

MEMO

Dean of
Graduate Studies

STREET ADDRESS

Maggie Benston Student Services
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Burnaby BC V5A 1S6
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TO: Senate

TEL

FROM Wade Parkhouse, Dean, Graduate Studies



RE Faculty of Science

[GS2011.14]

CC Derek Bingham

DATE June 15, 2011

For information

Acting under delegated authority at its meeting of 13 June 2011, the SGSC approved the following curriculum revisions:

Effective Date is January 2012**Faculty of Science**

[GS2011.14]

a. Department of Biomedical Physiology and Kinesiology

- 1) Master Program (thesis option):
i) Change to number of required courses

- 2) Doctoral Program:
i) Changes to the Comprehensive Examination Process

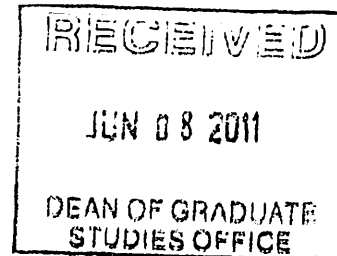
b. Department of Molecular Biology and Biochemistry

- i) New course proposals:
MBB 746-3 Cell Death and Cell Survival
MBB 761-3 Comparative Genomics
MBB 762-3 Human Genomics

c. Department of Physics

- i) New course proposal:
PHYS 833-3 Biological Physics Laboratory

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 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 shelley_gair@sfu.ca.



TO: W. Parkhouse
Dean of Graduate Studies

FROM: D. Bingham, Chair
Faculty of Science Graduate Studies
Committee

RE: BPK Curriculum Changes

DATE: June 3, 2011

The following has been approved by the Faculty of Science and is forwarded for approval by the Senate Graduate Studies Committee. Please include it on the next SGSC agenda.

Biomedical Physiology & Kinesiology

Changes to the Biomedical Physiology & Kinesiology Graduate Program as described in the attached documentation. The two proposals describe changes to the PhD Comprehensive Exam and the number of courses required for Thesis MSc students in the Department of Biomedical Physiology and Kinesiology.

Enclosure

c. C. Cupples

R. Howell

for D. Bingham

**Proposed Changes to the number of courses required for Thesis MSc *
students in the Department of Biomedical Physiology and Kinesiology
(BPK)**

Background:

Revision of the number of courses required for Thesis MSc students in BPK:

Current BPK requirements are a minimum of 18 units, including KIN 801 and a graduate-level statistics or research methods course. Of the remaining 12 units, 9 must be BPK courses. SFU requires 12 graduate course credit hours. Most other graduate programs in the Faculty of Science require only 12 credit hours. We propose a reduction in the number of courses for a Thesis MSc to increase student time and efficiency for research, to ensure competitiveness with other universities, and to promote optimal lengths of degrees.

Modification of the number of courses for the BPK Thesis MSc has been approved by the BPK GPC and the Department:

The changes proposed were developed by the BPK Graduate Program Committee in consultation with BPK faculty members. These changes were unanimously approved in the April 21 BPK departmental meeting.

Existing SFU Calendar Wording: (copied from the SFU 2011 Summer Calendar:
http://students.sfu.ca/calendar/kinesiology/kin_MSc_thesis_option.html)

Program Requirements

FROM: This program requires ~~18~~ 12 units minimum of graduate courses and a thesis. If a supervisory committee deems that preparation is inadequate, more than this may be required. At least ~~12~~ 6 of these units must be from graduate biomedical physiology and kinesiology (BPK) courses.

Students complete

- KIN 801-3 Seminar on Research in Biomedical Physiology and Kinesiology and a graduate course in statistics or research methods, such as HSCI 801 and three additional graduate BPK courses and one additional graduate BPK course or, with prior approval of the graduate program committee, from outside the Department of Biomedical Physiology and Kinesiology

Deviations from the above curriculum must be approved by the graduate program chair.
For further information and regulations, see graduate general regulations.

Proposed New SFU Calendar Wording:

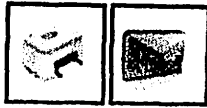
Program Requirements

To: This program requires 12 units minimum of graduate courses and a thesis. If a supervisory committee deems that preparation is inadequate, more than this may be required. At least 6 of these units must be from graduate biomedical physiology and kinesiology (BPK) courses.

Students complete

- KIN 801-3 Seminar on Research in Biomedical Physiology and Kinesiology
- and a graduate course in statistics or research methods, such as HSCI 801
and one additional graduate BPK course
and one additional graduate BPK course or, with prior approval of the graduate program committee, from outside the Department of Biomedical Physiology and Kinesiology
Deviations from the above curriculum must be approved by the graduate program chair.
For further information and regulations, see graduate general regulations.

Simon Fraser University



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Kinesiology Master of Science (Thesis Option) Program

*Department of Biomedical Physiology and Kinesiology | Faculty of Science
Simon Fraser University Calendar 2011 Summer*

Program Requirements

This program requires 18 units minimum of graduate courses and a thesis. If a supervisory committee deems that preparation is inadequate, more than this may be required. At least 12 of these units must be from graduate biomedical physiology and kinesiology (BPK) courses.

Students complete

- KIN 801-3 Seminar on Research in Biomedical Physiology and Kinesiology

and a graduate course in statistics or research methods, such as HSCI 801

and three additional graduate BPK courses

and one additional graduate BPK course or, with prior approval of the graduate program committee, from outside the Department of Biomedical Physiology and Kinesiology

Deviations from the above curriculum must be approved by the graduate program chair.

For further information and regulations, see graduate general regulations.

Thesis Requirements

The department encourages early thesis proposal submission, which is circulated to faculty and resident graduate students, and formally presented for open forum discussion. A formal defence of the completed thesis is made to the examination committee at an open forum. The thesis proposal must precede the defence by at least four months. For regulations, see graduate general regulations.

Time Required for Degree

Requirements are normally completed in six terms.

Application Criteria for Transfer from MSc to PhD Program

Students currently in the biomedical physiology and kinesiology master's program may be considered for transfer to the PhD program. Such transfers will be infrequent and very selective. Normally, only students enrolled in their third through sixth terms may apply to transfer to the PhD program. The graduate program committee (GPC) reviews such applications, and the GPC chair forwards a recommendation to the dean of graduate studies. The decision is made by the dean of graduate studies.

In addition to section 1.3.4 of the graduate general regulations, eligibility and the decision regarding transfer to the PhD in kinesiology will include the following criteria.

- strong support letters from the senior supervisor and at least one other academic referee
- excellent academic performance (e.g. minimum GPA of 3.67)
- strong background in research design and statistics or modeling as appropriate to the area
- completion of biomedical physiology and kinesiology graduate seminar course (KIN 801)
- evidence that the student is capable of completing and disseminating research. Such capability will be judged by research to date, publications and letters from referees.

Academic Requirements within the Graduate General Regulations

All graduate students must satisfy the academic requirements that are specified in the Graduate General Regulations (residence, course work, academic progress, supervision, research competence requirement, completion time, and degree completion), as well as the specific requirements for the program in which they are enrolled, as shown above.

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For calendar inquiries and technical problems, contact calendar-sfu@sfu.ca |
Calendar changes and corrections



Proposed Changes to the PhD Comprehensive Examination Process in the Department of Biomedical Physiology and Kinesiology (BPK)

Background:

The current BPK process for the PhD comprehensive exam is onerous and time-consuming. The current process includes three steps: 1) a grant-style research proposal, 2) a series of written exams, and 3) an oral exam. Students who have undergone this process in the past year have taken from 4 to 8 month to complete it. Students have indicated that the process distracts them from research for several months. Many faculty members also feel that the current process takes up too much time. It is proposed that the BPK PhD comprehensive exam process be simplified to make it more similar to those used by other graduate programs in the Faculty of Science. The main change proposed is elimination of the written exams step. The composition of the comprehensive examination committee is also changed slightly, to include an examiner who is outside of the student's supervisory committee.

Modification of the comprehensive exam has been approved by the BPK GPC and the Department:

The changes proposed were developed by the BPK Graduate Program Committee in consultation with BPK faculty and graduate students. They were unanimously approved in the April 21 BPK departmental meeting.

Existing SFU Calendar Wording: (copied from the SFU 2011 Summer Calendar:
http://students.sfu.ca/calendar/kinesiology/kin_PhD.html)

Comprehensive Examination

The comprehensive exam will normally consist of a research proposal, and a related oral ~~and written~~ exam.

From:

The research proposal will be written in the format of ~~either an NSERC Discovery Grant application, or a CIHR Operating Grant application~~, with an eleven page limit exclusive of budget, references, appendices, figures and tables. The proposal is to be written independently by the candidate, and should be written in enough detail to determine that the research is feasible and sufficient for PhD level research. ~~The associated closed-book written examination will consist of questions structured to examine the candidate's knowledge of the proposed research area and to determine whether he/she is capable of carrying out the proposed research. The~~

~~questions may cover areas such as: fundamental knowledge, theoretical ideas or models, methodology, analysis and interpretation of results.~~

The oral examination is designed to further assess the candidate's ability to understand the **issues underlying science**, and their ability to undertake the proposed research. It will consist of a 20-30 minute presentation of the candidate's research proposal ~~to an open forum~~, followed by a closed session. At the oral examination, the examiners ~~may ask the student to clarify or elaborate the answers to the written exam questions and may~~ further explore the student's knowledge in any area relevant to the proposed research.

Students should normally expect to complete their comprehensive exams within the first six terms. The examining committee will include the senior supervisor who, in consultation with the candidate, will nominate the other examining committee members, subject to the approval of the graduate program committee. Normally this will consist of ~~at least one other~~ **the** members of the student's supervisory committee ~~who is a Simon Fraser University biomedical physiology and kinesiology faculty member and is also~~ **plus an additional** ~~faculty member~~ **examiner who is** external to the ~~school as external examiner, who may be a member of the student's supervisory committee.~~ The graduate program committee chair or designate will chair the committee.

Proposed New SFU Calendar Wording:

Comprehensive Examination

The comprehensive exam will normally consist of a research proposal and a related oral exam.

The research proposal will be written in the format of a CIHR Operating Grant application, with an eleven page limit exclusive of references, appendices, figures and tables. The proposal is to be written independently by the candidate, and should be written in enough detail to determine that the research is feasible and sufficient for PhD level research.

The oral examination is designed to assess the candidate's ability to understand the underlying science, and their ability to undertake the proposed research. It will consist of a 20-30 minute presentation of the candidate's research proposal, followed by a closed session. At the oral examination, the examiners will further explore the student's knowledge in any area relevant to the proposed research.

Students should normally expect to complete their comprehensive exams within the first six terms. The examining committee will include the senior supervisor who, in consultation with the candidate, will nominate the other examining committee members, subject to the approval of the graduate program committee. Normally this will consist of the members of the student's supervisory committee, **plus an additional examiner** who is external to the student's supervisory committee. The graduate program committee chair or designate will chair the committee.

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Kinesiology Doctor of Philosophy Program

*Department of Biomedical Physiology and Kinesiology | Faculty of Science
Simon Fraser University Calendar 2011 Summer*

Program Requirements

Students are admitted to a program area that is defined and determined prior to acceptance by the department's graduate program committee. The program must be within the student's and the department's capabilities. Students must show competence in methodology relevant to proposed research.

Normally the supervisory committee will prescribe courses necessary to complete the student's academic preparation. In exceptional circumstances, the supervisory committee may allow the student to proceed without additional course work over and above that for a master's degree.

Study and research is designed to suit the background and research objectives of each student and may differ widely from student to student.

The student will present two school seminars on topics approved by the student's senior supervisor, of which one should be directly related to the student's thesis research. At least one of the seminars should be presented as a school seminar. The graduate program committee encourages students to participate in appropriate scientific meetings and conferences. As such, approval of a formal conference presentation, in lieu of one of the school seminars, will typically be granted.

*** Comprehensive Examination**

The comprehensive exam will normally consist of a research proposal, and a related oral and written exam.

The research proposal will be written in the format of either an NSERC Discovery Grant application, or a CIHR Operating Grant application, with an eleven page limit exclusive of budget, references, appendices, figures and tables. The proposal is to be written independently by the candidate, and should be written in enough detail to determine that the research is feasible and sufficient for PhD level research. The associated closed-book written examination will consist of questions structured to examine the candidate's knowledge of the proposed research area and to determine whether he/she is capable of carrying out the proposed research. The questions may cover areas such as: fundamental knowledge, theoretical ideas or models, methodology, analysis and interpretation of results.

The oral examination is designed to further assess the candidate's ability to understand the issues, and their ability to undertake the proposed research. It will consist of a 20-30 minute presentation of the candidate's research proposal to an open forum, followed by a closed session. At the oral examination, the examiners may ask the student to clarify or elaborate the answers to the written exam questions and may further explore the student's knowledge in any area relevant to the proposed research.

Students should normally expect to complete their comprehensive exams within the first six terms. The examining committee will include the senior supervisor who, in consultation with the candidate, will nominate the other examining committee members, subject to the approval of the graduate program committee. Normally this will consist of at least: one other member of the student's supervisory committee who is a Simon Fraser University biomedical physiology and kinesiology faculty member and is also a faculty member external to the school as external examiner, who may be a member of the student's supervisory committee. The graduate program committee chair or designate will chair the committee.

Dissertation

The completed dissertation is judged by the candidate's examining committee. If the dissertation defence is failed, the candidate is ineligible for further candidacy in the degree program at this University.

For information and regulations, see the [graduate general regulations](#).

Academic Requirements within the Graduate General Regulations

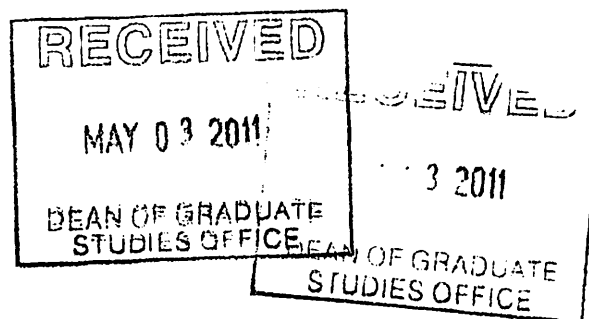
All graduate students must satisfy the academic requirements that are specified in the [Graduate General Regulations](#) (residence, course work, academic progress, supervision, research competence requirement, completion time, and degree completion), as well as the specific requirements for the program in which they are enrolled, as shown above.

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[Calendar changes and corrections](#)



TO: W. Parkhouse
Dean of Graduate Studies

FROM: D. Bingham, Chair
Faculty of Science Graduate Studies
Committee

RE: MBB 746-3, 761-3, 762-3 New
Courses

DATE: April 26, 2011

The following have been approved by the Faculty of Science and is forwarded for approval by the Senate Graduate Studies Committee. Please include this on the next SGSC agenda.

Molecular Biology & Biochemistry

New course proposals: MBB 746-3, 761-3, 762-3

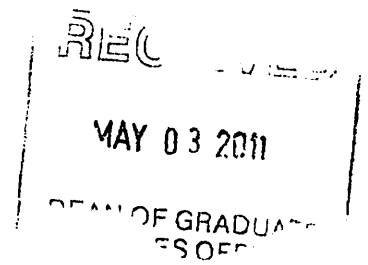
A handwritten signature, appearing to be "D. Bingham", is written over a horizontal line. Below the line, the name "D. Bingham" is printed in a standard font.

Enclosure

c. C. Cupples



DEPARTMENT OF MOLECULAR BIOLOGY AND BIOCHEMISTRY



Memorandum

To: Science Graduate Studies Committee
Re: New Course Proposals

From: Nicholas Harden, Chair, DGSC
Date: April 13, 2011

Please find attached new course proposal forms for three new Molecular Biology and Biochemistry graduate courses:

MBB 746, Cell Death and Cell Survival
MBB 761, Comparative Genomics
MBB 762, Human Genomics

These courses have all been taught and well-received as Special Topics courses and constitute much needed additions to the graduate course offerings in our program. Course descriptions have already been circulated to graduate chairs of appropriate units for feedback on possible overlap concerns.

SIMON FRASER UNIVERSITY

NEW GRADUATE COURSE PROPOSAL FORM

When a department proposes a new course it must first be sent to the chairs of each faculty graduate program committee where there might be an overlap in course content. The chairs will indicate that overlap concerns have been dealt with by signing the appropriate space or via a separate memo or e-mail (attach). The new course proposal must also be sent to the Library for a report.

Once overlap concerns have been dealt with, signatures indicate approval by the department, home faculty and Senate Graduate Studies Committee.

Department or School: Molecular Biology and Biochemistry

Proposed course number and title: MBB 746, Cell Death and Cell Survival

Other Faculties:

Other Faculties approval indicates that the Dean(s) or designate of other Faculties affected by the proposed new course support(s) the approval of the new course.

Name of Faculty	<u>NA</u>	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____

Departmental approval (non-departmentalized faculties need not sign)

Department Graduate Program Committee

Signature [Signature] Date APRIL 1, 2011

Department Chair

Signature [Signature] Date April 1, 2011

Faculty approval

Faculty 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

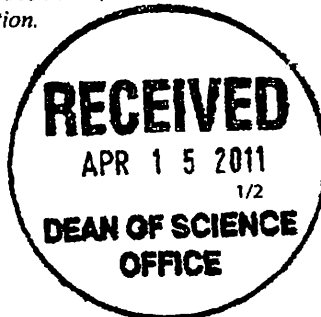
Faculty Graduate Program Committee

Signature [Signature] Date April 30/11

SGSC approval

Signature [Signature] Date June 14/11

SGSC approval indicates that the Library report has been seen, and all resource issues dealt with. Once approved, new course proposals are sent to Senate for information.



NEW GRADUATE COURSE PROPOSAL FORM

Subject: MBB (max. 4 chars) Catalog Number: 746

Course Title: Cell Death and Cell Survival (max. 80 char.)

Short Title (appears on transcripts etc.) Cell Death and Survival (max. 25 char.)

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

An examination of various types of cell death and cell survival mechanisms and their relationship to disease with a focus on cancer and therapeutic strategies.

Units: 3

Available Course Components: (select all that apply)

☒ Lecture

☐ Seminar

☐ Laboratory

☐ Practicum

Prerequisites: (if any)

Campus at which course will be offered: Burnaby

Estimated Enrolment: 5-10 The term course will first be offered: 2012-1

Frequency of course offering: every 1-2 years

Grading Basis: ☒ Graded

☐ Satisfactory/Unsatisfactory

☐ In Progress/Complete

Justification:

This course was taught as a special topics course and received a very positive response from students. Dr. Gorski holds a joint appointment in MBB and the Vancouver Genome Sciences Center at the BC Cancer Agency. She brings outstanding expertise in the subject matter that is of considerable interest to students.

Resources:

Faculty member(s) who will normally teach this course:
(append information about their competency to teach the course)

Sharon Gorski

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)

None

Additional Library resources required: (append details) Annually \$ None One-time \$ None

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.

MOLECULAR BIOLOGY AND BIOCHEMISTRY

MBB 746-3

Cell Death and Cell Survival

DAY Spring 2012

Instructor: Dr. Sharon Gorski, Office: TASC2 8006

Description/topics: The balance between cell death and cell survival is important for normal development. Alterations in these processes can lead to human diseases including cancer. In this course, we will study various types of cell death and cell survival mechanisms and their relationships to disease with a focus on cancer. We will also investigate anti-cancer therapeutic strategies that target specific components of cell death and cell survival pathways. Topics will include the following:

- Cancer basics
- Oncogenes and Tumor Suppressors
- Cell growth
- Cell survival mechanisms
- Types of cell death: morphology and molecules
- Autophagy: dual roles in cancer
- Targeted anti-cancer therapeutics

In addition, we will explore recent selected special topics related to the discovery of mechanisms contributing to cancer cell survival. These may include:

- Cancer Immunology
- Characterizing cancer genomes
- Chromosomal aberrations and proteomic alterations in cancer
- Cancer stem cells

Grading: Class presentation (30%), Class participation (10%), Grant proposal (50%), Grant review (10%).

Required texts: None. This course will be based largely on primary literature and review articles.

Recommended texts: The Biology of Cancer, Robert A. Weinberg, 2006, Garland Publishing (for background reading)

Prerequisite/corequisite: Pre-requisite: MBB 322, MBB 331

"Students requiring accommodations as a result of a disability, must contact the Centre for Students with Disabilities (778-782-3112 or e-mail: csd@sfu.ca)."

All students are subject to and responsible for being familiar with the SFU academic integrity policy which can be found

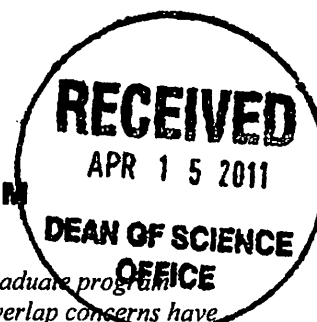
on-line at <http://students.sfu.ca/academicintegrity/index.html>

Students are advised to review the plagiarism tutorial found at

<http://www-old.lib.sfu.ca/researchhelp/tutorials/interactive/plagiarism/tutorial/table-of-contents.htm>

For help with writing, learning and study strategies please contact the Student Learning Commons at
<http://learningcommons.sfu.ca/>

SIMON FRASER UNIVERSITY
NEW GRADUATE COURSE PROPOSAL FORM



When a department proposes a new course it must first be sent to the chairs of each faculty graduate program committee where there might be an overlap in course content. The chairs will indicate that overlap concerns have been dealt with by signing the appropriate space or via a separate memo or e-mail (attach). The new course proposal must also be sent to the Library for a report.

Once overlap concerns have been dealt with, signatures indicate approval by the department, home faculty and Senate Graduate Studies Committee.

Proposed course number and title MBB 761-3 Comparative Genomics

Other Faculties:

Other Faculties approval indicates that the Dean(s) or designate of other Faculties affected by the proposed new course support(s) the approval of the new course.

Name of Faculty	<u>NA</u>	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____

Departmental approval *(non-departmentalized faculties need not sign)*

Department Graduate Program Committee

Signature  Date APRIL 1, 2011

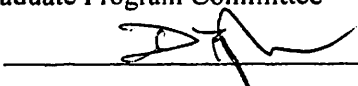
Department Chair

Signature  Date April, 2011

Faculty approval

Faculty 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 Program Committee

Signature  Date April 30/11

SGSC approval

Signature  Date June 14/11

SGSC approval indicates that the Library report has been seen, and all resource issues dealt with. Once approved, new course proposals are sent to Senate for information.

NEW GRADUATE COURSE PROPOSAL FORM

Department MBB Course Number MBB 761-3

Course Title Comparative Genomics (max. 80 char.)

Short Title (appears on transcripts etc.) Comparative Genomics (max. 25 char.)

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

Examination of the fundamentals of comparative genomics, identification and activity of functional elements in genomes, inter- and intra-species comparisons, relationship of genomic to phenotypic variation, and personalized genomics are among the topics to be explored. Comparison of genome data has impacts on medicine and many other fields of the life sciences.

Credit Hours 3 Vector hour Lecture 2 Seminar Lab

Prerequisites (if any) MBB331

Estimated Enrolment 20 when the course will first be offered Spring 2011

Frequency of course offering annually

Regular

Grading: regular grading or satisfactory/unsatisfactory?

Justification: This is an elective course designed to expose students to the emerging field of comparative genomics. Since the completion of the Human Genome project in 2003, the number of sequenced genomes has been increasing exponentially due to the research demands of fields that include medicine, agriculture, aquaculture, forestry and evolution. A course that takes students from the basics of sequence technology and genomic elements through to the analysis of entire genomes and comparisons of genomes within and among species is of increasing value to today's molecular biology and genetics students. The external review of the MBB Department recommended that more upper division, specialized elective courses be made available to MBB majors and this course is part of that mandate. The course is expected to become part of the anticipated Genomics B.Sc. program for which a notice of intent has been approved.

Resources:

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

Number of additional faculty members required in order to offer this course None

Additional 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.

New Graduate Course Proposal Form

COURSE OUTLINE MBB 761-3 COMPARATIVE GENOMICS

Course Introduction: This new course aims to provide a comprehensive introduction to the emerging field comparative genomics to students familiar with molecular biology and genetics. Since the completion of the Human Genome Project (1990-2003), the number of the sequenced genomes has been increasing exponentially, due to the revolutionary development in DNA sequencing technologies, and most importantly demands of researchers in various fields including medicine, fishery, forestry, agriculture, and evolution. Although genome sequences contain the ultimate information responsible for driving gene expression, development, and cellular differentiation, how the information is represented in the genome is largely unknown. How does a transcription factor drive unique phenotypes? How does novelty occur in genome evolution? How can a mutation cause a disease condition? Comparative genomics has been effective for addressing these questions. This course has been designed to review how these questions are tackled in comparative genomics in the last decade.

Learning Objectives: The students expect to understand key concepts and major public projects in comparative genomics and bioinformatics. They will also appreciate applications of comparative genomics. In particular, students will learn various types of functional elements in genome including genes, ultraconserved elements, and cis-acting regulatory elements, genomic variations within a species, and comparison of genomes of different species.

Assignments: Students will be required to submit two (4-5 page) summaries of articles in the field, which will also be presented orally, exploring the methods, concepts, and applications of comparative genomics. In addition, students will complete five quizzes; there will be no comprehensive final exam.

Grading Breakdown: Oral presentation (15% x 2) 30%; written submissions (20% x 2) 40%; 4 quizzes (5% x 4) 20%; participation 10%.

Course Texts:

- Will not follow a particular text book. The following texts can be used as reference
- Introduction to Genomics, Arthur M. Lesk, Oxford, 2007. ISBN 978-0-19-929695-8
- Bioinformatics and Functional Genomics, 2nd, Jonathan Pevsner, Wiley-Blackwell, 2009. ISBN 978-0-470-08585-1
- Supplementary readings from journals and edited books will also be provided.

Provisional list of topics to be covered

Module 1: Fundamentals

Lecture 1: Comparative genomics: an emerging field
Lecture 2: DNA sequencing technologies: the driving force
Lecture 3: Bioinformatics: the enabling force
Lecture 4: Resources for comparative genomics
Lecture 5: The Human Genome Project

Module 2: Functional elements: identification and function

Lecture 6: Gene
Lecture 7: Ultraconserved elements
Lecture 8: Functional elements: cis-regulatory elements
Lecture 9: ENCODE & MOD-ENCODE projects
Lecture 10: Synteny blocks
Lecture 11: Genome rearrangement events and genome evolution

New Graduate Course Proposal Form

Module 3: Intra-species comparison

Lecture 12: Genomic variations

Lecture 13: From SNP to HapMap

Lecture 14: Structural variations

Lecture 15: Loss-of-function variations

Lecture 16: GWAS (genome-wide association studies)

Lecture 17: Personalized genomes and The 1000 Genome Project

Module 4: Inter-species comparison

Lecture 18: Genome family expansion and contraction

Lecture 19: Transcription factor and gene battery

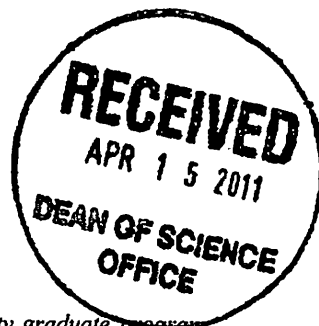
Lecture 20: Horizontal gene transfer

Lecture 21: Virulence factors and drug targets

Lecture 22: Metagenomics

Lecture 23: What makes us human?

Lecture 24: The Genome 10K Project



SIMON FRASER UNIVERSITY

NEW GRADUATE COURSE PROPOSAL FORM

When a department proposes a new course it must first be sent to the chairs of each faculty graduate program committee where there might be an overlap in course content. The chairs will indicate that overlap concerns have been dealt with by signing the appropriate space or via a separate memo or e-mail (attach). The new course proposal must also be sent to the Library for a report.

Once overlap concerns have been dealt with, signatures indicate approval by the department, home faculty and Senate Graduate Studies Committee.

Department or School: Molecular Biology and Biochemistry

Proposed course number and title: MBB 762, Human Genomics

Other Faculties:

Other Faculties approval indicates that the Dean(s) or designate of other Faculties affected by the proposed new course support(s) the approval of the new course.

Name of Faculty	<u>NA</u>	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____

Departmental approval (non-departmentalized faculties need not sign)

Department Graduate Program Committee

Signature [Signature] Date APRIL 1, 2011

Department Chair

Signature [Signature] Date April 1, 2011

Faculty approval

Faculty 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 Program Committee

Signature [Signature] Date June 14/2011

SGSC approval

Signature [Signature] Date June 14/11

SGSC approval indicates that the Library report has been seen, and all resource issues dealt with. Once approved, new course proposals are sent to Senate for information.

SFU Connect

sheilagh@sfu.ca

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Re: URGENT-I need either a signature or an email approval - MBB 762

From : Derek Bingham <dbingham@stat.sfu.ca>

Wed, Jun 15, 2011 04:08 AM

Sender : derekbing@gmail.com**Subject :** Re: URGENT-I need either a signature or an email approval - MBB 762**To :** Sheilagh MacDonald <sheilagh@sfu.ca>**Cc :** Rosemary Hotell <hotell@sfu.ca>

I approve this.

Derek Bingham

On Tue, Jun 14, 2011 at 7:30 PM, Sheilagh MacDonald <sheilagh@sfu.ca> wrote:

Hi Derek and Rosemary,

I need either an email approval or a signature/scanned back to me asap. We just have until tomorrow (June 15th) to process. If we don't get it I'll have to pull this course from the Senate package.

Sheilagh

From: "Sheilagh MacDonald" <sheilagh@sfu.ca>**To:** "Derek Bingham" <dbingham@stat.sfu.ca>**Sent:** Thursday, June 9, 2011 12:13:24 PM**Subject:** please sign and scan back

Hi Derek,

you missed one of the new courses for SGSC. Can you print out the top page, sign, scan and email back to me.

Sheilagh

From: "Dean of Grad Studies Office" <dgs-sfu@sfu.ca>**To:** "Sheilagh MacDonald" <sheilagh@sfu.ca>**Sent:** Thursday, June 9, 2011 1:08:18 PM**Subject:** Scanned from MFP-05018470 06/09/2011 12:08

Scanned from MFP-05018470.

Date: 06/09/2011 12:08

Pages:3

Resolution:200x200 DPI

--

Sheilagh MacDonald

Secretary, Dean of Graduate Studies

NEW GRADUATE COURSE PROPOSAL FORM

Subject: MBB (max. 4 chars) Catalog Number: 762

Course Title: Human Genomics (max. 80 char.)

Short Title (appears on transcripts etc.) Human Genomics (max. 25 char.)

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

The organization of the human genome and the role of genomic variation in health and disease.
Genomics and personalized medicine; Intellectual property and privacy issues.

Units: 3

Available Course Components: (select all that apply)

☒ Lecture

☐ Seminar

☐ Laboratory

☐ Practicum

Prerequisites: (if any)

Campus at which course will be offered: Burnaby

Estimated Enrolment: 5-10 The term course will first be offered: 2011-3 (or 2012-3)

Frequency of course offering: yearly

Grading Basis: ☒ Graded

☐ Satisfactory/Unsatisfactory

☐ In Progress/Complete

Justification:

Genomics is a major area of research activity and graduate training in MBB, and this course builds on the joint appointments of expert scientists working at the Vancouver Genome Sciences Centre at the BC Cancer Agency. It has been taught as a special topics course and was well received by students.

Resources:

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

(append information about their competency to teach the course)

Robert Holt

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)

None

Additional Library resources required: (append details) Annually \$ None One-time \$ None

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.

MOLECULAR BIOLOGY AND BIOCHEMISTRY

MBB 762-3

Human Genomics

Instructor: Dr. R. Holt, Office: TASC2 8003

Description/topics: This course will focus on the organization of the human genome and the role of genome variation in health and disease. Ancillary topics of direct relevance to human genomics, such as personalized medicine and intellectual property will also be covered. Instruction will include lecture material, and in depth consideration of selected seminal papers in human genomics.

Topics will include the following:

- Landscape of the human genome
- How the human genome was sequenced
- Who owns your genome - genomics and intellectual property
- Human genome variation – polymorphism and complex disease
- Human genome variation – can genomics enable personalized medicine?
- Human genome variation - cancer genomes
- Genomics of the adaptive immune system
- Ancient genomes
- Synthetic genes, synthetic genomes
- Human proteomics
- Other current topics in human genomics

Grading: Biweekly exams (30 min) on lecture material and assigned reading (40% of grade). Three short (1-2 page) summaries/critiques of papers selected from primary literature (30% of grade). Lecture presentation on selected topic (20% of grade). Participation (10% of grade).

Required text: None

Recommended text: *Recombinant DNA: Genes and Genomes — A Short Course* Third Edition. 2007.

Genomes 3 Third Edition. 2006. By Terry A. Brown

Prerequisite: MBB 331

"Students requiring accommodations as a result of a disability, must contact the Centre for Students with Disabilities (778-782-3112 or e-mail: csdo@sfu.ca)."

All students are subject to and responsible for being familiar with the SFU academic integrity policy which can be found on-line at <http://students.sfu.ca/academicintegrity/index.html>

Students are advised to review the plagiarism tutorial found at

<http://www-old.lib.sfu.ca/researchhelp/tutorials/interactive/plagiarism/tutorial/table-of-contents.htm>

For help with writing, learning and study strategies please contact the Student Learning Commons at

<http://learningcommons.sfu.ca/>

From: nicholas harden <nharden@sfu.ca>
To: Rosemary Hotell <hotell@sfu.ca>
Subject: Re: MBB 746, 761, 762
Date: Wed, 27 Apr 2011 13:56:51 -0700

Hi Rosemary

Below is the report on MBB 746 and MBB 762. I am still checking on MBB 761.

Nick

----- Forwarded Message -----

From: "Leslie Rimmer" <lsrimmer@sfu.ca>
To: "Bruce Brandhorst" <brandhor@sfu.ca>
Cc: "Ingrid Northwood" <inorthwo@sfu.ca>, "Jenna Thomson" <jennat@sfu.ca>, "Gwen Bird" <gbird@sfu.ca>
Sent: Thursday, March 31, 2011 4:01:43 PM
Subject: Re: MBB 446/746 and 462/762 course proposals

Dear Bruce:

I have completed the course assessments for you for the following courses:

MBB 746 - Cell Death and Cell Survival
MBB 762 - Human Genomics

No additional library resources will be required to support these courses. They have been added to the appropriate list

at <http://www.lib.sfu.ca/collections/course-assessments> . This will be indicate library sign-off for you.

If you have any questions, please do not hesitate to contact me.

Best regards, Leslie

----- Forwarded Message -----

From: "Bruce Brandhorst" <brandhor@sfu.ca>
To: "Leslie Rimmer" <leslie_rimmer@sfu.ca>
Sent: Wednesday, March 30, 2011 2:40:00 PM
Subject: MBB 446/746 and 462/762 course proposals

From: nicholas harden <nharden@sfu.ca>
To: Rosemary Hotell <hotell@sfu.ca>
Subject: Fwd: request for course assessment for MBB761
Date: Thu, 28 Apr 2011 16:17:35 -0700

Hi Rosemary

Here is the library report for MBB 761.

Nick

Begin forwarded message:

From: Leslie Rimmer <lsrimmer@sfu.ca>
Date: April 28, 2011 3:43:14 PM PDT
To: nicholas harden <nharden@sfu.ca>
Cc: ursula ellis <ursula_ellis@sfu.ca>, Gwen Bird <gbird@sfu.ca>
Subject: Fwd: request for course assessment for MBB761

Dear Nick,

I have reviewed this proposal and concluded that no additional library resources will be needed to support MBB 761 - Comparative Genomics. I have therefore added it to the list at <http://www.lib.sfu.ca/collections/course-assessments> indicating library sign off.

Please don't hesitate to contact me should you have any questions.

Best regards,
Leslie

From: "nicholas harden" <nharden@sfu.ca>
To: gbird@sfu.ca
Sent: Wednesday, April 27, 2011 2:29:56 PM
Subject: request for course assessment for MBB761

Dear Gwen

MBB is proposing a new graduate course, MBB 761 Comparative Genomics, and we would like a library report done on this. The companion undergrad course, MBB461, has already been signed-off by the library. I attach the course proposal form and outline for this course.

Thanks for your attention.

Nick Harden
Chair MBB grad studies committee

Nicholas Harden, PhD
Associate Professor
Department of Molecular Biology and Biochemistry
Simon Fraser University
8888 University Drive
Burnaby, BC
V5A 1S6

SFU Connect

sheilagh@sfu.ca

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Course overlap check - MBB 746, 761 & 762

From : Rosemary Hotell <hotell@sfu.ca>

Wed, May 04, 2011 01:53 PM

Subject : Course overlap check - MBB 746, 761 & 762

To : Sheilagh MacDonald <sheilagh@sfu.ca>

>Date: Wed, 04 May 2011 13:30:55 -0700

>From: Duncan Knowler <djk@sfu.ca>

>To: Rosemary Hotell <hotell@sfu.ca>

>Subject: Course overlap check - MBB 746, 761 & 762

>

>Rosemary, no issues with these courses from FENV.

>

>Duncan Knowler

>Associate Dean, FENV

--

Rosemary Hotell
Faculty Assistant & Manager
Dean of Science Office, P9316
Simon Fraser University
Telephone: 778.782.3772
Fax: 778.782.3424



TO: W. Parkhouse
Dean of Graduate Studies

FROM: D. Bingham, Chair
Faculty of Science Graduate Studies
Committee

RE: PHYS 833-3 - New Courses

DATE: May 6, 2011

The following has been approved by the Faculty of Science and is forwarded for approval by the Senate Graduate Studies Committee. Please include this on the next SGSC agenda.

~~Molecular Biology & Biochemistry~~

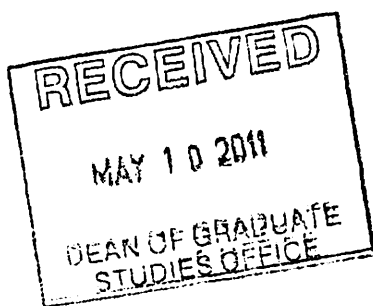
New course proposal: PHYS 833-3

A handwritten signature in black ink, appearing to be "D. Bingham", is written over a horizontal line.

D. Bingham

Enclosure

c. C. Cupples



SIMON FRASER UNIVERSITY

NEW GRADUATE COURSE PROPOSAL FORM

When a department proposes a new course it must first be sent to the chairs of each faculty graduate program committee where there might be an overlap in course content. The chairs will indicate that overlap concerns have been dealt with by signing the appropriate space or via a separate memo or e-mail (attach). The new course proposal must also be sent to the Library for a report.

Once overlap concerns have been dealt with, signatures indicate approval by the department, home faculty and Senate Graduate Studies Committee.

Department or School: PHYSICS

Proposed course number and title: PHYS 833-3 BIOLOGICAL PHYSICS LABORATORY

Other Faculties:

Other Faculties approval indicates that the Dean(s) or designate of other Faculties affected by the proposed new course support(s) the approval of the new course.

Name of Faculty	<u>Science</u>	Signature	_____	Date	_____
Name of Faculty	<u>Health Sciences</u>	Signature	<u>SEE EMAIL</u>	Date	<u>MARCH 15, 2011</u>
Name of Faculty	<u>Applied Sciences</u>	Signature	<u>SEE EMAIL</u>	Date	<u>MARCH 23, 2011</u>
Name of Faculty	_____	Signature	_____	Date	_____
Name of Faculty	_____	Signature	_____	Date	_____

Departmental approval (non-departmentalized faculties need not sign)

Department Graduate Program Committee
 Signature [Signature] Date May 2, 2011

Department Chair
 Signature [Signature] Date Apr 29 2011

Faculty approval

Faculty 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 Program Committee
 Signature [Signature] Date May 6/11

SGSC approval

Signature [Signature] Date June 14/11

SGSC approval indicates that the Library report has been seen, and all resource issues dealt with. Once approved, new course proposals are sent to Senate for information.

NEW GRADUATE COURSE PROPOSAL FORM

Subject: PHYS (max. 4 chars) **Catalog Number:** 833-3

Course Title: BIOLOGICAL PHYSICS LABORATORY (max. 80 char.)

Short Title (appears on transcripts etc.) BIOLOGICAL PHYSICS LAB (max. 25 char.)

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

Experiments in biological and soft condensed matter physics including investigation of Brownian motion, molecular order and biophysical forces using techniques such as optical trapping, NMR, spectroscopy and x-ray diffraction. Attention will also be given to more general skills, including experimental design, operating and troubleshooting experimental equipment, data analysis, and the presentation of experimental results.

Units: 3

Available Course Components: (select all that apply)

☐ Lecture

☐ Seminar

☒ Laboratory

☐ Practicum

Prerequisites: (if any)

PHYS 231 or MBB 309; PHYS 347 or PHYS 344 or MBB 323 or CHEM 360; or permission of the department.

Campus at which course will be offered: Burnaby

Estimated Enrolment: 5 **The term course will first be offered:** Fall 2011

Frequency of course offering: once per year

Grading Basis: ☒ Graded ☐ Satisfactory/Unsatisfactory ☐ In Progress/Complete

Justification:

Please see attached.

Resources:

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

(append information about their competency to teach the course)

Nancy Forde, John Bechhoefer, Barbara Frisken, Jenifer Thewalt, Eldon Emberly

Number of additional faculty members required in order to offer this course: None

Additional space required in order to offer this course: (append details) None

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

Additional Library resources required: (append details) **Annually \$** None **One-time \$** None

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.

PHYSICS 433-3/833-3

Biological Physics Laboratory

RECOMMENDED TEXTBOOK:

*"Statistics: A Guide to the Use of Statistical Methods
in the Physical Sciences"*

Author: R.J. Barlow

Publisher: Wiley

COURSE DESCRIPTION:

Experiments in biological and soft condensed matter physics including investigation of Brownian motion, molecular order and biophysical forces using techniques such as optical trapping, NMR, spectroscopy and x-ray diffraction. Attention will also be given to more general skills, including experimental design, operating and troubleshooting experimental equipment, data analysis, and the presentation of experimental results.

Prerequisites: PHYS 231 or MBB 309; PHYS 347 or PHYS 344 or MBB 323 or CHEM 360; or permission of the department.

Quantitative.

GRADING:

Laboratory reports: 45%

Mid-term quiz: 15%

Independent project and presentation: 40%

For graduate students enrolled in Phys 833, the breakdown of marks will be the same as for undergraduates, however the work required for each will be different, as follows.

- Laboratory work will require additional pre-lab questions and the answering of all (rather than just one) of the deeper "points to ponder" in the laboratory report.
- Some labs will also require more detailed data analysis.
- The mid-term quiz will include different questions.
- The independent project on a topic outside the student's primary research area will include a required written review of background literature.

COURSE OUTLINE:

Experimental techniques to be covered in the first half of the semester:

- Cell growth
- Electrophoresis
- Microscopy and motility
- Spectroscopy and light scattering
- Optical tweezers
- Fluorescence correlation spectroscopy

The second half of the semester will be spent on students' independent projects, based on current research in the biological physics literature. For their projects, students will make use of the techniques outlined above to probe physical properties of a biological system. The independent project will include a wet-lab portion (production of the biological system of interest) as well as physical measurements and quantitative analysis. The

Fall 2010

course will culminate in a scientific poster session during which all students present the work of their independent projects.

SFU Connect

physgrad@sfu.ca

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Fwd: New Course Proposal

From : Leslie Rimmer <lsrimmer@sfu.ca>

Tue, May 03, 2011 03:02 PM

Subject : Fwd: New Course Proposal 2 attachments**To :** Physics Graduate Program Assistant SFU <physgrad@sfu.ca>**Cc :** Shane Plante <spa61@sfu.ca>, Gwen Bird <gbird@sfu.ca>

Dear Rose,

I have reviewed this proposal and concluded that no additional library resources will be needed to support PHYS 833 - Biological Physics Laboratory. I have therefore added it to the list at <http://www.lib.sfu.ca/collections/course-assessments> indicating library sign off.

Please don't hesitate to contact me should you have any questions.

Best regards,

Leslie

----- Forwarded Message -----

From: "Physics Graduate Program Assistant SFU" <physgrad@sfu.ca>

To: "Gwen Bird" <gbird@sfu.ca>

Sent: Friday, April 29, 2011 3:24:45 PM

Subject: Re: New Course Proposal

Thank you Gwen. The proposal and outline are attached. Is it too vague for me to say ASAP for a completion date? The intention was to offer the course in the Fall semester, I'd like to forward the proposal and report to the Faculty within the next few days but I'm not sure how much time is generally involved in the reporting process, so please do let me know if that's an unreasonable timeline.

Thank you,

Rose

----- Forwarded Message -----

From: "Gwen Bird" <gbird@sfu.ca>

To: "Physics Graduate Program Assistant SFU" <physgrad@sfu.ca>

Sent: Friday, April 29, 2011 2:53:05 PM

Subject: Re: New Course Proposal

Hi Rose,

Electronic copy is fine. I will need the course outline as well (electronic also fine), and some idea of when you need the report completed.

--Gwen

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

From: "Physics Graduate Program Assistant SFU" <physgrad@sfu.ca>

To: "Gwen Bird" <gwen_bird@sfu.ca>

Sent: Friday, April 29, 2011 2:17:08 PM

SFU Connect

physgrad@sfu.ca

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Phys 833

From : Funda Ergun <funda@cs.sfu.ca>

Tue, Mar 22, 2011 01:19 PM

Subject : Phys 833**To :** physgrad@sfu.ca

Dear Amy,

This course was brought to my attention to check for any possible overlaps with Computing Science courses. It seems quite different from what we teach, so you can go ahead without worrying about us.

Thanks,

Funda

Funda Ergun
Associate Professor and Graduate Program Director
School of Computing Science

SFU Connect

physgrad@sfu.ca

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Re: New Graduate Course Proposal ~ Physics

From : Martin Ester <ester@cs.sfu.ca>

Wed, Mar 23, 2011 11:00 AM

Subject : Re: New Graduate Course Proposal ~ Physics**To :** Physics Graduate Program Assistant SFU <physgrad@sfu.ca>**Cc :** Funda Ergun <funda@cs.sfu.ca>**Reply To :** Martin Ester <ester@sfu.ca>

Dear Amy,

thanks for the course proposal. There is no overlap with our bioinformatics curriculum, and I have no concerns.

Best,

Martin

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

From: "Physics Graduate Program Assistant SFU" <physgrad@sfu.ca>

To: "Martin Ester" <ester@sfu.ca>

Cc: "Funda Ergun" <funda@cs.sfu.ca>

Sent: Wednesday, March 23, 2011 9:32:39 AM

Subject: Re: New Graduate Course Proposal ~ Physics

Dear Martin,

Please see attached for the PHYS 833 proposal. Thanks!

Thank you,

Ms. Amy Wiebe Lau

Graduate Program Assistant

Department of Physics

Simon Fraser University

P8429 - 8888 University Drive

Burnaby, BC V5A 1S6

Tel: 778.782.4310

Fax: 778.782.3592

Email: physgrad@sfu.ca

Web: physics.sfu.ca

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

From: "Martin Ester" <ester@cs.sfu.ca>

To: physgrad@sfu.ca

Cc: "Funda Ergun" <funda@cs.sfu.ca>

Sent: Tuesday, March 22, 2011 2:00:56 PM

Subject: Re: New Graduate Course Proposal ~ Physics

SFU Connect

physgrad@sfu.ca

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RE: New Graduate Course Proposal ~ Physics

From : John O'Neil <joneil@sfu.ca>

Tue, Mar 15, 2011 11:22 AM

Subject : RE: New Graduate Course Proposal ~ Physics**To :** 'Physics Graduate Program Assistant SFU' <physgrad@sfu.ca>

There are no overlap concerns.

--

John D. O'Neil, PhD
Professor and Dean
Faculty of Health Sciences
Simon Fraser University
Blusson Hall
8888 University Drive, Burnaby, BC.
Canada, V5A 1S6
Office: 778.782.5361
Fax: 778.782.5927
Cell: 604.306.4987
e-mail: joneil@sfu.ca
www.fhs.sfu.ca

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From: Physics Graduate Program Assistant SFU [<mailto:physgrad@sfu.ca>]**Sent:** March 15, 2011 9:12 AM**To:** joneil@sfu.ca**Subject:** Re: New Graduate Course Proposal ~ Physics

Dear Dean,

Sorry, please see revised proposal.

Thank you,
Ms. Amy Wiebe Lau
Graduate Program Assistant
Department of Physics
Simon Fraser University
P8429 - 8888 University Drive
Burnaby, BC V5A 1S6
Tel: 778.782.4310