reactions, thermodynamics, balancing chemical equations), which will include, but are not specific to, the concepts covered in CHEM 371 and NUSC 341-344. These principles will be applied to Earth Science specific problems/topics (see above), and at a more advanced level than what is currently offered in any of the Earth Science or Chemistry undergraduate courses.
- The Chemistry Graduate Program Chair, Dr. Erika Plettner, has had opportunity to review the Graduate courses we are proposing, and after we addressed her suggestions she gave her consent. In fact, Dr. Plettner asked that we increase our estimated enrollment and adjust our prerequisites for the proposed courses in order to accommodate the possible enrollment of graduate students from Chemistry. We made these adjustments, and made it clear that we would gladly accept enrollment of Chemistry graduate students who are qualified to take either of the proposed courses.

- 2) *Only one faculty member listed as someone "who will normally teach this course":*
- We have a relatively small department (13 Research Faculty) with a broad range of research and teaching expertise, and therefore there is limited overlapping expertise amongst faculty members. This makes it difficult at the Graduate level to offer a course that can be taught by more than one faculty member. Nevertheless, to ensure the proposed courses can be offered without interruption, Dr. Diana Allen has agreed to serve as an alternate instructor for the proposed courses in the event that Dr. Dirk Kirste, the person who will normally teach the proposed courses, is unable to offer either course in a given year (e.g., due to Study Leave or Sabbatical).
- 3) *Textbook listed as the primary source of information for topics covered in a Faculty of Science Graduate course:*
- The textbooks suggested by Dr. Kirste are written for 4<sup>th</sup> year and Graduate level students. Nevertheless, he has adjusted the outlines for the courses to reflect the fact that journal articles will serve as a primary source of information for the topics covered. This will be augmented by upper level textbooks that provide background information on the principles, concepts and techniques covered in the journal articles.
- 4) *Could the proposed courses simply be offered as "Special Topics" or "Directed Readings" courses?*
- In Earth Sciences, our MSc students are required to take four 3-credit Graduate courses, and only two of the four courses can be a "Special Topics" and/or "Directed Readings" course, the other two must be formally registered Graduate courses. Currently in Earth Sciences, there are no Graduate courses listed in the SFU Calendar that cover the topics specific to Dr. Kirste's research, and that of his Graduate students or any other students dealing with groundwater geochemistry. Thus, Dr. Kirste would like to offer the two proposed courses as officially listed Graduate courses, as opposed to simply offering them as a "Special Topics" or "Directed Readings" course.
- 5) *Will the courses still be offered if only 2 students enroll (i.e. minimum number listed for estimated enrollment)?*
- Yes. In the Earth Sciences department, we do not get credit for teaching Graduate level courses, so there is no restriction on the number of students needed in order for the course to be offered.

Please do not hesitate to contact me if you require more information or clarification.

Sincerely,



Dr. Dan Gibson

EASC Graduate Program Chair

Department of Earth Sciences

Email: [hdgibson@sfu.ca](mailto:hdgibson@sfu.ca)

Tel: ext. 27057

NEW GRADUATE COURSE PROPOSAL FORM

Subject: EASC (max. 4 chars) Catalog Number: 601 - 3

Course Title: Advanced Groundwater Geochemistry (max. 80 char.)

Short Title (appears on transcripts etc.) Adv. Groundwater Geochem (max. 25 char.)

Course Description for Calendar: (append a course outline as a separate document)

Advanced topics in understanding water-rock interactions and the geochemistry of groundwater during processes such as weathering and recharge, acid mine drainage, diagenesis and hydrothermal ore deposit formation. The course focuses on the physical and chemical principles that govern the geochemistry of groundwater with emphasis on water sample collection and analysis, chemical thermodynamics, gas-water-rock interactions and geochemical modeling.

Units: 3.0

Available Course Components: (select all that apply)

Lecture  Seminar  Laboratory  Practicum

Prerequisites: (if any)

Recommended: undergraduate course in hydrogeology (or permission of instructor)

Campus at which course will be offered: Burnaby

Estimated Enrolment: 2-10 The term course will first be offered: Fall 2010

Frequency of course offering: Every year

Grading Basis:  Graded  Satisfactory/Unsatisfactory  In Progress/Complete

**Justification:**

This course enables graduate students who focus on groundwater studies to access the area of specialization of the instructor. The course is designed to provide a graduate level understanding of groundwater geochemistry and gas-water-rock interactions that is not met by any undergraduate or graduate courses currently offered by Earth Science or other departments at SFU. Offered as EASC 704 Special Studies 2007-2009

**Resources:**

Faculty member(s) who will normally teach this course:

(append information about their competency to teach the course)

Dr. Dirk Kirste (Dr. Diana Allen as alternate)

Number of additional faculty members required in order to offer this course: 0

Additional space required in order to offer this course: (append details) 0

Additional specialized equipment required in order to offer this course: (append details)

0

Additional Library resources required: (append details) Annually \$ 0 One-time \$ 0

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.

Upon approval of the course proposal, the Dean of Graduate Studies office will consult with the department or school regarding other course attributes that may be required to enable the proper entry of the new course in the student record system.

NEW GRADUATE COURSE PROPOSAL FORM

Subject: EASC (max. 4 chars) Catalog Number: 602 -3

Course Title: Environmental Isotopes (max. 80 char.)

Short Title (appears on transcripts etc.) Environmental Isotopes (max. 25 char.)

Course Description for Calendar: (append a course outline as a separate document)

This course reviews the principles of isotope geochemistry and examines case studies on the application of isotopes to hydrogeology and hydrogeochemistry. Problems in groundwater quality/resource evaluation including the origin of recharge, identifying and quantifying evaporation and water balance, ground water/surface water interactions and groundwater mixing will be addressed. Isotope methods in groundwater age dating will be discussed as well as the use of environmental isotopes in understanding water-rock interactions and groundwater flow paths.

Units: 3.0

Available Course Components: (select all that apply)

Lecture  Seminar  Laboratory  Practicum

Prerequisites: (if any)

Recommended: undergraduate courses in hydrogeology and ground water geochemistry (or permission of instructor)

Campus at which course will be offered: Burnaby

Estimated Enrolment: 2-10 The term course will first be offered: Spring 2010

Frequency of course offering: Every 2nd year

Grading Basis:  Graded  Satisfactory/Unsatisfactory  In Progress/Complete

**Justification:**

This course enables graduate students who intend to focus on groundwater related studies to access the area of specialization of the instructor. The course is designed to provide a graduate level understanding of isotope geochemistry and the application of environmental isotopes to groundwater systems that is not met by any undergraduate or graduate courses currently offered by Earth Sciences or other departments at SFU.

**Resources:**

Faculty member(s) who will normally teach this course:

(append information about their competency to teach the course)

Dr. Dirk Kirste (Dr. Diana Allen as alternate)

Number of additional faculty members required in order to offer this course: 0

Additional space required in order to offer this course: (append details) 0

Additional specialized equipment required in order to offer this course: (append details)

0

Additional Library resources required: (append details) Annually \$ 0 One-time \$ 0

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.

Upon approval of the course proposal, the Dean of Graduate Studies office will consult with the department or school regarding other course attributes that may be required to enable the proper entry of the new course in the student record system.