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**MEMORANDUM**

<b>ATTENTION</b>	Senate	<b>DATE</b>	April 8, 2011
<b>FROM</b>	Bill Krane, Chair Senate Committee on Undergraduate Studies	<b>PAGES</b>	1/2
<b>RE:</b>	Faculty of Science (SCUS 11-23)		

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**For information:**

Acting under delegated authority at its meeting of April 7, 2011, SCUS approved the following curriculum revisions effective Spring 2012:

1. Department of Biomedical Physiology and Kinesiology (SCUS 11-23a)
  - (a) Changes to the Kinesiology Minor
  - (b) Changes to the Professional School Transfer for Kinesiology Major
  - (c) Changes to the Professional School Transfer for Biomedical Physiology Major
  - (d) Changes to the Biomedical Physiology Honors Program
  - (e) Prerequisite changes to KIN 496
  - (f) Prerequisite changes to KIN 498
  
2. Department of Chemistry (SCUS 11-23b)
  - (a) New Course Proposals:
    - CHEM 283-3, Organic Chemistry IIb
    - CHEM 266-2, Physical Chemistry Laboratory I
    - CHEM 330-4, Chemistry of the Main-Group Elements
    - CHEM 363-3, Chemical Kinetics and Reaction Dynamics
  - (b) Changes to the Chemistry Major
  - (c) Changes to the Chemistry Honours
  - (d) Title, description and prerequisite change for CHEM 366
  - (e) Title and description change for CHEM 367
  - (f) Changes to the Physics requirement for the Chemistry Major
  
3. Department of Earth Sciences (SCUS 11-23c)
  - (a) Changes to the EASC Major Program
  - (b) Prerequisite changes to EASC 204, 205, 207, 305, 314 and 302.

4. Department of Mathematics (SCUS 11-23d)

- (a) Prerequisite changes to MATH 448
- (b) Changes to the Applied Mathematics Major and Honours Program
- (c) Addition of MACM 201 to the Lower Division Requirements for the MACM Joint Major and Joint Honours Program

5. Department of Molecular Biology and Biochemistry (SCUS 11-23e)

- (a) Prerequisite changes to MBB 242
- (b) Changes to the MBB Major

6. Department of Physics (SCUS 11-23f)

- (a) Change to the Biological Physics Honours Program

7. Department of Statistics and Actuarial Science (SCUS 11-23g)

- (a) New Course Proposal: STAT 305-3, Introduction to Biostatistical Methods for Health Sciences

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 [shelley\\_gair@sfu.ca](mailto:shelley_gair@sfu.ca).



**TO:** Bill Krane, Chair, SCUS

**FROM:** Rolf Mathewes, Associate Dean  
Faculty of Science

**RE:** Faculty of Science  
Undergraduate Curriculum  
Items

**DATE:** March 29, 2011

The Faculty of Science has approved the following, which must now be considered by SCUS. Please place these items on the agenda of the next SCUS meeting.

1. **Biomedical Physiology & Kinesiology**
  - a) Changes to the KIN minor
  - b) Changes to the Professional School Transfer - KIN Major
  - c) Changes to the Professional School Transfer - BIF Major
  - d) Changes to the Biomedical Physiology Honors Program
  - e) KIN 496 - change in prerequisite
  - f) KIN 498 - change in prerequisite
  - g) Changes to admission to the KIN Major
  - h) Changes to admission to the KIN Minor
  - i) Changes to admission to the BIF Major
  - j) Changes to admission to the BIF Minor
2. **Chemistry**
  - a) CHEM 283-3, CHEM 266-2, CHEM 330-4, CHEM 363-3 New courses
  - b) Changes to the Chemistry Major
  - c) Changes to the Chemistry Honours
  - d) CHEM 366W-3 & CHEM 367-2 – change of name and prerequisite
  - e) Change to the Physics requirement for the Chemistry Major
3. **Earth Sciences**

Changes to the EASC Major Program  
EASC 204-3, EASC 205-3, EASC 207-3, EASC 305-3, EASC 314, EASC 302-3
4. **Mathematics**
  - a) MATH 448-3 – change of prerequisites
  - b) Change to the Applied Mathematics Major and Honours Program
5. **Molecular Biology & Biochemistry**
  - a) MBB 242 – prerequisite change
  - b) Changes to the MBB Major
6. **Physics**

Change to the Biological Physics Honours Program
7. **Statistics & Actuarial Science**

STAT 305-3 – New course

  
R. Mathewes

Enclosure

c. J. Hinchliffe, C. Cupples

**Summary of BPK Motions for FSUCC – March 18, 2011 – Ryan Dill**

Please see attachments for details of calendar changes.

**1. Kinesiology Minor**

**Motion :** add Kin 305 and 306 to 'and four of' list of required options for Kinesiology Minor.

**Rationale :** Several students currently take these courses for professional school and would like to count them towards their minor

**2. Professional School Transfer Requirements for Kinesiology Major**

**a. Motion:** Change upper division requirements for Professional transfer, removing Kin 340, 301 and 407 from list.

**b. Motion:** Add optometry to list of professional schools.

**Rationale:** Kin 340 is removed, as it is not required in both majors. Kin 301/ 407 (lab requirement) is removed, as students often can not take these until their final semester. Optometry added as it is listed in the Faculty of Science guidelines. We require a separate process form the faculty of science as the first year of many professional schools involves courses that are in our program (anatomy and physiology).

**3. Professional School Transfer Requirements for Biomedical Physiology Major**

**a. Motion:** Add the following section to the Biomedical physiology Major Program.

**Professional School Transfer**

Students are eligible to receive a bachelor of science (BSc) degree after completion of the second year of professional study and have completed at least 90 units of Simon Fraser University credit comprising the following.

- all lower division requirements
- 27 upper division units in biomedical physiology and kinesiology (including - KIN 304W, 305, 306, and 326)
- acceptance into an accredited professional program in dentistry, medicine, optometry, chiropractic, or veterinary medicine

Professional program courses must not duplicate those already completed at Simon Fraser University and must be acceptable for transfer credit to the University. Candidates apply for transfer credit and for receipt of the degree through Student Services.

**Rationale:** This section should be included in this major and be the same as just revised for the Kin Major.

**4. Biomedical Physiology Honors Degree**

**a. Motion :** Remove the statement “ at least 54 of the 61 must be in biomedical physiology and kinesiology courses.” from the first paragraph as the degree requires several upper division MBB and BISC courses.

**b. Motion:** Remove statement “only one of these courses may count toward the requirement of 27 upper division elective biomedical physiology and kinesiology units.” from the last paragraph referring to directed studies courses.

**Rationale:** As some students move into honors after taking both directed studies courses, we would like to allow our students to be able to count both directed studies courses towards their honors degree.

**5. Change of course prerequisite for Kin 496 – Directed Studies I**

**Motion:** Remove the statement “Honours students may count only one of either KIN 496 or KIN 498 towards their 27 upper division Kinesiology elective units.” From the course prerequisite of Kin 496.

**Rationale:** As some students move into honors after taking both directed studies courses, we would like to allow our students to be able to count both directed studies courses towards their honors degree.

**6. Change of course prerequisite for Kin 498 - Directed Studies II**

**Motion:** Remove the statement “Honours students may count only one of either KIN 496 or KIN 498 towards their 27 upper division Kinesiology elective units.” From the course prerequisite of Kin 498.

**Rationale:** As some students move into honors after taking both directed studies courses, we would like to allow our students to be able to count both directed studies courses towards their honors degree.

**7. Admissions Process for Kinesiology Major**

**a. Motion :** Remove post secondary transfer, option 2, from list of possible entry

**b. Motion :** Change three to two in second sentence of Admission Requirements.

**c. Motion :** Remove following sentence from Admission Requirements to align with other programs in Faculty of Science

If one or more courses have been duplicated (repeated), the grades from all course attempts will be used equally to calculate the kinesiology admission GPA.

**d. Motion :** Remove ‘and Direct transfer, Post Secondary Institutions’ from Direct Admission Title and description

**e. Motion :** Add the following paragraph and title after Direct Admission

Post-Secondary Transfer

Students transferring to Simon Fraser University for the Kinesiology major will first transfer into the Faculty of Science as an 'intended major'. Students may then apply for admission through the internal transfer process outlined below.

- f. **Motion** : Change ten to nine in second sentence of paragraph three of internal transfer.
- g. **Motion** : Change four to nine in last sentence of paragraph three of internal transfer.
- h. **Motion** : Add the following sentence to end of paragraph three of internal transfer.

All courses completed towards the program will be included in the application process.

- i. **Motion** : Change the dates in the Application Procedure to June, October and February.

#### **8. Admissions Process for Kinesiology Minor**

- a. **Motion** : Change three to four in first sentence of paragraph one.
- b. **Motion** : Add the following sentence to the end of paragraph one.

At least one of the four courses must be KIN 105 or KIN 142.

- c. **Motion** : Change three to four in first sentence of paragraph two.
- d. **Motion** : Remove the following sentence from paragraph two.

If one or more have been duplicated (repeated), grades from all course attempts will be used equally to calculate kinesiology's admission GPA.

- e. **Motion** : Add the following sentence to the end of paragraph two.

All courses completed towards the program will be included in the application process.

- f. **Motion** : Add the following paragraph and title.

Application Procedure

Students should complete a program approval form available at the Biomedical Physiology and Kinesiology general office and submit it to the academic advisor by June 1 for fall term approval, October 1 for spring term approval, or February 1 for summer term approval.

## **9. Admissions Process for Biomedical Physiology Major**

- a. **Motion** : In prerequisite course grades, change kinesiology to biomedical physiology, and remove '(including concentrations)'
- b. **Motion** : Remove post secondary transfer, option 2
- c. **Motion** : Change three to two in second sentence of Admission Requirements.
- d. **Motion** : Remove following sentence from Admission Requirements

If one or more courses have been duplicated (repeated), the grades from all course attempts will be used equally to calculate the kinesiology admission GPA.

- e. **Motion** : Remove 'and Direct transfer, Post Secondary Institutions' from Direct Admission Title and description
- f. **Motion** : Add the following paragraph and title after Direct Admission

### **Post-Secondary Transfer**

Students transferring to Simon Fraser University for the Biomedical Physiology major will first transfer into the Faculty of Science as an 'intended major'. Students may then apply for admission through the internal transfer process outlined below.

- g. **Motion** : Remove Kin 207 – no longer in program
- h. **Motion** : Add BISC 102 to secondary list
- i. **Motion** : Change four to ten in last sentence of paragraph three of internal transfer.
- j. **Motion** : Add the following sentence to end of paragraph three of internal transfer.

All courses completed towards the program will be included in the application process.

- k. **Motion** : Change the dates in the Application Procedure to June, October and February.

## **10. Admissions Process for Biomedical Physiology Minor**

- a. **Motion** : Add the following title and paragraph above admission requirements  
Prerequisite Course Grade

Students enrolling in kinesiology courses must have a grade of C- or better in prerequisite courses. Students enrolled in the biomedical physiology minor must have grade of C- or better in all required courses.

- b. **Motion** : Remove everything directly under the heading Admission Requirements, as these statements only apply to majors.

- c. **Motion** : Remove title internal transfer.
- d. **Motion** : Remove Kin 142, Kin 201, Kin 207, and STAT 201 as they are not in the minor program.
- e. **Motion** : Add BISC 102 to secondary list as it is in minor program
- f. **Motion** : Change five to four in paragraph two.
- g. **Motion** : Change ten to eight in second sentence of paragraph three.
- h. **Motion** : Change four to eight in last sentence of paragraph three.
- i. **Motion** : Add the following sentence to end of paragraph three.

All courses completed towards the program will be included in the application process.

- j. **Motion** : Change the dates in the application procedures to June, October and February.



**Motion : Add Kin 305 and Kin 306 to 'and four of ' list of requirement options for Kinesiology Minor**

**Rationale : Several students currently take these courses for professional school and would like to count them towards their minor.**

**KIN MINOR**

**FROM :**

**Program Requirements**

the following have been completed, with a minimum grade of C-in each course. At that point, applicants can submit a program approval form to the undergraduate advisor.

Students complete

KIN 142-3 Introduction to Kinesiology  
and one of

KIN 105-3 Fundamentals of Human Structure and Function  
KIN 205-3 Introduction to Human Physiology  
KIN 208-3 Introduction to Physiological Systems  
and three of the following, one of which must be a 200 division course

KIN 110-3 Human Nutrition: Current Issues  
KIN 111-3 Food and Food Safety  
KIN 140-3 Contemporary Health Issues  
KIN 143-3 Exercise: Health and Performance  
KIN 180W-3 Introduction to Ergonomics  
KIN 201-3 Biomechanics  
KIN 207-3 Human Motor Systems  
KIN 212-3 Food and Society  
KIN 241-3 Sports Injuries — Prevention and Rehabilitation  
and one of

KIN 325-3 Basic Human Anatomy  
KIN 342-3 Active Health  
and four of

KIN 303-3 Kinanthropometry  
KIN 310-3 Exercise/Work Physiology  
KIN 311-3 Applied Human Nutrition  
KIN 312-3 Nutrition for Fitness and Sport  
KIN 325-3 Basic Human Anatomy\*  
KIN 342-3 Active Health\*  
KIN 367-3 Psychology of Motor Skill Acquisition  
KIN 375-3 Human Growth and Development  
KIN 380-3 Occupational Biomechanics  
KIN 381-3 Psychology of Work  
KIN 382-3 Workplace Health  
KIN 420-3 Selected Topics I  
KIN 421-3 Selected Topics II  
KIN 422-3 Selected Topics III  
KIN 423-3 Selected Topics IV  
KIN 431-3 Environmental Carcinogenesis  
KIN 461-3 Physiological Aspects of Aging  
KIN 488-3 Ergonomics Laboratory  
\*if not already counted toward this program

## **KIN MINOR**

**TO:**

### **Program Requirements**

the following have been completed, with a minimum grade of C-in each course. At that point, applicants can submit a program approval form to the undergraduate advisor.

Students complete

KIN 142-3 Introduction to Kinesiology  
and one of

KIN 105-3 Fundamentals of Human Structure and Function  
KIN 205-3 Introduction to Human Physiology  
KIN 208-3 Introduction to Physiological Systems  
and three of the following, one of which must be a 200 division course

KIN 110-3 Human Nutrition: Current Issues

KIN 111-3 Food and Food Safety  
KIN 140-3 Contemporary Health Issues  
KIN 143-3 Exercise: Health and Performance  
KIN 180W-3 Introduction to Ergonomics  
KIN 201-3 Biomechanics  
KIN 207-3 Human Motor Systems  
KIN 212-3 Food and Society  
KIN 241-3 Sports Injuries — Prevention and Rehabilitation  
and one of

KIN 325-3 Basic Human Anatomy  
KIN 342-3 Active Health  
and four of

KIN 303-3 Kinanthropometry  
**KIN 305-3 Human Physiology I**  
**KIN 306-3 Human Physiology II (Principles of Physiological  
Regulation)**

KIN 310-3 Exercise/Work Physiology  
KIN 311-3 Applied Human Nutrition  
KIN 312-3 Nutrition for Fitness and Sport  
KIN 325-3 Basic Human Anatomy\*  
KIN 342-3 Active Health\*  
KIN 367-3 Psychology of Motor Skill Acquisition  
KIN 375-3 Human Growth and Development  
KIN 380-3 Occupational Biomechanics  
KIN 381-3 Psychology of Work  
KIN 382-3 Workplace Health  
KIN 420-3 Selected Topics I  
KIN 421-3 Selected Topics II  
KIN 422-3 Selected Topics III  
KIN 423-3 Selected Topics IV  
KIN 431-3 Environmental Carcinogenesis  
KIN 461-3 Physiological Aspects of Aging  
KIN 488-3 Ergonomics Laboratory  
\*if not already counted toward this program

**Rationale:**

**Students in the minor program have asked for these courses to count towards their degree for professional schools.**

**Motion : Modifications to Professional School Transfer Requirements for the Kinesiology Majors.**

- a. Change upper division requirements, removing 340, 301 and 407 .
- b. Add optometry to list of professional schools.

**FROM :**

**BPK**

**Professional School Transfer**

Students are eligible to receive a bachelor of science (BSc) degree after completion of the second year of professional study and have completed at least 90 units of Simon Fraser University credit comprising the following.

- all lower division requirements
- 27 upper division units in biomedical physiology and kinesiology (including - KIN 304, 305, 306, 326, 340 and either 301 or 407)
- acceptance into an accredited professional program in dentistry, medicine, chiropractic, or veterinary medicine

Professional program courses must not duplicate those already completed at Simon Fraser University and must be acceptable for transfer credit to the University. Candidates apply for transfer credit and for receipt of the degree through Student Services.

**TO :**

**Professional School Transfer**

Students are eligible to receive a bachelor of science (BSc) degree after completion of the second year of professional study and have completed at least 90 units of Simon Fraser University credit comprising the following.

- all lower division requirements
- 27 upper division units in biomedical physiology and kinesiology (including - KIN 304W, 305, 306, and 326)
- acceptance into an accredited professional program in dentistry, medicine, optometry, chiropractic, or veterinary medicine

Professional program courses must not duplicate those already completed at Simon Fraser University and must be acceptable for transfer credit to the University. Candidates apply for transfer credit and for receipt of the degree through Student Services.

**Rationale:**

1. We will still require two years before granting transfer, as there is significant overlap between our programs and the first year of most professional school programs. Kin 340 is removed, as it is not required in the BIF major. Kin 301/407 (lab requirement) is removed, as students often can not take these until their final semester.

2. Optometry added as it is listed in the Faculty of Science guidelines.

For Reference the following is used in the Faculty of Science

**Current Calendar:**

**Faculty of Science**

**Transfer Credit and Bachelor of Science Degrees for Students Who Successfully Complete First Year Medical Science Professional Training**

Students who complete at least 90 units in a science degree program and are accepted into an accredited professional program in medicine, dentistry, optometry or veterinary medicine are eligible for a Simon Fraser University bachelor of science degree after successful completion of the first professional study year. To be acceptable, courses completed in the professional program must not duplicate those already completed at Simon Fraser University and must be acceptable for transfer credit in a major or honours program. Candidates must apply for transfer credit and a bachelor's degree through Simon Fraser University. Since official transcripts of the work completed in the first year of the professional program are required for transfer credit, application for graduation should be delayed until the summer term following the completion of requirements.

**Motion : Add Professional School Transfer Requirements to the Biomedical Physiology Major Program**

TO :

**Professional School Transfer**

Students are eligible to receive a bachelor of science (BSc) degree after completion of the second year of professional study and have completed at least 90 units of Simon Fraser University credit comprising the following.

- all lower division requirements
- 27 upper division units in biomedical physiology and kinesiology (including - KIN 304W, 305, 306, 326)
- acceptance into an accredited professional program in dentistry, medicine, optometry, chiropractic, or veterinary medicine

Professional program courses must not duplicate those already completed at Simon Fraser University and must be acceptable for transfer credit to the University. Candidates apply for transfer credit and for receipt of the degree through Student Services.

**Rationale:**

1. This section should be included in this major, and be the same as just revised for the Kinesiology Major.

For Reference the following is used in the Faculty of Science

**Current Calendar:**

**Faculty of Science**

**Transfer Credit and Bachelor of Science Degrees for Students Who Successfully Complete First Year Medical Science Professional Training**

Students who complete at least 90 units in a science degree program and are accepted into an accredited professional program in medicine, dentistry, optometry or veterinary medicine are eligible for a Simon Fraser University bachelor of science degree after successful completion of the first professional study year. To be acceptable, courses completed in the professional program must not duplicate those already completed at Simon Fraser University and must be acceptable for transfer credit in a major or honours program. Candidates must apply for transfer credit and a bachelor's degree through Simon Fraser

**University. Since official transcripts of the work completed in the first year of the professional program are required for transfer credit, application for graduation should be delayed until the summer term following the completion of requirements.**



## Biomedical Physiology Honors Degree

a. **Motion:** Remove statement "At least 54 of the 61 must be in biomedical physiology and kinesiology courses." from the first paragraph as the degree requires several upper division MBB and BISC courses.

b. **Motion:** Remove statement "only one of these courses may count toward the requirement of 27 upper division elective biomedical physiology and kinesiology units." from the last paragraph referring to directed studies courses.

### Rationale:

## Biomedical Physiology Honors Program

From:

### Upper Division Requirements

Students complete a minimum of 61 upper division units in the following courses, each of which must be completed with a grade of C- or higher. **At least 54 of the 61 must be in biomedical physiology and kinesiology courses.**

Students complete all of

KIN 304W-3 Inquiry and Measurement in Kinesiology†  
KIN 305-3 Human Physiology I  
KIN 306-3 Human Physiology II  
KIN 326-4 Functional Anatomy  
KIN 407-3 Human Physiology Laboratory  
KIN 497-3 Undergraduate Honours Thesis Proposal  
KIN 499-12 Undergraduate Honours Thesis  
MBB 321-3 Intermediary Metabolism

and one of

BISC 303-3 Microbiology  
BISC 329-4 Introduction to Experimental Techniques  
BISC 333-3 Developmental Biology  
BISC 357-3 Gene Cloning  
BISC 403-3 Current Topics in Cell Biology  
BISC 405-3 Cell Physiology

BISC 431-3 Molecular Biotechnology  
MBB 308-3 Molecular Biology and Biochemistry Laboratory I  
MBB 309-3 Molecular Biology and Biochemistry Laboratory II  
MBB 322-3 Molecular Physiology  
MBB 323-3 Introduction to Physical Biochemistry  
MBB 331-3 Molecular Biology  
and seven of

KIN 301-3 Biomechanics Laboratory  
KIN 310-3 Exercise/Work Physiology  
KIN 336-3 Microscopic Anatomy  
KIN 340-3 Active Health: Behavior and Promotion  
KIN 402-3 Mechanical Properties of Tissues  
KIN 412-3 Molecular and Cellular Cardiology  
KIN 415-3 Neural Control of Movement  
KIN 416-3 control of Limb Mechanics  
KIN 420-3 Selected Topics I\*  
KIN 421-3 Selected Topics II\*  
KIN 422-3 Selected Topics III\*  
KIN 423-3 Selected Topics IV\*  
KIN 426-3 Neuromuscular Anatomy  
KIN 430-3 Human Energy Metabolism  
KIN 431-3 Environmental Carcinogenesis  
KIN 442-3 Biomedical Systems  
KIN 444-3 Cardiac Disease: Pathophysiology and Assessment  
KIN 446-3 Neurobiology of Disease  
KIN 448-3 Rehabilitation of Movement Control  
KIN 484-3 Altitude and Aerospace Physiology  
KIN 496-3 Directed Study I\*  
KIN 498-3 Directed Study II\*  
and three upper division units from any faculty

†KIN 304W satisfies the University's breadth requirements of three upper division units in writing

\*must be selected topics courses in physiology; **only one of these courses may count toward the requirement of 27 upper division elective biomedical physiology and kinesiology units.**

TO:

## Upper Division Requirements

Students complete a minimum of 61 upper division units in the following courses, each of which must be completed with a grade of C- or higher.

Students complete all of

KIN 304W-3 Inquiry and Measurement in Kinesiology†  
KIN 305-3 Human Physiology I  
KIN 306-3 Human Physiology II  
KIN 326-4 Functional Anatomy  
KIN 407-3 Human Physiology Laboratory  
KIN 497-3 Undergraduate Honours Thesis Proposal  
KIN 499-12 Undergraduate Honours Thesis  
MBB 321-3 Intermediary Metabolism

and one of

BISC 303-3 Microbiology  
BISC 329-4 Introduction to Experimental Techniques  
BISC 333-3 Developmental Biology  
BISC 357-3 Gene Cloning  
BISC 403-3 Current Topics in Cell Biology  
BISC 405-3 Cell Physiology  
BISC 431-3 Molecular Biotechnology  
MBB 308-3 Molecular Biology and Biochemistry Laboratory I  
MBB 309-3 Molecular Biology and Biochemistry Laboratory II  
MBB 322-3 Molecular Physiology  
MBB 323-3 Introduction to Physical Biochemistry  
MBB 331-3 Molecular Biology

and seven of

KIN 301-3 Biomechanics Laboratory  
KIN 310-3 Exercise/Work Physiology  
KIN 336-3 Microscopic Anatomy  
KIN 340-3 Active Health: Behavior and Promotion  
KIN 402-3 Mechanical Properties of Tissues  
KIN 412-3 Molecular and Cellular Cardiology

KIN 415-3 Neural Control of Movement  
KIN 416-3 control of Limb Mechanics  
KIN 420-3 Selected Topics I\*  
KIN 421-3 Selected Topics II\*  
KIN 422-3 Selected Topics III\*  
KIN 423-3 Selected Topics IV\*  
KIN 426-3 Neuromuscular Anatomy  
KIN 430-3 Human Energy Metabolism  
KIN 431-3 Environmental Carcinogenesis  
KIN 442-3 Biomedical Systems  
KIN 444-3 Cardiac Disease: Pathophysiology and Assessment  
KIN 446-3 Neurobiology of Disease  
KIN 448-3 Rehabilitation of Movement Control  
KIN 484-3 Altitude and Aerospace Physiology  
KIN 496-3 Directed Study I\*  
KIN 498-3 Directed Study II\*  
and three upper division units from any faculty

†KIN 304W satisfies the University's breadth requirements of three upper division units in writing

\*must be selected topics courses in physiology



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

Course number  Credit  Title  Description  Prerequisite  Course deletion

Indicate number of hours for: Lecture \_\_\_\_\_ Seminar \_\_\_\_\_ Tutorial \_\_\_\_\_ Lab \_\_\_\_\_

FROM TO
Course Number KIN 496 KIN 496
Credits (Units) 3 3

TITLE

(1) Long title for calendar and schedule, no more than 100 characters including spaces and punctuation.

Directed Study I Directed Study I

(2) Short title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

DESCRIPTION

DESCRIPTION

PREREQUISITE

Prerequisite: permission from the chair of the undergraduate program committee. Usually, upper level standing with at least 75 units in the kinesiology program will be required. Honours s

PREREQUISITE

Prerequisite: permission from the chair of the undergraduate program committee. Usually, upper level standing with at least 75 units in the kinesiology program will be required.

RATIONALE

As some students move into honors after taking both directed studies courses, we would like to allow our students to be able to count both directed studies courses towards their honors degree.

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be noted in the prerequisite.

Effective term and year Fall 2011



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

Course number  Credit  Title  Description  Prerequisite  Course deletion

Indicate number of hours for: Lecture \_\_\_\_\_ Seminar \_\_\_\_\_ Tutorial \_\_\_\_\_ Lab \_\_\_\_\_

FROM TO
Course Number KIN 498 Course Number KIN 498
Credits (Units) 3 Credits (Units) 3

TITLE

(1) Long title for calendar and schedule, no more than 100 characters including spaces and punctuation.

Directed Study II Directed Study II

(2) Short title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

DESCRIPTION

DESCRIPTION

PREREQUISITE

insufficient space, please see rationale

PREREQUISITE

insufficient space, please see rationale

RATIONALE

As some students move into honors after taking both directed studies courses, we would like to allow our students to be able to count both directed studies courses towards their honors degree.

From: Prerequisite: STAT 201 and permission from the chair of the undergraduate program committee. Usually, upper level standing with at least 75 units in the kinesiology program will be required. Honours students may count only one of either KIN 496 or KIN 498 towards their 27 upper division kinesiology elective units.

To: Prerequisite: STAT 201 and permission from the chair of the undergraduate program committee. Usually, upper level standing with at least 75 units in the kinesiology program will be required.

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be noted in the prerequisite.

Effective term and year Fall 2011

**Chemistry Motions for FSUCC meeting  
(all material already approved by Chem. Dept.)**

**Background for Motions 1-8**

In March 2008, the Chem. Dept. underwent an external review. Part of this review included an examination of our undergraduate curriculum. The review committee commented as follows:

“In the areas of physical and inorganic chemistry, the core courses provide only the bare minimum. For example, an undergraduate at SFU is likely to receive only a cursory introduction to main group chemistry and a rather limited exposure to kinetics....The committee would prefer [over a group theory/symmetry course – my brackets] to see the addition of a main group chemistry course and an increase in the exposure of undergraduates to basic physical chemistry as the first priorities for new courses.”

After extensive discussions throughout the Department (guided by the Dept. Undergraduate Studies Committee), the Chemistry Dept. unanimously approved the following package to address the concerns of the external review, and also to further improve our core offerings in general. In addition to pedagogical principles, the issues of maintaining flexibility for students through our program, as well as teaching resource limitations, were taken into consideration. Thus, the following motions are proposed for consideration by FSUCC:

1. **MOTION:** To approve the new course CHEM 283-3, "Organic Chemistry IIb" as outlined in the supporting documentation.
2. **MOTION:** To approve the new course CHEM 266-2, "Physical Chemistry Laboratory I" as outlined in the supporting documentation.
3. **MOTION:** To approve the new course CHEM 330-4, "Chemistry of the Main-Group Elements" as outlined in the supporting documentation.
4. **MOTION:** To approve the new course CHEM 363-3, "Chemical Kinetics and Reaction Dynamics" as outlined in the supporting documentation.
5. **MOTION:** To approve the change in the requirement for the completion of a Chemistry Majors degree such that:

(a) CHEM 283-3 and CHEM 266-2 are required core courses.

(b) the number of upper-division chemistry electives required for a Chem. Major degree increases from 9 to 15.

Rationale: This has the effect of guiding our students to taking more chemistry, without forcing them to take specific courses. The number of chemistry credit hours required in the SFU Major is less than most other schools in Western Canada and this will help to rectify this situation.

(c) Of the 15 UD-CHEM electives, 6 must be CHEM 4xx (as previously), 3 can be from MBB AND 3 can be NUSC.

Rationale: The current status is that 3 can be from MBB OR NUSC. This change has the potential of drawing some additional students to the NUSC courses without negatively impacting their ability to take MBB courses.

**6. MOTION:** To approve the change in the requirements for the completion of a Chemistry Honours degree such that:

(a) CHEM 283-3 and CHEM 266-2 are required core courses.

(b) the number of required CHEM/elective credits at the lower/upper division is adjusted to reflect the addition of CHEM 283-3 and 266-2. The total credits remains unchanged.

**7. MOTION:** To approve the course name change and prerequisite for CHEM 366W-3 to reflect the introduction of CHEM 266-2, as outlined in the supporting documentation.

**8. MOTION:** To approve the course name change and prerequisite for CHEM 367-2 to reflect the introduction of CHEM 266-2, as outlined in the supporting documentation.

All course proposal documentation, course outlines and proposed changes to the major/honours requirements are included below.

**9. MOTION:** That the Physics requirements for the Chemistry Major program be amended such that the following paragraph will be added to the section headed "Students Intending to Specialize in Chemistry" between the two existing paragraphs (page 191 of the 2009/2010 Calendar):

"Students are encouraged to complete the Standard (PHYS 120/PHYS 121/PHYS



131) or Advanced (PHYS 125/PHYS 126/PHYS 131) streams of Physics. Students may also choose to complete the Studio (PHYS 140/PHYS 141) Physics stream. Students who complete the Life-Sciences (PHYS 101/PHYS 102/PHYS 130) stream (which has a BISC 100 or BISC 101 or BISC 102 co-requisite) with a minimum B grade should have sufficient preparation for the Major program."

This change has been brought forward in consultation with and the approval of Physics (see attached documentation).

Cheers,  
Danny Leznoff  
Chemistry DUGS Chair

**SIMON FRASER UNIVERSITY**  
**Senate Committee for Undergraduate Studies**  
**NEW COURSE PROPOSAL**

Course Number: CHEM 283-3

Course Title: Organic Chemistry IIb

**AND**

Organic Chemistry IIb

Indicate number of hours for Lect ( 3 ) Sem ( 0 ) Tut ( 1 ) Lab ( 0 )

---

**Course Description (for Calendar).**

An advanced treatment of Organic Chemistry II. Topics include dienes and their reactivity, conjugation and aromaticity, aromatic substitution reactions, carboxylic acids and their derivatives, ketones and aldehydes, biological molecules, radical reactions, organometallic reagents, pericyclic reactions and planning multistep syntheses. Quantitative.

**Prerequisite:** CHEM 281.

**Corequisite:** None

**Special Instructions:** Students should not receive credit for both CHEM 282 and CHEM 283

**Course(s) to be dropped if this course is approved:** None

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**Rationale for Introduction of this Course:**

Currently, the second half of introductory organic chemistry (CHEM 282) is offered as a 2-credit, high enrollment (typically 200-300 students/semester) course and is required for a number of degree programs; including Chemistry, Molecular Biology and Biochemistry, Biological Sciences, Environmental Science, Health Science, and Kinesiology. In addition, students that intend to transfer to professional programs in dentistry, medicine, veterinary medicine, or pharmacology are required to complete CHEM 282. As a result of the limited lecture time available in a 2-credit course (26 lectures), the curriculum for CHEM 282 is a condensed version of what is taught at most Canadian universities. The rationale for introducing CHEM 283 is to provide a stronger foundation in organic chemistry for Chemistry majors and other students that intend to enroll in upper division chemistry courses, without disrupting current course requirements for other departments. It is important to note that CHEM 283 will be

taught concurrently with CHEM 282 by the same instructor. After 26 lectures together, CHEM 282 and 283 students will write a comprehensive exam, following which CHEM 282 students will have completed their course requirements. Students enrolled in CHEM 283 will have an additional 13 lectures in which topics not covered in CHEM 282 but considered fundamental aspects of introductory organic chemistry (e.g., organometallics, radical chemistry, pericyclic reactions, molecular orbital theory) will be discussed. These additional lectures will better prepare students for upper division chemistry courses, bring our curriculum in line with that of most other Canadian universities and the reduced class size for these last 13 lectures should enhance the overall learning experience for students that intend to continue on in chemistry. It is also expected that students enrolled in CHEM 282 will benefit from the condensed semester (i.e., triweekly lectures for 8.7 weeks), as the current format for CHEM 282 (biweekly lectures for 13 weeks) includes a 4-day gap between lectures and, as a result, considerable time is wasted on review.

**Scheduling and Registration Information:**

The first semester this course will be offered is 2011-3. Subsequently, this course will be offered once every semester along with CHEM 282.

---

**Note: There is a two-semester(term) wait for implementation of any new course.**

**Indicate if there is a Waiver required**

YES \_\_\_\_\_ NO  \_\_\_\_\_

**Will this be a required or elective course in the curriculum?**

This course will be a required course in the Chemistry curriculum.

**What is the probable enrolment when offered?**

20-40 students per semester

**Which of your present CFL faculty have the expertise to offer this course?**

This course will be taught by faculty members that have taught Organic Chemistry I and/or II in the past, including Andrew Bennet, Neil Branda, Robert Britton, Uwe Kreis, Sophie Lavieri, Nabyl Merbouh, Melanie O'Neill, Mario Pinto, Erika Plettner, Vance Williams, and Peter Wilson.

**Are there any proposed student fees associated with this course other than tuition fees? (if so, attach mandatory supplementary fee approval form)** NO

**Resource Implications:**

**Note: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.**

Campus where course will be taught: \_\_\_\_\_ Burnaby and Surrey \_\_\_\_\_

Library report status \_\_\_\_\_ See attached \_\_\_\_\_

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering?

CHEM 283 will not require additional instructional resources. CHEM 282 is currently offered every semester and CHEM 283 is simply a 13-lecture extension of CHEM 282. Importantly, there will be no change to the CHEM 282 curriculum and the faculty members that currently teach CHEM 282 (Britton, Kreis, Lavieri, Merbouh, Plettner, Williams) unanimously support the introduction of CHEM 283. As a consequence of condensing CHEM 282 to 8.6 weeks, students enrolled in CHEM 282 will have 4 fewer tutorials, and the combination of CHEM 282 and CHEM 283 will require less tutorials and resources for tutorials (i.e., classroom time, Teaching Assistant hours, etc.) than is currently needed for CHEM 282 alone.

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc.

None.

**Approvals**

1. **Departmental approval** indicates that the Department has approved the content of the course, and has consulted with other Departments and Faculties regarding proposed course content and overlap issues.

	<u>March 17, 2011</u>
Chair, Dept./School	Date
	<u>March 29, 2011</u>
Chair, Faculty Curriculum Committee	Date

**2. 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.

Clara Epps Date: 29 March 2011  
Dean or Designate

*List which other Departments Schools and Faculties have been consulted regarding the proposed course content including overlap issues. Attach documentary evidence of responses.*

No consultations with other Departments/Faculties were conducted with respect to the addition of this course, since the original CHEM 282 will remain in force. Nevertheless, if approved, other Departments and programs that have CHEM 282 in their program may want to consider using CHEM 283 instead, if they desire a higher level of organic chemistry.

**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.

\_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_ Date: \_\_\_\_\_

**3. SCUS approval** indicates that the course has been approved for implementation subject, where appropriate, to financial issues being addressed.

Course approved by SCUS (Chair of SCUS)

\_\_\_\_\_ Date: \_\_\_\_\_

**Approval is signified by date and appropriate signature.**

**CHEM 283-3**  
**Organic Chemistry IIb**

**General Course Description:**

This lecture course is a requirement for students that intend on enrolling in upper division chemistry courses. The intention of this course is to provide students with a fundamental appreciation for synthetic organic chemistry, including the mechanisms of organic reactions, as well as an introduction to synthetic methods that facilitate the construction of complex organic molecules. In addition, this course provides an introduction to biological molecules (e.g., carbohydrates, nucleic acids and DNA) and the reactions of these molecules as they relate to biological processes. As specific course outline is detailed below.

**Weeks 1-2:** Dienes and their reactivity, and the Diels-Alder reaction. Introduction to terpenes, resonance stabilization and allylic and benzylic cations.

**Weeks 2-4:** Aromatic compound, including nomenclature, electrophilic aromatic substitution, Friedel-Crafts alkylation, and substituent effects on reactivity.

**Weeks 4-5:** Carboxylic acids and their derivatives. including nomenclature and physical properties, nucleophilic acyl substitution, reactions of acids, esters, acid chlorides, amides, nitriles, and Friedel-Crafts acylation.

**Weeks 5-7:** Ketones and aldehydes, including oxidation and reduction reactions, Grignard addition reactions, reactions with various nucleophiles, reactions of  $\alpha,\beta$ -unsaturated aldehydes and ketones, conversion to enamines, imines, ketals and alkenes. Reactions on the  $\alpha$ -carbon, including keto-enol tautomerization, enolate formation, alkylation, halogenation, Michael reaction, aldol reaction, Claisen condensation, and Robinson annulation.

**Week 7-8:** Biological molecules, including relationships between structure and reactivity, carbohydrates (discussed in the context of acetals, conformation and stereochemistry), amino acids (discussed in the context of amides and amide couplings as well as peptide synthesis), and DNA/RNA (discussed in the context of heterocycles, stability and reactivity).

**Week 9:** Reactions of aromatic compounds, including nucleophilic aromatic substitution as well as the formation and reactions of diazonium salts.

**Week 10:** Radical chemistry, including a discussion of structure and the relationship between structure and reactivity as well as examples of simple radical reactions.

**Week 11:** Organometallic chemistry, including a discussion of alkyl lithium reagents (formation and reactivity), formation and reaction of organocuprates, and the Reformatsky reaction. A detailed analysis of palladium cross coupling reactions (including catalytic cycle for Stille cross coupling) and representative examples of both the Stille cross coupling and Sonagashira cross coupling reactions will also be presented.

**Week 12:** Pericyclic reactions, including a mechanistic discussion of the Diels-Alder reaction using molecular orbital theory. The molecular orbital theory will also be used to understand the mechanism and requirements for sigmatropic rearrangements, cycloaddition reactions and electrocyclic rearrangements. Representative and examples of each type of reaction will be given.

**Week 13:** Specific examples of target-oriented synthesis, including an analysis of synthetic planning/retrosynthetic analysis will be presented.

### **Grading:**

The first 2/3 of the course coincide with the CHEM 282 curriculum and students will receive 65% of their CHEM 283 grade for their performance in this portion as follows:

Assignments:	10%
Interterm exam:	15%
Comprehensive Exam:	30%

The remainder of their grade will be derived from their performance in the last 13 lectures as assessed by:

Assignments:	5%
Final Exam:	40%

### **Textbook:**

Paula Y. Bruice, *Organic Chemistry, 6<sup>th</sup> Edition*, Prentice Hall, 2010.

**SIMON FRASER UNIVERSITY**  
**Senate Committee for Undergraduate Studies**  
**NEW COURSE PROPOSAL**

Course Number: CHEM 266-2

Course Title:

Long - for calendar/schedule no more than 100 characters including spaces/punctuation:

Physical Chemistry Laboratory I – The Microscopic World of Chemistry

AND

Short - for registration/transcript no more than 30 characters including spaces/punctuation

Phys Chem Lab I

Indicate number of hours for Lect ( 0 ) Sem ( 0 ) Tut ( ) Lab ( 4 )

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**Course Description (for Calendar). Attach a course outline to this proposal.**

Fundamental principles of experimental physical chemistry from the microscopic perspective. Modern experiments in atomic and molecular spectroscopy and structure.

Co-requisite: CHEM 260

**Special Instructions**

That is, does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses. If so, this should be noted in the pre-requisite.

No similar course currently exists. CHEM 266 is a new course intended to introduce students to experimental physical chemistry at an earlier point in their undergraduate education than has historically been the case.

Course(s) to be dropped if this course is approved: None.

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**Rationale for Introduction of this Course:**

No similar course currently exists. The current core offerings in physical chemistry do not provide students with exposure to modern experimental methods in physical chemistry until the third year of their undergraduate program, a point which is viewed to be too late in their undergraduate career. This is recognized as a shortcoming in our program. The proposed course addresses this issue directly by providing students with an earlier exposure to modern experimental methods.



This also addresses the deficiency in physical chemistry offerings as identified by the external review in 2008.

**Scheduling and Registration Information:**

Indicate effective semester/year course would be first offered and planned frequency of offering thereafter.

Fall 2012 or Spring 2013. Three times every two years.

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**Note: There is a two-semester(term) wait for implementation of any new course.**

Indicate if there is a Waiver required YES \_\_\_\_\_ NO  X

Will this be a required or elective course in the curriculum?  
REQUIRED

What is the probable enrolment when offered? 30-50 students

Which of your present CFL faculty have the expertise to offer this course?

J.C. Brodovitch, R. Goyan, S. Holdcroft, G. Leach, C. Walsby.

Are there any proposed student fees associated with this course other than tuition fees? (if so, attach mandatory supplementary fee approval form)

None

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**Resource Implications:**

**Note: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.**

Campus where course will be taught: Burnaby

Library report status  See attached

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering?

The proposed CHEM 266 course will be offered three times in a two year period. CHEM 366, the third year laboratory course in physical chemistry is currently offered twice a year or four times in a two year period. The frequency of offering of CHEM 366 will be reduced to three times in a two year period. Similarly, CHEM 360, the 3<sup>rd</sup> year physical chemistry course in thermodynamics and kinetics, is currently offered five times in a two-year period; this will be reduced to three times in a two year period (the high offering frequency is no longer necessary due to the removal of this course from the MBB curriculum requirements and the subsequent enrollment drop). The reduction in course offerings of CHEM 366 and 360 liberate the teaching resources to deliver CHEM 266 and thus no new teaching resources are required. No special issues regarding class size or pedagogical style exist.

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc.

None.

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### Approvals

1. **Departmental approval** indicates that the Department has approved the content of the course, and has consulted with other Departments and Faculties regarding proposed course content and overlap issues.



Chair, Dept./School

March 17, 2011

Date



Chair, Faculty Curriculum Committee

March 29, 2011

Date

2. **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.



Dean or Designate

Date: 29 March 2011

List which other Departments Schools and Faculties have been consulted regarding the proposed course content including overlap issues. *Attach documentary evidence of responses.*

NONE needed

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**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.

\_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_ Date: \_\_\_\_\_

**3. SCUS approval** indicates that the course has been approved for implementation subject, where appropriate, to financial issues being addressed.

Course approved by SCUS (Chair of SCUS)

\_\_\_\_\_ Date: \_\_\_\_\_

**Approval is signified by date and appropriate signature.**

Simon Fraser University  
Science

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CHEM 266-2  
PHYSICAL CHEMISTRY LABORATORY I  
D01.00  
Semester 20xx-y

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**Instructor:** To be announced

**Description/Topics:** **General Course description:**  
The Microscopic World of Chemistry: Modern experiments in atomic and molecular spectroscopy and structure.  
4 lab hours/week

**Topics:**

Students are required to perform eight of the ten experiments listed below. A written report corresponding to each experiment performed is to be submitted within a week of completion of the experiment.

**Experiment**

- I *Rotational-vibrational spectroscopy of HCl*
- II *Vibrational spectroscopy: Infrared Spectrum of SO<sub>2</sub>*
- III *Principles of Raman Spectroscopy*
- IV *UV-Vis spectroscopy: Charge Transfer Complexes*
- V *Molecular Spectroscopy of Organic Compounds: Fluorescence Intensity, Lifetime and Quantum Yield*
- VI *Pyrene Excimer Kinetics: The Thermodynamics of Excited State Dimer Formation*
- VII *Picosecond Laser Spectroscopy: Transient Grating Studies in Condensed Phase Environments.*
- VIII *Principles of nuclear magnetic resonance (nmr) spectroscopy*
- IX *Flash Photolysis of Benzophenone.*
- X *Surface structure and modification: Atomic Force Microscopy (AFM) and Scanning Tunneling Microscopy (STM) studies of surfaces and nanostructures.*

**Grading:** 85% lab reports; 15% performance during experimental work + laboratory notebook

**Recommended text:** C.W. Garland, J.W. Nibler and D.P. Shoemaker, "Experiments in Physical Chemistry", 8<sup>th</sup> Ed. 2003, McGraw Hill, N.Y.

**A laboratory manual containing supplementary information will be distributed at the first laboratory meeting.**

<b>Recommended texts:</b>	None
<b>Materials/supplies:</b>	None
<b>Co-requisite:</b>	CHEM 260
<b>Notes:</b>	None

**SIMON FRASER UNIVERSITY**  
**Senate Committee for Undergraduate Studies**  
**NEW COURSE PROPOSAL**

Course Number: CHEM 330-4

Course Title: Chemistry of the Main Group Elements

Long - for calendar/schedule no more than 100 characters including spaces/punctuation: Chemistry of the Main Group Elements

**AND**

Short - for registration/transcript no more than 30 characters including spaces/punctuation

Chemistry of the Main Group Elements

Indicate number of hours for Lect ( 3 ) Sem ( 0 ) Tut ( 1 ) Lab ( 2 )

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**Course Description (for Calendar). Attach a course outline to this proposal.**

A survey of the chemistry of non-transition metal (main group) elements, their physical and chemical properties and characterization techniques.

Prerequisite:

CHEM 230 and 236 or permission of the Department.

Corequisite: None

Special Instructions

That is, does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses. If so, this should be noted in the pre-requisite.

No similar courses exist. Some redistribution of the laboratory experiments from CHEM 236 and 336 into this course will occur, along with the introduction of new experiments. There is minimal overlap of course material with the core CHEM 230 or 332 courses.

Course(s) to be dropped if this course is approved:  
None.

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**Rationale for Introduction of this Course:**

The external review of the Chemistry Dept. in 2008 specifically noted the lack of a Main Group Chemistry course in our program and urged that such a course be added and this new offering will partially address that recommendation. Indeed, this course fills a large knowledge gap in the current chemistry course offerings (noted by the external reviewers), that of main group chemistry. SFU remains one of the few chemistry Departments in Canada that does not offer a Main Group chemistry course. The proposed CHEM 330 course will help to rectify this situation.

**Scheduling and Registration Information:**

Indicate effective semester/year course would be first offered and planned frequency of offering thereafter.

Fall 2012 or Spring 2013. Once every year.

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**Note: There is a two-semester(term) wait for implementation of any new course.**

Indicate if there is a Waiver required YES \_\_\_\_\_ NO  X

Will this be a required or elective course in the curriculum?  
ELECTIVE

What is the probable enrolment when offered? Estimate 30-40 students

Which of your present CFL faculty have the expertise to offer this course?

Faculty with the inorganic chemistry expertise to offer the course include D. Leznoff, T. Storr, R. Pomeroy, L. Hanlan, Z.G. Ye, G. Mund

Are there any proposed student fees associated with this course other than tuition fees? (if so, attach mandatory supplementary fee approval form)

None

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**Resource Implications:**

**Note: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.**

Campus where course will be taught: Burnaby

Library report status See attached

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering?

The course will be offered one to two times in a 2-year period. Currently, CHEM 230 and 236 are both offered twice per year (i.e., 4 terms out of 6); these will be reduced to three terms out of six, thereby freeing the resources to offer this proposed CHEM 330 course once per year. No special issues regarding class size or pedagogical style exist.

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc.

The laboratory component of this course (a 4-hour lab every other week) can be accommodated in the inorganic teaching laboratory space, thus there is no new space requirement, although scheduling of the laboratory will need to be considered in light of other course offerings. For the most part, existing laboratory equipment can be utilized (minor costs for supplies will be incurred). A small allocation of TA resources (0.5-1 TAships) will be required to help run this laboratory component.

### Approvals

1. **Departmental approval** indicates that the Department has approved the content of the course, and has consulted with other Departments and Faculties regarding proposed course content and overlap issues.

	<u>March 17, 2011</u>
Chair, Dept./School	Date
	<u>March 29, 2011</u>
Chair, Faculty Curriculum Committee	Date



**2. 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.

Clayton Date: 29 March 2011  
Dean or Designate

List which other Departments Schools and Faculties have been consulted regarding the proposed course content including overlap issues. *Attach documentary evidence of responses.*

NONE needed  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**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.

\_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_ Date: \_\_\_\_\_

**3. SCUS approval** indicates that the course has been approved for implementation subject, where appropriate, to financial issues being addressed.

Course approved by SCUS (Chair of SCUS)

\_\_\_\_\_ Date: \_\_\_\_\_

**Approval is signified by date and appropriate signature.**

**Simon Fraser University  
Science**

**Sample Outline**

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**CHEM 330 - 4**

**Chemistry of the Main-group Elements  
D01.00**

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- Instructor:** Dr. XXXX
- Description/topics:** **General Course Description:**  
A survey of the chemistry of non-transition metal (main-group) elements treated at an advanced level, their physical and chemical properties and characterization techniques.
- 3 lecture hours/week; 1 tutorial hour/week; 4 lab hours every other week.
- Lecture Topics:**
1. Introduction. Classification and comparison of the main group elements with the transition metal elements. Stability of lower oxidation states and periodic trends.
  2. Common techniques used to characterize main-group compounds: Infrared/Raman, NMR, MS, X-ray, Sn-Mössbauer etc.
  3. Descriptive Main-group chemistry:
    - (a) Hydrogen and Group 1 elements
    - (b) Aspects of Boron and Group 13 chemistry
    - (c) Silicon and lower Group 14 chemistry
    - (d) Phosphorus and Group 15 chemistry
    - (e) Sulfur and Selenium
    - (f) Halogens and Noble Gas chemistry
  4. Selected topics (time permitting): For example, heavy metals in the environment, main group compounds in pharmaceuticals, biomineralization, main-group materials, nanochemistry etc.

**Selected Laboratory Topics:**

Synthesis, characterization and reactivity of main-group element compounds (e.g. Sn(II)/Sn(IV) complexes; Na in NH<sub>3</sub>(l); phosphorus-based ligand synthesis; allotropes of elemental sulfur); Main-group polymers (e.g. Silicon- and boron-based materials); Superconducting materials.

**Grading:** 10% In-class Quizzes  
25% In-Term Examinations (2)  
25% Laboratory  
40% Final Examination  
Students must pass the lecture and lab component independently.

**Required texts:** Housecroft, C. E., and Sharpe, A. G. "Inorganic Chemistry"  
3<sup>rd</sup> ed, 2008, Prentice Hall

&

Alan K. Brisdon, "Inorganic Spectroscopic Methods". Oxford University Press. 1998.

**The laboratory manual will be handed out in the first week.**

**Recommended texts:** None.

**Materials/supplies:** Students must purchase Safety Glasses if they do not already have a pair. Laboratory coats are recommended.

**Prerequisite/corequisite:** Prerequisite: CHEM 230 and 236 or permission of the department.

**Notes:** None

**SIMON FRASER UNIVERSITY**  
**Senate Committee for Undergraduate Studies**  
**NEW COURSE PROPOSAL**

Course Number: CHEM 363-3

Course Title:

Long - for calendar/schedule no more than 100 characters including spaces/punctuation:

Chemical Kinetics and Reaction Dynamics

**AND**

Short - for registration/transcript no more than 30 characters including spaces/punctuation

Kinetics and Reaction Dynamics

Indicate number of hours for Lect ( 3 ) Sem ( 0 ) Tut ( 1 ) Lab ( 0 )

---

**Course Description (for Calendar). Attach a course outline to this proposal.**

Fundamental principles of chemical kinetics, rate laws, mechanisms, reactive intermediates, theories of reaction rates, solvation effects, photochemistry, radiation chemistry, and experimental methods.

Prerequisite: CHEM 260. Quantitative.

Corequisite: None

**Special Instructions**

That is, does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses. If so, this should be noted in the pre-requisite.

No similar courses currently exist. CHEM 363 was in existence until 1999. This proposal reintroduces this course with revised content.

Course(s) to be dropped if this course is approved: None.

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**Rationale for Introduction of this Course:**

The 2008 External Review of Chemistry commented on our physical chemistry offerings with the statement: "an undergraduate at SFU is likely to receive...a rather limited exposure to kinetics",

and recommended "an increase in the exposure of undergraduates to basic physical chemistry" as a top priority for a new course. Reintroduction of CHEM 363 addresses that deficiency. This course was in existence until 1999 but was dropped as part of a reorganization of the physical chemistry curriculum (replacement of 261 and 361 with 360 and 260, respectively). At that time some course material was moved to CHEM 360 but experience has shown that there is not sufficient time in that course to adequately treat the topic of chemical kinetics, which commands a full semester course at many other universities.

**Scheduling and Registration Information:**

Indicate effective semester/year course would be first offered and planned frequency of offering thereafter.

Fall 2011 or Spring 2012. Once every year.

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**Note: There is a two-semester(term) wait for implementation of any new course.**

Indicate if there is a Waiver required YES \_\_\_\_\_ NO  X

Will this be a required or elective course in the curriculum?  
ELECTIVE

What is the probable enrolment when offered? 30-50 students

Which of your present CFL faculty have the expertise to offer this course?

A. Bennet, M. Eikerling, R. Goyan, S. Holdcroft, G. Leach, P. Percival, C. Walsby, J. Wilkie.

Are there any proposed student fees associated with this course other than tuition fees? (if so, attach mandatory supplementary fee approval form)

None

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**Resource Implications:**

**Note: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.**

Campus where course will be taught: Burnaby

Library report status  See attached

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering?



The course will be offered once or twice in a 2-year period. The teaching resources can be provided by reducing the frequency of offering of CHEM 460 and 464 (these are low-enrollment courses currently taught every year). The course content of the proposed CHEM 363 has been taught as a Special Topics course. There are no special issues regarding class size or pedagogical style.

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc.

None.

#### Approvals

1. **Departmental approval** indicates that the Department has approved the content of the course, and has consulted with other Departments and Faculties regarding proposed course content and overlap issues.

	<u>March 17, 2011</u>
Chair, Dept./School	Date
	<u>March 29, 2011</u>
Chair, Faculty Curriculum Committee	Date

2. **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.

Clayton P. P. P. Date: 29 March 2011  
Dean or Designate

List which other Departments Schools and Faculties have been consulted regarding the proposed course content including overlap issues. *Attach documentary evidence of responses.*

NONE needed

**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.

\_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_ Date: \_\_\_\_\_

**3. SCUS approval** indicates that the course has been approved for implementation subject, where appropriate, to financial issues being addressed.

Course approved by SCUS (Chair of SCUS)

\_\_\_\_\_ Date: \_\_\_\_\_

**Approval is signified by date and appropriate signature.**

# **CHEM 363–3 Chemical Kinetics and Reaction Dynamics**

## **Sample Outline for New Course Proposal**

<b>Instructor:</b>	TBA
<b>Description</b>	<b>General Course Description:</b> Fundamental principles of chemical kinetics, rate laws, mechanisms, reactive intermediates, theories of reaction rates, solvent effects, photochemistry and radiation chemistry, and experimental methods.  3 lecture hours/week; 1 tutorial hour/week.
<b>Lecture Topics:</b>	Empirical chemical kinetics Rate theories Reaction dynamics Reactions in solution Catalysis Photochemistry and radiation chemistry Fast reaction techniques
<b>Grading:</b>	25% Assignments 25% Mid-Term Examination 50% Final Examination
<b>Required text:</b> (examples)	K.J. Laidler, Reaction Kinetics, 3 <sup>rd</sup> ed. (Prentice Hall, 1997) or M.J. Pilling and P.W. Seakins, Reaction Kinetics, 2 <sup>nd</sup> ed. (Oxford, 1996) or M.R. Wright, Chemical Kinetics (Wiley, 2004) or S.R. Logan, Fundamentals of Chemical Kinetics (Longman, 1996)
<b>Prerequisite:</b>	CHEM 260



# **CHEM 363–3 Chemical Kinetics and Reaction Dynamics**

## **Detailed Contents (Sample)**

### **Empirical chemical kinetics:**

rate laws, parallel and opposing reactions

[Griller and Ingold: free radical clocks]

[Eigen, Nobel Prize in Chemistry 1967: relaxation techniques]

consecutive reactions, intermediates, steady-state, chain reactions,

[pyrolysis, flames, explosions]

feedback and oscillations

[predator-prey populations]

### **Reaction rate theories and reaction dynamics:**

collision theory

potential energy surfaces, transition state theory

[Zewail: Nobel Prize in Chemistry 1999]

kinetic isotope effects

unimolecular reactions, Lindemann and RRKM

### **Reactions in solution:**

diffusion and activation control

solvent, pressure, ionic effects

### **Catalysis:**

homogeneous, enzyme,

[Michaelis & Menten]

surface reactions

[Ertl, Nobel Prize in Chemistry 2007]

### **Photochemistry**

excited states, fluorescence quenching, dye lasers

flash photolysis [Norrish and Porter, Nobel Prize in Chemistry 1967]

chemiluminescence, chemical lasers

[Polanyi: Nobel Prize in Chemistry 1986]

### **Radiation chemistry**

pulse radiolysis, radiolysis of water, reactions of H, OH and  $e^-_{aq}$

Other fast reaction techniques.

# **FROM Chemistry Program Requirements**

## **Chemistry Major Program**

### **Lower Division Requirements**

Students complete 53-54 units, including all of

- CHEM 121-4 General Chemistry and Laboratory I
- CHEM 122-2 General Chemistry II
- CHEM 126-2 General Chemistry Laboratory II
- CHEM 215-4 Introduction to Analytical Chemistry
- CHEM 230-3 Inorganic Chemistry
- CHEM 236W -3 Inorganic Chemistry Laboratory
- CHEM 260-4 Atoms, Molecules, Spectroscopy
- CHEM 281-4 Organic Chemistry I
- CHEM 282-2 Organic Chemistry II
- CHEM 286-2 Organic Chemistry Laboratory II
- MATH 152-3 Calculus II
- MATH 232-3 Applied Linear Algebra
- MATH 251-3 Calculus III
- MBB 222-3 Molecular Biology and Biochemistry

and one of

- MATH 150-4 Calculus I with Review
- MATH 151-3 Calculus I

and all of

- PHYS 120-3 Mechanics and Modern Physics
- PHYS 121-3 Optics, Electricity and Magnetism
- PHYS 131-2 Physics Laboratory I

or all of

- PHYS 125-3 Mechanics and Special Relativity
- PHYS 126-3 Electricity, Magnetism and Light
- PHYS 131-2 Physics Laboratory I

or both of

- PHYS 140-4 Studio Physics – Mechanics and Modern Physics
- PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism

## Upper Division Requirements

Students complete 28 units, including all of

- CHEM 316-4 Introductory Instrumental Analysis
- CHEM 332-3 The Chemistry of Transition Metals
- CHEM 336-2 Advanced Inorganic Chemistry Laboratory
- CHEM 360-3 Thermodynamics and Chemical Kinetics
- CHEM 366W -3 Physical Chemistry Laboratory
- CHEM 380-4 Chemical and Instrumental Methods of Identification of Organic Compounds

and an additional nine units of upper division credit in CHEM, MBB or NUSC courses, including at least six units of 400 division CHEM courses.

## Electives

In addition to the above, students complete 38-39 elective units, including

- courses chosen to fulfil the WQB requirements
- upper division courses chosen from any faculty (but excluding EDUC 401-407) to total a minimum of 44 upper division units
- electives at any division from any faculty to provide 120 units as is required for the degree.

Specialization in physical or theoretical chemistry requires more mathematics and physics courses than specified above, and a computer programming course.

## Chemistry Honours Program

*Department of Chemistry | Faculty of Science  
Simon Fraser University Calendar 2010-2011*

### Program Requirements

Mathematics and physics courses should be completed as early as possible.

For an example of a typical program schedule, visit  
<http://www.chemistry.sfu.ca/teaching/undergrads>

## Lower Division Requirements

Students complete 59-60 units, including all of

- CHEM 121-4 General Chemistry and Laboratory I
- CHEM 122-2 General Chemistry II
- CHEM 126-2 General Chemistry Laboratory II
- CHEM 215-4 Introduction to Analytical Chemistry
- CHEM 230-3 Inorganic Chemistry
- CHEM 236W -3 Inorganic Chemistry Laboratory
- CHEM 260-4 Atoms, Molecules, Spectroscopy
- CHEM 281-4 Organic Chemistry I
- CHEM 282-2 Organic Chemistry II
- CHEM 286-2 Organic Chemistry Laboratory II
- MATH 152-3 Calculus II
- MATH 232-3 Applied Linear Algebra
- MATH 251-3 Calculus III
- MBB 222-3 Molecular Biology and Biochemistry
- PHYS 211-3 Intermediate Mechanics
- PHYS 231-3 Physics Laboratory II

and one of

- MATH 150-4 Calculus I with Review
- MATH 151-3 Calculus I

and all of

- PHYS 120-3 Mechanics and Modern Physics
- PHYS 121-3 Optics, Electricity and Magnetism
- PHYS 131-2 Physics Laboratory I

or all of

- PHYS 125-3 Mechanics and Special Relativity
- PHYS 126-3 Electricity, Magnetism and Light
- PHYS 131-2 Physics Laboratory I

or both of

- PHYS 140-4 Studio Physics – Mechanics and Modern Physics
- PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism

### **Upper Division Requirements**

Students complete 48 units, including all of

- CHEM 316-4 Introductory Instrumental Analysis
- CHEM 332-3 The Chemistry of Transition Metals
- CHEM 336-2 Advanced Inorganic Chemistry Laboratory

- CHEM 360-3 Thermodynamics and Chemical Kinetics
- CHEM 366W -3 Physical Chemistry Laboratory
- CHEM 380-4 Chemical and Instrumental Methods of Identification of Organic Compounds
- CHEM 481-5 Undergraduate Research
- NUSC 341-3 Introduction to Radiochemistry

and one of

- CHEM 460-3 Advanced Physical Chemistry
- CHEM 464-3 Quantum Chemistry

and an additional 18 upper division units in CHEM, MBB or NUSC courses, including at least nine units of 400 division CHEM courses.

### Electives

In addition to the above, students complete 24-25 elective units, including

- courses chosen to fulfil the WQB requirements
- upper division courses from any faculty (excluding EDUC 401-407) to total a minimum of 60 upper division units.
- electives at any division from any faculty to provide the minimum 132 units for the honours

Those specializing in physical or theoretical chemistry should complete more mathematics courses than specified above and a course in computer programming.

## **TO Chemistry Program Requirements**

### **Chemistry Major Program**

#### **Lower Division Requirements**

Students complete 56-57 units, including all of

- CHEM 121-4 General Chemistry and Laboratory I
- CHEM 122-2 General Chemistry II
- CHEM 126-2 General Chemistry Laboratory II
- CHEM 215-4 Introduction to Analytical Chemistry
- CHEM 230-3 Inorganic Chemistry
- CHEM 236W -3 Inorganic Chemistry Laboratory
- CHEM 260-4 Atoms, Molecules, Spectroscopy
- CHEM 266-2 Physical Chemistry Laboratory I
- CHEM 281-4 Organic Chemistry I
- ~~CHEM 282-2 Organic Chemistry II~~
- CHEM 283-3 Organic Chemistry IIb
- CHEM 286-2 Organic Chemistry Laboratory II
- MATH 152-3 Calculus II
- MATH 232-3 Applied Linear Algebra
- MATH 251-3 Calculus III
- MBB 222-3 Molecular Biology and Biochemistry

and one of

- MATH 150-4 Calculus I with Review
- MATH 151-3 Calculus I

and all of

- PHYS 120-3 Mechanics and Modern Physics
- PHYS 121-3 Optics, Electricity and Magnetism
- PHYS 131-2 Physics Laboratory I

or all of

- PHYS 125-3 Mechanics and Special Relativity
- PHYS 126-3 Electricity, Magnetism and Light

- PHYS 131-2 Physics Laboratory I

or both of

- PHYS 140-4 Studio Physics – Mechanics and Modern Physics
- PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism

### Upper Division Requirements

Students complete 34 units, including all of

- CHEM 316-4 Introductory Instrumental Analysis
- CHEM 332-3 The Chemistry of Transition Metals
- CHEM 336-2 Advanced Inorganic Chemistry Laboratory
- CHEM 360-3 Thermodynamics and Chemical Kinetics
- CHEM 366W-3 Physical Chemistry Laboratory II
- CHEM 380-4 Chemical and Instrumental Methods of Identification of Organic Compounds

and an additional fifteen units of upper division credit in CHEM, MBB or NUSC courses (max 3 MBB and 3 NUSC), including at least six units of 400 division CHEM courses.

### Electives

In addition to the above, students complete 29-30 elective units, including

- courses chosen to fulfil the WQB requirements
- upper division courses chosen from any faculty (but excluding EDUC 401-407) to total a minimum of 44 upper division units
- electives at any division from any faculty to provide 120 units as is required for the degree.

Specialization in physical or theoretical chemistry requires more mathematics and physics courses than specified above, and a computer programming course.

## Chemistry Honours Program

*Department of Chemistry | Faculty of Science  
Simon Fraser University Calendar 2010-2011*

## Program Requirements

Mathematics and physics courses should be completed as early as possible.

For an example of a typical program schedule, visit

<http://www.chemistry.sfu.ca/teaching/undergrads>

## Lower Division Requirements

Students complete 62-63 units, including all of

- CHEM 121-4 General Chemistry and Laboratory I
- CHEM 122-2 General Chemistry II
- CHEM 126-2 General Chemistry Laboratory II
- CHEM 215-4 Introduction to Analytical Chemistry
- CHEM 230-3 Inorganic Chemistry
- CHEM 236W -3 Inorganic Chemistry Laboratory
- CHEM 260-4 Atoms, Molecules, Spectroscopy
- CHEM 266-2 Physical Chemistry Laboratory I
- CHEM 281-4 Organic Chemistry I
- ~~CHEM 282-2 Organic Chemistry II~~
- CHEM 283-3 Organic Chemistry IIb
- CHEM 286-2 Organic Chemistry Laboratory II
- MATH 152-3 Calculus II
- MATH 232-3 Applied Linear Algebra
- MATH 251-3 Calculus III
- MBB 222-3 Molecular Biology and Biochemistry
- PHYS 211-3 Intermediate Mechanics
- PHYS 231-3 Physics Laboratory II

and one of

- MATH 150-4 Calculus I with Review
- MATH 151-3 Calculus I

and all of

- PHYS 120-3 Mechanics and Modern Physics
- PHYS 121-3 Optics, Electricity and Magnetism
- PHYS 131-2 Physics Laboratory I

or all of

- PHYS 125-3 Mechanics and Special Relativity
- PHYS 126-3 Electricity, Magnetism and Light
- PHYS 131-2 Physics Laboratory I



or both of

- PHYS 140-4 Studio Physics – Mechanics and Modern Physics
- PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism

### **Upper Division Requirements**

Students complete 48 units, including all of

- CHEM 316-4 Introductory Instrumental Analysis
- CHEM 332-3 The Chemistry of Transition Metals
- CHEM 336-2 Advanced Inorganic Chemistry Laboratory
- CHEM 360-3 Thermodynamics and Chemical Kinetics
- CHEM 366W -3 Physical Chemistry Laboratory II
- CHEM 380-4 Chemical and Instrumental Methods of Identification of Organic Compounds
- CHEM 481-5 Undergraduate Research
- NUSC 341-3 Introduction to Radiochemistry

and one of

- CHEM 460-3 Advanced Physical Chemistry
- CHEM 464-3 Quantum Chemistry

and an additional 18 upper division units in CHEM, MBB or NUSC courses, including at least nine units of 400 division CHEM courses.

### **Electives**

In addition to the above, students complete 21-22 elective units, including

- courses chosen to fulfill the WQB requirements
- upper division courses from any faculty (excluding EDUC 401-407) to total a minimum of 60 upper division units.
- electives at any division from any faculty to provide the minimum 132 units for the honours

Those specializing in physical or theoretical chemistry should complete more mathematics courses than specified above and a course in computer programming.

**SIMON FRASER UNIVERSITY**  
**Course Change Form**

Existing Course Number/Title:

**CHEM 366W-3 Physical Chemistry Laboratory I**

Please check appropriate revision(s) being recommended:

Course Number: \_\_\_\_\_ Credit Hour: \_\_\_\_\_ Title:   ✓    
Description:   ✓   Prerequisite:   ✓   Vector: \_\_\_\_\_

From:

Experiments in thermodynamics, chemical kinetics, electrochemistry and atomic and molecular structure.

Prerequisites: CHEM 260

Corequisites: CHEM 360

To:

**CHEM 366W-3 Physical Chemistry Laboratory II**

**(Short title for transcript: Phys Chem Lab II)**

Advanced experimental methods in thermodynamics, chemical kinetics, electrochemistry and atomic and molecular structure.

Prerequisites: CHEM 266.

Corequisites: CHEM 360

Rationale:


The title, description and prerequisite need to be updated to take account of the proposed introduction of CHEM 266, which would represent the first course in experimental physical chemistry.


Does this course duplicate the content of a previously approved course to such an extent that students should not receive credit for both courses. If so, please specify.

No.

Effective date: contingent on approval of CHEM 266

**Approvals**

  
Chair, Department/School  
March 17, 2011  
Date

  
Chair, Faculty Curriculum Committee  
March 29, 2011  
Date

\_\_\_\_\_  
Chair, SCUS  
\_\_\_\_\_  
Date

**SIMON FRASER UNIVERSITY**  
**Course Change Form**

Existing Course Number/Title:

**CHEM 367-2 Physical Chemistry Laboratory II**

Please check appropriate revision(s) being recommended:

Course Number: _____	Credit Hour: _____	Title: <u>  ✓  </u>
Description: <u>  ✓  </u>	Prerequisite: _____	Vector: _____

From:

Continues CHEM 366.

Prerequisite: CHEM 366

To:

**CHEM 367-2 Advanced Physical Chemistry Laboratory**

**Short title for transcript: Adv Phys Chem Lab**

Advanced experimental methods in physical chemistry.

Prerequisites: CHEM 366

Rationale:

The title and description need to be updated to take account of the proposed introduction of CHEM 266, and corresponding title change of CHEM 366, which would then represent the second physical chemistry laboratory.

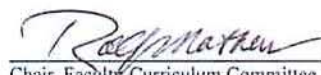
Does this course duplicate the content of a previously approved course to such an extent that students should not receive credit for both courses. If so, please specify.

No.

Effective date: contingent on approval of CHEM 266

**Approvals**

  
\_\_\_\_\_  
Chair, Department/School  
March 17, 2011  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Chair, Faculty Curriculum Committee  
March 29, 2011  
\_\_\_\_\_  
Date

\_\_\_\_\_  
Chair, SCUS  
\_\_\_\_\_  
Date



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MEMORANDUM

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<b>ATTENTION</b>	Rolf Mathewes, Chair, Faculty of Science Curriculum Committee	<b>DATE</b>	March 14, 2011
<b>FROM</b>	Daniel Leznoff, Chair, Undergraduate Studies Committee	<b>PAGES</b>	1/1
<b>RE:</b>	New Chemistry courses, changes to the Chemistry Majors/Honours Program and clarification of the Physics requirements with respect to Chemistry		

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At its meeting on Feb. 21, 2011 the department of Chemistry approved a series of new courses and changes to the Chemistry Majors/Honours program, as outlined in the attached documents.

A change to the Physics requirements for the Chemistry Majors program was also approved in a previous meeting and, in consultation with Physics (see attached document), the following new additional paragraph is proposed. The proposed paragraph would be added to the section headed "Students Intending to Specialize in Chemistry", between the two existing paragraphs.

Addition:

Students are encouraged to complete the Standard (PHYS 120/PHYS 121/PHYS 131) or Advanced (PHYS 125/PHYS 126/PHYS 131) streams of Physics. Students may also choose to complete the Studio (PHYS 140/PHYS 141) Physics stream. Students who complete the Life-Sciences (PHYS 101/PHYS 102/PHYS 130) stream (which has a BISC 100 or BISC 101 or BISC 102 co-requisite) with a minimum B grade should have sufficient preparation for the Major program.

Zuo Ye  
Chair, Chemistry



MEMORANDUM

SCUS 11-23c

Brent Ward

Undergraduate Chair  
Department of Earth Sciences  
Faculty of Science  
Simon Fraser University

ADDRESS

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ATTENTION	Dr. Rolf Mathewes
FROM	Brent Ward
RE	Earth Science UCC Agenda Item
DATE	March 18, 2011

Dear Rolf,

I would like to bring the following item forward to the UCC meeting on March 22.

- 1.EASC UCC ATT A - Changes to present EASC Major Programme  
Changes to Physics and Statistics requirements.

Sincerely,

Brent Ward  
Undergraduate Chair  
Department of Earth Sciences

Proposed changes to the present Earth Science Major Programme

Present Calendar	Proposed additions in italics, deletions strikethrough
<p><b>Lower Division Requirements</b>  All students, no matter which streams they will choose, will complete a minimum of 54 units including all of</p> <ul style="list-style-type: none"> <li>• CHEM 121-4 General Chemistry and Laboratory I</li> <li>• CHEM 122-2 General Chemistry II</li> <li>• CHEM 126-2 General Chemistry Laboratory II</li> <li>• EASC 101-3 Physical Geology</li> <li>• EASC 201-3 Stratigraphy and Sedimentation</li> <li>• EASC 202-3 Introduction to Mineralogy</li> <li>• EASC 204-3 Structural Geology I</li> <li>• EASC 205-3 Introduction to Petrology</li> <li>• EASC 206-2 Field Geology I</li> <li>• EASC 207-3 Introduction to Applied Geophysics</li> <li>• EASC 208-3 Introduction to Geochemistry</li> <li>• EASC 210-3 Historical Geology</li> <li>• GEOG 213-3 Introduction to Geomorphology</li> <li>• MATH 152-3 Calculus II</li> </ul> <p>and one of</p> <ul style="list-style-type: none"> <li>• MATH 150-4 Calculus I with Review</li> <li>• MATH 151-3 Calculus I</li> </ul> <p>and one of</p> <ul style="list-style-type: none"> <li>• STAT 101-3 Introduction to Statistics</li> <li>• STAT 201-3 Statistics for the Life Sciences</li> </ul> <p>and one of</p> <ul style="list-style-type: none"> <li>• PHYS 101-3 Physics for the Life Sciences I*</li> <li>• PHYS 120-3 Mechanics and Modern Physics</li> <li>• PHYS 125-3 Mechanics and Special Relativity</li> </ul> <p>and one of</p> <ul style="list-style-type: none"> <li>• PHYS 102-3 Physics for the Life Sciences II*</li> <li>• PHYS 121-3 Optics, Electricity and Magnetism</li> <li>• PHYS 126-3 Electricity, Magnetism and Light</li> </ul> <p>and one of</p> <ul style="list-style-type: none"> <li>• PHYS 130-2 Physics for the Life Sciences Laboratory*</li> <li>• PHYS 131-2 Physics Laboratory I</li> </ul> <p>*with a grade of B or better</p>	<p><b>Lower Division Requirements</b>  All students, no matter which streams they will choose, will complete a minimum of 54 units including all of</p> <ul style="list-style-type: none"> <li>• CHEM 121-4 General Chemistry and Laboratory I</li> <li>• CHEM 122-2 General Chemistry II</li> <li>• CHEM 126-2 General Chemistry Laboratory II</li> <li>• EASC 101-3 Physical Geology</li> <li>• EASC 201-3 Stratigraphy and Sedimentation</li> <li>• EASC 202-3 Introduction to Mineralogy</li> <li>• EASC 204-3 Structural Geology I</li> <li>• EASC 205-3 Introduction to Petrology</li> <li>• EASC 206-2 Field Geology I</li> <li>• EASC 207-3 Introduction to Applied Geophysics</li> <li>• EASC 208-3 Introduction to Geochemistry</li> <li>• EASC 210-3 Historical Geology</li> <li>• GEOG 213-3 Introduction to Geomorphology</li> <li>• MATH 152-3 Calculus II</li> </ul> <p>and one of</p> <ul style="list-style-type: none"> <li>• MATH 150-4 Calculus I with Review</li> <li>• MATH 151-3 Calculus I</li> </ul> <p>and one of</p> <ul style="list-style-type: none"> <li>• <del>STAT 101-3 Introduction to Statistics</del></li> <li>• STAT 201-3 Statistics for the Life Sciences</li> <li>• <i>STATS 270-3 Introduction to Probability and Statistics</i></li> </ul> <p>and one of</p> <ul style="list-style-type: none"> <li>• PHYS 101-3 Physics for the Life Sciences I<sup>‡</sup></li> <li>• PHYS 120-3 Mechanics and Modern Physics</li> <li>• PHYS 125-3 Mechanics and Special Relativity</li> <li>• <i>PHYS 140-4 Studio Physics – Mechanics and Modern Physics</i></li> </ul> <p>and one of</p> <ul style="list-style-type: none"> <li>• PHYS 102-3 Physics for the Life Sciences II<sup>‡</sup></li> <li>• PHYS 121-3 Optics, Electricity and Magnetism</li> <li>• PHYS 126-3 Electricity, Magnetism and Light</li> <li>• <i>PHYS 141-4 Studio Physics – Optics,</i></li> </ul>

	<p>Electricity and Magnetism and if not taking <i>PHYS 140/141</i> one of</p> <ul style="list-style-type: none"> <li>• <i>PHYS 130-2</i> Physics for the Life Sciences Laboratory*</li> <li>• <i>PHYS 131-2</i> Physics Laboratory I</li> </ul> <p>* <i>Students are encouraged to complete the Standard (PHYS 120/PHYS 121/PHYS 131) or Advanced (PHYS 125/PHYS 126/PHYS 131) streams of Physics. Students may also choose to complete the Studio (PHYS 140/PHYS 141) Physics stream. Students who complete the Life-Sciences (PHYS 101/PHYS 102/PHYS 130) stream (which has a BISC 100 or BISC 101 or BISC 102 co-requisite) with a minimum B grade should have sufficient preparation for the Major program. with a grade of B or better</i></p>
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The change in the physics requirements will result in changes to the pre-requisites in the calendar descriptions for the following courses:

EASC 204-3 Structural Geology I  
EASC 205-3 Introduction to Petrology  
EASC 207-3 Introduction to Applied Geophysics  
EASC 305-3 Quantitative Methods for the Earth Sciences  
EASC 314-3 Principles of Glaciology

Physics 140 or 141 would be added, and the mark differential for Physics 101/102/and or 130 would be removed.

The changes to the stats requirement would result in changes to the pre-requisites in the calendar for the following courses:

EASC 302-3 Sedimentary Petrology  
EASC 305-3 Computational Methods for the Earth Sciences

Stats 101 would be removed and "STAT 201 or STATS 270" added.

**SIMON FRASER UNIVERSITY**  
**Course Change Form**

Existing Course Number/Title:

EASC 204-3 Structural Geology I

Please check appropriate revision(s) being recommended:

Course Number: \_\_\_\_\_ Credit Hour: \_\_\_\_\_ Title: \_\_\_\_\_

\_\_\_\_\_

Description: \_\_\_\_\_ Prerequisite:   X   Vector: \_\_\_\_\_

\_\_\_\_\_

Prerequisite From:

From:

Prerequisites: EASC 102 or 210, and PHYS 125 or 120 or 140, (or PHYS 101 with a grade of B or higher)

Corequisites: none

Recommended: none

To:

Prerequisites: EASC 102 or 210, and PHYS 102 or PHYS 121 or PHYS 126 or PHYS 141

Recommended: none

Rationale:

**This change reflects changes to the EASC Major programme to allow students greater flexibility in their choice of physics courses.**

Does this course duplicate the content of a previously approved course to such an extent that students should not receive credit for both courses.

**No**

Effective date: 2011/2012 Calendar or \_\_\_\_\_

Passed by the EASC Undergraduate Committee:



Brent Ward, Committee Chair

Date March 18, 11



**SIMON FRASER UNIVERSITY**  
**Course Change Form**

Existing Course Number/Title:

EASC 205-3 Introduction to Petrology

Please check appropriate revision(s) being recommended:

Course Number: \_\_\_\_\_ Credit Hour: \_\_\_\_\_ Title: \_\_\_\_\_

Description: \_\_\_\_\_ Prerequisite:   X   Vector: \_\_\_\_\_

Prerequisite From:

From:

Prerequisites: EASC 202, CHEM 122, PHYS 121 (or PHYS 102 with a grade of B or higher), and PHYS 131 (or PHYS 130 with a grade of B or higher). PHYS 126 may be substituted for PHYS 121.

Corequisites: none

Recommended: none

To:

Prerequisites: EASC 202, CHEM 122, PHYS 102 or PHYS 121 or PHYS 126 or PHYS 141, and PHYS 131 or PHYS 130 unless PHYS 141 was taken.

Recommended: none

Rationale:

**This change reflects changes to the EASC Major programme to allow students greater flexibility in their choice of physics courses.**

Does this course duplicate the content of a previously approved course to such an extent that students should not receive credit for both courses.

**No**

Effective date: 2011/2012 Calendar or \_\_\_\_\_

Passed by the EASC Undergraduate Committee:

  
\_\_\_\_\_  
Brent Ward, Committee Chair  
Date March 15, 11

**SIMON FRASER UNIVERSITY**  
**Course Change Form**

Existing Course Number/Title:

EASC 207-3 Introduction to Applied Geophysics

Please check appropriate revision(s) being recommended:

Course Number: \_\_\_\_\_ Credit Hour: \_\_\_\_\_ Title: \_\_\_\_\_

Description: \_\_\_\_\_ Prerequisite: \_\_\_\_\_ X \_\_\_\_\_ Vector: \_\_\_\_\_

Prerequisite From:

From:

Prerequisites: MATH 152, PHYS 121, 131, all with a grade of C- or higher, or MATH 152, with a grade of C- or higher and PHYS 102, PHYS 130 both with a grade of B or higher.

Corequisites: none

Recommended: none

To:

Prerequisites: MATH 152, PHYS 121 or PHYS 102 or PHYS 141, and PHYS 130 or PHYS 131 unless PHYS 141 taken, all with a grade of C- or higher

Recommended: none

Rationale:

**This change reflects changes to the EASC Major programme to allow students greater flexibility in their choice of physics courses.**

Does this course duplicate the content of a previously approved course to such an extent that students should not receive credit for both courses.

No

Effective date: 2011/2012 Calendar or \_\_\_\_\_

Passed by the EASC Undergraduate Committee:

  
\_\_\_\_\_  
Brent Ward, Committee Chair

Date March 18, 11

**SIMON FRASER UNIVERSITY**  
**Course Change Form**

Existing Course Number/Title:

EASC 305-3 Quantitative Methods for the Earth Sciences

Please check appropriate revision(s) being recommended:

Course Number: \_\_\_\_\_ Credit Hour: \_\_\_\_\_ Title: \_\_\_\_\_  
Description: \_\_\_\_\_ Prerequisite:   X   Vector: \_\_\_\_\_

Prerequisite From:

From:

Prerequisites: EASC 101, MATH 152 (grade of C or higher), PHYS 121 (grade of C or higher), STAT 101 or STAT 201 (grade C or higher), and six units in any 200 division or higher EASC courses.

Corequisites: none

Recommended: none

To:

Prerequisites: EASC 101; MATH 152, PHYS 121 or PHYS 126 or PHYS 102 or PHYS 141, and STAT 201 or STAT 270 (all with a grade C or higher), and six units in any 200 division or higher EASC courses.

Recommended: none

Rationale:

**This change reflects changes to the EASC Major programme to allow students greater flexibility in their choice of physics courses. This also reflects the change in the statistics requirements.**

Does this course duplicate the content of a previously approved course to such an extent that students should not receive credit for both courses.

**No**

Effective date: 2011/2012 Calendar or \_\_\_\_\_

Passed by the EASC Undergraduate Committee:

Brent Ward  
Brent Ward, Committee Chair

Date March 15, 11

**SIMON FRASER UNIVERSITY**  
**Course Change Form**

Existing Course Number/Title:

EASC 314-3 Principles of Glaciology

Please check appropriate revision(s) being recommended:

Course Number: \_\_\_\_\_ Credit Hour: \_\_\_\_\_ Title: \_\_\_\_\_

Description: \_\_\_\_\_ Prerequisite: \_\_\_\_\_ X \_\_\_\_\_ Vector: \_\_\_\_\_

Prerequisite From:

From:

Prerequisites: 60 units, including MATH 152 (with grade C or higher), PHYS 126 or PHYS 121 (with grade of C or higher), and GEOG 213 or permission of the instructor. Quantitative.

Corequisites: none

Recommended: none

To:

Prerequisites: 60 units, including MATH 152 (with grade of C or higher), PHYS 126 or PHYS 121 or PHYS 141 or PHYS 102 (with grade of C or higher), and GEOG 213 or permission of the instructor. Quantitative.

Recommended: none

Rationale:


**This change reflects changes to the EASC Major programme to allow students greater flexibility in their choice of physics courses.**

Does this course duplicate the content of a previously approved course to such an extent that students should not receive credit for both courses.

**No**

Effective date: 2011/2012 Calendar or \_\_\_\_\_

Passed by the EASC Undergraduate Committee:

  
\_\_\_\_\_  
Brent Ward, Committee Chair  
Date March 15, 11

**SIMON FRASER UNIVERSITY**  
**Course Change Form**

Existing Course Number/Title:

EASC 302-3 Sedimentary Petrology

Please check appropriate revision(s) being recommended:

Course Number: \_\_\_\_\_ Credit Hour: \_\_\_\_\_ Title: \_\_\_\_\_

Description: \_\_\_\_\_ Prerequisite: \_\_\_\_\_ X \_\_\_\_\_ Vector: \_\_\_\_\_

Prerequisite From:

From:

Prerequisites: STAT 101 or STAT 201, EASC 201 and 205.

Corequisites: none

Recommended: none

To:

Prerequisites: STAT 201 or STAT 270, EASC 201 and 205.

Recommended: none

Rationale:

**This change reflects changes to the EASC Major programme in statistic courses.**

Does this course duplicate the content of a previously approved course to such an extent that students should not receive credit for both courses.

**No**

Effective date: 2011/2012 Calendar or \_\_\_\_\_

Passed by the EASC Undergraduate Committee:

Brent Ward  
Brent Ward, Committee Chair  
Date March 15, 11

SCUS 11-23d

**MEMO**

DEPARTMENT OF MATHEMATICS

**ATTENTION** Dr. Rolf Mathewes  
 Dept/Company Faculty of Science Undergraduate Curriculum Committee  
 Local 24472

**From:** David Muraki  
 Chair, Undergraduate Studies Committee Department of Mathematics  
 SC K 10538  
 Local 24814

**RE:** Change to Pre-requisites for MATH 448

**Date:** 10 March, 2011

Enclosed are documents related to undergraduate curriculum changes approved by Mathematics, to be considered at the FSUCC meeting.

**I. Change to the pre-requisites for MATH 448.**

	<b>FROM</b>	<b>TO</b>
MATH 448 – 3 Network Flows	CMPT 225, MATH 308, 345.	MATH 308. Recommended: MATH 345.



**EXISTING COURSE, CHANGES RECOMMENDED**

SENATE COMMITTEE ON  
UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

OCTOBER 2007

Please check appropriate revision(s)

Course number  Credit  Title  Description  Prerequisite  Deletion

Indicate number of hours for: Lecture 3 Seminar \_\_\_\_\_ Tutorial \_\_\_\_\_ Lab \_\_\_\_\_

**FROM :**

**TO:**

Course Number MATH 448 Course Number MATH 448 Credit

Hour 3 Credit Hour 3

**TITLE**

(1) Long title for calendar and schedule, no more than 100 characters including spaces and punctuation.

**No Change**

(2) Short title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

**DESCRIPTION**

No Change

**PREREQUISITE**

CMPT 225, MATH 308, 345

MATH 308. Recommended: MATH 345.

The software packages currently used in 448 demand less programming experience. In the current syllabus, the pre-requisite knowledge from Math 345 is quite minimal, and can be introduced in short time. As the OR degree program has Math 448 as a required course, but not 345, this change removes a hidden requirement for OR students. Quantitative.

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite.**

Effective term and year Spring 2012

# Applied Mathematics Major Program

## FROM:

### Lower Division Requirements

.....

### Upper Division Requirements

Students complete a minimum of 30 units, including all of

- MACM 316-3 Numerical Analysis I
- MATH 310-3 Introduction to Ordinary Differential Equations
- MATH 314-3 Introduction to Fourier Methods and Partial Differential Equations
- MATH 320-3 Introduction to Analysis II
- MATH 322-3 Complex Variables
- MATH 418-3 Partial Differential Equations

and at least one of

- MATH 461-3 Continuous Mathematical Models
- MATH 462-3 Fluid Dynamics

and at least two of

- MACM 401-3 Introduction to Computer Algebra
- MACM 409-3 Numerical Linear Algebra and Optimization
- MACM 416-3 Numerical Analysis II
- MATH 308-3 Linear Optimization
- MATH 309-3 Continuous Optimization
- MATH 338-3 Advanced Linear Algebra
- MATH 343-3 Applied Discrete Mathematics
- MATH 345-3 Introduction to Graph Theory
- MATH 419-3 Linear Analysis
- MATH 424-3 Complex Analysis
- MATH 425-3 Real Analysis
- MATH 461-3 Continuous Mathematical Models
- MATH 462-3 Fluid Dynamics
- MATH 467-3 Dynamical Systems
- MATH 470-3 Variational Calculus



- MATH 495-3 Topics in Applied Mathematics
- PHYS 413-3 Advanced Mechanics
- STAT 380-3 Introduction to Stochastic Processes

and one additional upper division MATH or MACM course, or any pre-approved quantitative upper division course offered by the Faculties of Applied Sciences, Arts and Social Sciences, Business Administration or Science. This course, if other than MATH or MACM, must be pre-approved by a department advisor. Students are encouraged to explore the option of completing courses outside the department and to discuss possibilities with a department advisor.

Choices from the third group (“at least two of”) must not include the course used to satisfy the second group (“at least one of”). At least three of the courses used to satisfy the upper division requirements must be at the 400 division.

**TO:**

**Lower Division Requirements**

.....

**Upper Division Requirements**

Students complete a minimum of 30 units, including all of

- MACM 316-3 Numerical Analysis I
- MATH 310-3 Introduction to Ordinary Differential Equations
- MATH 314-3 Introduction to Fourier Methods and Partial Differential Equations
- MATH 320-3 Introduction to Analysis II
- MATH 322-3 Complex Variables
- MATH 418-3 Partial Differential Equations

and at least one of

- MATH 461-3 Continuous Mathematical Models
- MATH 462-3 Fluid Dynamics
- MATH 467-3 Dynamical Systems

and at least two of

- MACM 401-3 Introduction to Computer Algebra
- MACM 409-3 Numerical Linear Algebra and Optimization
- MACM 416-3 Numerical Analysis II

- MATH 308-3 Linear Optimization
- MATH 309-3 Continuous Optimization
- MATH 338-3 Advanced Linear Algebra
- MATH 343-3 Applied Discrete Mathematics
- MATH 345-3 Introduction to Graph Theory
- MATH 419-3 Linear Analysis
- MATH 424-3 Complex Analysis
- MATH 425-3 Real Analysis
- MATH 461-3 Continuous Mathematical Models
- MATH 462-3 Fluid Dynamics
- MATH 467-3 Dynamical Systems
- MATH 470-3 Variational Calculus
- MATH 495-3 Topics in Applied Mathematics
- PHYS 413-3 Advanced Mechanics
- STAT 380-3 Introduction to Stochastic Processes

and one additional upper division MATH or MACM course, or any pre-approved quantitative upper division course offered by the Faculties of Applied Sciences, Arts and Social Sciences, Business Administration or Science. This course, if other than MATH or MACM, must be pre-approved by a department advisor. Students are encouraged to explore the option of completing courses outside the department and to discuss possibilities with a department advisor.

Choices from the third group (“at least two of”) must not include the course used to satisfy the second group (“at least one of”). At least three of the courses used to satisfy the upper division requirements must be at the 400 division.



**TO:** Bill Krane, Chair, SCUS

**FROM:** Rolf Mathewes, Associate Dean  
Faculty of Science

**RE:** Program Change Correction to  
include MACM 201-3

**DATE:** March 3, 2011

---

The Faculty of Science has approved the following, which must now be considered by SCUS.

Please place this item on the agenda of the next SCUS meeting.

**Mathematics**

MACM 201-3 was inadvertently removed from the Mathematics & Computing Science (MACM) joint Major and Joint Honors program. Please add this course to the lower division requirements.

  
R. Mathewes

Enclosure

c. J. Hinchliffe, C. Cupples

P.S. It would be greatly appreciated if this could be put into the Fall Calendar.

SFU

**MEMO**

DEPARTMENT OF MATHEMATICS

**ATTENTION** Dr. Rolf Mathewes  
 Dept/Company Faculty of Science Undergraduate Curriculum Committee  
 Local 24472

**From:** David Muraki  
 Chair, Undergraduate Studies Committee Department of Mathematics  
 SC K 10538  
 Local 24814

**RE:** Correction to approved requirement changes for the MACM Joint Major  
 and Joint Honours Program

**Date:** 30 March, 2011

Enclosed are documents related to undergraduate curriculum changes approved by Mathematics, to be considered at the FSUCC meeting.

**I. Correction to the Program Changes adopted in March 2010 with regards to lower division requirements for the MACM Joint Major and Joint Honours Program.**

MACM 201-3 Discrete Math II	<u>MACM Joint Major and Joint Honours Program:</u> MACM 201-3 was mistakenly removed from the approved Lower Division Requirements list prior to Senate Approval in March 2010. Please add this course to the Lower Division Requirements.
--------------------------------	--

## Mathematics and Computing Science Joint Honours Program

### FROM:

### Program Requirements

Students complete 132 units, as specified below.

The program is subject to Faculty of Science and University regulations. Course and prerequisite admission is subject to departmental requirements.

Faculty of Applied Sciences residency requirements apply to the computing science courses used toward the program.

### Lower Division Requirements

Students complete at least 37 units, including either one of

- CMPT 126-3 Introduction to Computer Science and Programming \*
- CMPT 128-3 Introduction to Computing Science and Programming for Engineers

or both of

- CMPT 120-3 Introduction to Computing Science and Programming I\*
- CMPT 125-3 Introduction to Computing Science and Programming II\*

and all of

- CMPT 150-3 Introduction to Computer Design
- CMPT 225-3 Data Structures and Programming
- CMPT 275-4 Software Engineering
- MACM 101-3 Discrete Mathematics I
- MATH 242-3 Introduction to Analysis
- MATH 251-3 Calculus III
- STAT 270-3 Introduction to Probability and Statistics

and either

- MACM 202-4 Mathematical Modeling and Computation

or two of

- MACM 203-2 Computing with Linear Algebra

- MACM 204-2 Computing with Calculus
- MATH 294-2 Computational Studies in Mathematics

or with prior approval, one of†

- MACM 401-3 Introduction to Computer Algebra
- MACM 409-3 Numerical Linear Algebra: Algorithms, Implementation and Applications
- MATH 439-3 Algebra IV: Selected Topics in Algebra

†cannot be used to satisfy other upper division requirements for a major program

and one of

- MATH 150-4 Calculus I with Review
- MATH 151-3 Calculus I\*\*
- MATH 154-3 Calculus I for the Biological Sciences (with a B grade or better)
- MATH 157-3 Calculus for the Social Sciences I (with a B grade or better)

and one of

- MATH 152-3 Calculus II\*\*
- MATH 155-3 Calculus II for the Biological Sciences (with a B grade or better)
- MATH 158-3 Calculus for the Social Sciences II (with a B grade or better)

and one of

- MATH 232-3 Applied Linear Algebra (with a B grade or better)
- MATH 240-3 Algebra I: Linear Algebra\*\*

\*to aid your choice, prior to enrolment, complete the self-evaluation test at

<http://www.cs.sfu.ca/undergrad/advising/120-126>

\*\*strongly recommended

**TO:**

## **Program Requirements**

Students complete 132 units, as specified below.

The program is subject to Faculty of Science and University regulations. Course and prerequisite admission is subject to departmental requirements.

Faculty of Applied Sciences residency requirements apply to the computing science courses used toward the program.

## Lower Division Requirements

Students complete at least 37 units, including either one of

- CMPT 126-3 Introduction to Computer Science and Programming \*
- CMPT 128-3 Introduction to Computing Science and Programming for Engineers

or both of

- CMPT 120-3 Introduction to Computing Science and Programming I\*
- CMPT 125-3 Introduction to Computing Science and Programming II\*

and all of

- CMPT 150-3 Introduction to Computer Design
- CMPT 225-3 Data Structures and Programming
- CMPT 275-4 Software Engineering
- MACM 101-3 Discrete Mathematics I
- **MACM 201-3 Discrete Mathematics II**
- MATH 242-3 Introduction to Analysis
- MATH 251-3 Calculus III
- STAT 270-3 Introduction to Probability and Statistics

and either

- MACM 202-4 Mathematical Modeling and Computation

or two of

- MACM 203-2 Computing with Linear Algebra
- MACM 204-2 Computing with Calculus
- MATH 294-2 Computational Studies in Mathematics

or with prior approval, one of†

- MACM 401-3 Introduction to Computer Algebra
- MACM 409-3 Numerical Linear Algebra: Algorithms, Implementation and Applications
- MATH 439-3 Algebra IV: Selected Topics in Algebra

†cannot be used to satisfy other upper division requirements for a major program

and one of

- MATH 150-4 Calculus I with Review
- MATH 151-3 Calculus I\*\*
- MATH 154-3 Calculus I for the Biological Sciences (with a B grade or better)

- MATH 157-3 Calculus for the Social Sciences I (with a B grade or better)

and one of

- MATH 152-3 Calculus II\*\*
- MATH 155-3 Calculus II for the Biological Sciences (with a B grade or better)
- MATH 158-3 Calculus for the Social Sciences II (with a B grade or better)

and one of

- MATH 232-3 Applied Linear Algebra (with a B grade or better)
- MATH 240-3 Algebra I: Linear Algebra\*\*

\*to aid your choice, prior to enrolment, complete the self-evaluation test at

<http://www.cs.sfu.ca/undergrad/advising/120-126>

\*\*strongly recommended





## MEMO

Department of  
Molecular Biology &  
Biochemistry

8888 University Drive  
Burnaby BC V5A 1S6

T: 778.782.5630  
F: 778-782-5583

[www.sfu.ca/mbb](http://www.sfu.ca/mbb)

ATTENTION **Rolf Mathewes**

TEL

FROM **Ingrid Northwood; undergrad prog. coordinator-  
MBB**

RE **1 course pre-requisite change and 2 program changes**

DATE **March 7, 2011**

TIME

A course pre-requisite change for MBB242-Introductory Genomics is proposed. Now that the course has been taught once and is established, we would like to remove the pre-requisite grades of B- in BISC101, BISC102 and MBB222 and use the C- University prerequisite grades to make the course more accessible for students

A program change form is being submitted with 2 changes on it;

- 1) MBB461-Comparative Genomics, a newly approved course to be included with the other 400 level MBB courses as options for students.
- 2) The removal of MATH310 as an alternative to STAT201 or STAT270. Almost no MBB students actually take MATH310 and because the Calendar people insist on counting the options of STAT201, STAT270 or MATH310 as an upper division requirement it causes mass confusion among students as to the actual number of required upper division units.



Existing Course, Changes Recommended

Please check appropriate revision(s):

Course number     Credit     Title     Description     Prerequisite     Course deletion

Indicate number of hours for: Lecture 3    Seminar \_\_\_\_\_    Tutorial 1    Lab \_\_\_\_\_

FROM

TO

Course Number MBB 242

Course Number MBB 242

Credit Hour 3

Credit Hour 3

TITLE

(1) Long title for calendar and schedule, no more than 100 characters including spaces and punctuation.

Introductory Genomics \_\_\_\_\_    Introductory Genomics \_\_\_\_\_

(2) Short title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

Introductory Genomics \_\_\_\_\_    Introductory Genomics \_\_\_\_\_

DESCRIPTION

DESCRIPTION

A broad introductory survey of the genome sciences including genome organization, whole genome sequencing, genomic variation in health and disease, comparative genomics, transcriptomes and proteomes and some applications of genomics. Workshops will introduce bioinformatic approaches to the use of genomic databases.

A broad introductory survey of the genome sciences including genome organization, whole genome sequencing, genomic variation in health and disease, comparative genomics, transcriptomes and proteomes and some applications of genomics. Workshops will introduce bioinformatic approaches to the use of genomic databases.

PREREQUISITE

PREREQUISITE

Prerequisite: BISC 101, BISC 102, MBB 222 with grades of B- or better, or permission of the department.

**Prerequisite: BISC 101, BISC 102, MBB 222 ~~with grades of B- or better,~~ or permission of the department.**

RATONALE

Now that the course has been offered once, the department feels that the grade prerequisites of B- should be removed and the C- university prerequisites be employed in order to make the course more accessible for students

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **NO**

Effective term and year \_\_\_\_\_ **Fall, 2011(1117)**

Approvals:

[Signature]  
Chair, Department/School

\_\_\_\_\_  
Chair, Faculty Curriculum Committee

\_\_\_\_\_  
Chair, SCUS

Feb 24, 2011  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

**SIMON FRASER UNIVERSITY**  
**Program Change Form**

**Program:** Major in Molecular Biology and Biochemistry

**From:**

Upper Division Core Requirements  
(19 units)

Students complete all of

MBB 308-3 Molecular Biology Laboratory  
MBB 309W-4 Biochemistry Laboratory  
MBB 321-3 Intermediary Metabolism  
MBB 322-3 Molecular Physiology  
MBB 331-3 Molecular Biology

and one of

MATH 310-3 Introduction to Ordinary Differential Equations  
STAT 201-3 Statistics for the Life Sciences  
STAT 270-3 Introduction to Probability and Statistics

Students complete a minimum of five courses from the list below. There is no upper limit on the quantity in this list that can be completed.

MBB 323-3 Introduction to Physical Biochemistry  
MBB 402-3 Molecular Genetics  
MBB 420-3 Special Topics in Biochemistry  
MBB 421-3 Nucleic Acids  
MBB 422-3 Biomembranes  
MBB 423-3 Protein Structure and Function  
MBB 424-3 Membrane Transport Mechanisms  
MBB 426-4 Immune System I  
MBB 427-3 Immune System II  
MBB 428-3 Molecular Mechanisms of Molecular Pathogenesis  
MBB 430-3 Mechanisms of Secretory Transport  
MBB 431-3 Cells and Disease  
MBB 432-3 Advanced Molecular Biology Laboratory  
MBB 435-3 Genome Biology  
MBB 436-3 Gene Expression  
MBB 437-3 Selected Topics in Signal Transduction  
MBB 438-3 Human Molecular Genetics  
MBB 440-3 Special Topics in Molecular Biology  
MBB 441-3 Bioinformatics  
MBB 442-3 Proteomics  
MBB 443-3 Protein Biogenesis and Degradation  
MBB 444-3 Developmental Neurobiology  
PHYS 433-3 Biological Physics Lab



**To:**

Upper Division Core Requirements

~~(19 units)~~ (16 units)

Students complete all of

- MBB 308-3 Molecular Biology Laboratory
- MBB 309W-4 Biochemistry Laboratory
- MBB 321-3 Intermediary Metabolism
- MBB 322-3 Molecular Physiology
- MBB 331-3 Molecular Biology

and one of

**MATH 310-3 Introduction to Ordinary Differential Equations**

STAT 201-3 Statistics for the Life Sciences

STAT 270-3 Introduction to Probability and Statistics

Students complete a minimum of five courses from the list below. There is no upper limit on the quantity in this list that can be completed.

- MBB 323-3 Introduction to Physical Biochemistry
- MBB 402-3 Molecular Genetics
- MBB 420-3 Special Topics in Biochemistry
- MBB 421-3 Nucleic Acids
- MBB 422-3 Biomembranes
- MBB 423-3 Protein Structure and Function
- MBB 424-3 Membrane Transport Mechanisms
- MBB 426-4 Immune System I
- MBB 427-3 Immune System II
- MBB 428-3 Molecular Mechanisms of Molecular Pathogenesis
- MBB 430-3 Mechanisms of Secretory Transport
- MBB 431-3 Cells and Disease
- MBB 432-3 Advanced Molecular Biology Laboratory
- MBB 435-3 Genome Biology
- MBB 436-3 Gene Expression
- MBB 437-3 Selected Topics in Signal Transduction
- MBB 438-3 Human Molecular Genetics
- MBB 440-3 Special Topics in Molecular Biology
- MBB 441-3 Bioinformatics
- MBB 442-3 Proteomics
- MBB 443-3 Protein Biogenesis and Degradation
- MBB 444-3 Developmental Neurobiology
- MBB 461-3 Comparative Genomics**
- PHYS 433-3 Biological Physics Lab



Effective date: Fall, 2011 (1117)

**Approvals**

[Signature]  
Chair, Department/School

\_\_\_\_\_  
Chair, Faculty Curriculum Committee

\_\_\_\_\_  
Chair, SCUS

Feb 24, 2011  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

**SIMON FRASER UNIVERSITY  
MEMORANDUM**

SCUS 11-23f

**To: Rolf Mathewes, Chair Faculty of Science Undergrad Curriculum Committee**  
**Subject: calendar revisions**  
**From: Mike Hayden, Chair Physics UGCC**  
**Date: Mar 8, 2011**

---

Please find attached a proposal to revise the Biological Physics Honours Program. This change was approved by the Physics Department during a departmental meeting held on March 8, 2011.

1) Biological Physics Honours Program: Add PHYS 421 (Electromagnetic Waves) to the list of required courses for students who choose to complete Option B of the Upper Division Program Requirements. The intent of this change is to correct an oversight that was made during the revision of the department's course offerings in the area of Electricity and Magnetism. The program used to require PHYS 425 (Electromagnetic Theory); this requirement was accidentally dropped from the program when PHYS 421 was introduced to replace PHYS 425.

# SIMON FRASER UNIVERSITY

## Program Change Form

### BIPH HON Program Changes for 2011/12 calendar

#### Additions

#### Deletions

### Biological Physics Honours Program

This bachelor of science (BSc) honours program is for students who are interested in using physical approaches to tackle biological problems.

Students should speak with an advisor as soon as possible to schedule their programs.

Honours program graduates may undertake graduate work in either physics or molecular biology, or related areas, and should choose their courses accordingly.

#### ***Minimum Grade Requirement***

Students wishing to enrol in physics courses must obtain a C- grade or better in prerequisite courses.

#### ***Program Requirements***

Students complete 132 units, as specified below.

#### **Lower Division Requirements**

Students complete a minimum total of 64 units, including all of

- BISC 101-4 General Biology
- BISC 102-4 General Biology
- BISC 202-3 Genetics
- CHEM 121-4 General Chemistry and Laboratory I
- CHEM 122-2 General Chemistry II
- CHEM 281-4 Organic Chemistry
- CHEM 282-2 Organic Chemistry II
- MATH 152-3 Calculus II
- MATH 251-3 Calculus III
- MATH 252-3 Vector Calculus
- MBB 222-3 Molecular Biology and Biochemistry
- MBB 231-3 Cellular Biology and Biochemistry
- PHYS 211-3 Intermediate Mechanics
- PHYS 231-3 Physics Laboratory II
- PHYS 255-3 Vibrations and Waves

and one of

- MATH 150-4 Calculus I with Review
- MATH 151-3 Calculus I

and one of

- MATH 232-3 Applied Linear Algebra
- MATH 240-3 Algebra I: Linear Algebra

and one of

- CHEM 260-4 Atoms, Molecules, Spectroscopy
- PHYS 285-3 Introduction to Relativity and Quantum Mechanics

and one of

- PHYS 101-3 Physics for the Life Sciences I
- PHYS 120-3 Mechanics and Modern Physics
- PHYS 125-3 Mechanics and Special Relativity†
- PHYS 140-4 Studio Physics – Mechanics and Modern Physics\*

and one of

- PHYS 102-3 Physics for the Life Sciences II
- PHYS 121-3 Optics, Electricity and Magnetism
- PHYS 126-3 Electricity, Magnetism and Light†
- PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism\*†

and one of

- PHYS 130-2 Physics for the Life Sciences Laboratory
- PHYS 131-2 Physics Laboratory I\*

\*students with credit for PHYS 140 and 141 are not required to complete PHYS 131

†recommended

## Upper Division Requirements

Students complete a minimum total of 53 units, including all of

- MATH 310-3 Introduction to Ordinary Differential Equations
- MBB 309W-4 Biochemistry Laboratory
- MBB 322-3 Molecular Physiology
- MBB 331-3 Molecular Biology
- PHYS 321-3 Intermediate Electricity and Magnetism
- PHYS 347-3 Introduction to Biological Physics
- PHYS 385-3 Quantum Mechanics I
- PHYS 433-3 Biological Physics Laboratory

and one of

- CHEM 360-3 Thermodynamics and Chemical Kinetics
- MBB 323-3 Introduction to Physical Biochemistry
- PHYS 344-3 Thermal Physics

and four other upper division MBB or PHYS courses. MATH 462 may be included amongst these four. The following courses are suggested.

- MBB 308-3 Molecular Biology Laboratory
- MBB 321-3 Intermediary Metabolism
- MBB 413-2 Physical Biochemistry Laboratory
- MBB 421-3 Nucleic Acids
- MBB 422-3 Biomembranes
- MBB 423-3 Protein Structure and Function
- MBB 441-3 Bioinformatics
- MBB 442-3 Proteomics
- PHYS 492-3 Special Topics in Physics
- PHYS 413-3 Advanced Mechanics
- PHYS 445-3 Statistical Physics
- PHYS 455-3 Modern Optics
- PHYS 484-3 Nonlinear Physics
- MATH 462-3 Fluid Dynamics

## Option A or B Requirements

In addition to the requirements stated above, students also complete the requirements for their choice of either Option A or Option B as stipulated below.

### Option A

Students who choose this option will complete all of

- MBB 481-5 Individual Study Semester – Research Design
- MBB 482-5 Individual Study Semester – Research Performance
- MBB 483-5 Individual Study Semester – Research Reporting

### Option B

Students who choose this option will complete all of

- PHYS 384-3 Methods of Theoretical Physics I
- PHYS 415-3 Quantum Mechanics II
- PHYS 421-3 Electromagnetic Waves
- PHYS 432-5 Undergraduate Honours Thesis
- PHYS 445-3 Statistical Physics

**Rationale:** Several years ago the selection of upper division Electricity and Magnetism courses offered by the Physics Department was rationalized. As part of this process, PHYS 425 (Electromagnetic Theory) was removed from the calendar and replaced with PHYS 421 (Electromagnetic Waves). This substitution was intended to be made in all Physics programs where PHYS 425 had been required. An oversight occurred in the case of the Biological Physics Honours Program. PHYS 425 was removed from the program but was not replaced with PHYS 421. This change rectifies that oversight.





COURSE NUMBER STAT 305

COURSE TITLE SCUS 11-23g

LONG — for Calendar/schedule, no more than 100 characters including spaces and punctuation

Introduction to Biostatistical Methods for Health Sciences

**AND**

SHORT — for enrollment/transcript, no more than 30 characters including spaces and punctuation

Introduction to Biostatistics

**CREDITS**

Indicate number of credits for: Lecture 3 Seminar 0 Tutorial 0 Lab 0

**COURSE DESCRIPTION (FOR CALENDAR). 3-4 LINES MAXIMUM. ATTACH A COURSE OUTLINE TO THIS PROPOSAL.**

Intermediate statistical techniques for the health sciences. Review of introductory concepts in statistics and probability including hypothesis testing, estimation and confidence intervals for means and proportions.  
Contingency tables and the analysis of multiple 2x2 tables. Correlation and regression. Multiple regression and model selection. Logistic regression and odds ratios. Basic concepts in survival analysis.

**PREREQUISITE**

STAT 201 or STAT 203. Students cannot obtain credit for STAT 305 if they already have credit for STAT 302 or STAT 350, or if they are simultaneously enrolled in STAT 305 and either or both of STAT 302 and STAT 350. Statistics major and honors students may not use this course to satisfy the required number of elective units of upper division statistics.

**COREQUISITE**

**SPECIAL INSTRUCTIONS**

That is, does this course replicate the content of a previously-approved course to such an extent that students should not receive credit for both courses.? If so, this should be noted in the prerequisite.

**COURSES(S) TO BE DELETED IF THIS COURSE IS APPROVED**

**NOTE: APPROPRIATE DOCUMENT FOR DELETION MUST BE SUBMITTED TO SCUS**

None.

**RATIONALE FOR INTRODUCTION OF THIS COURSE**

This new course is developed specifically for the health sciences undergraduate program. We have been offering it over the last two years as a special version of STAT 302 and alerting departments which use STAT 302 of the difference in course content of the special version.  
We propose it now as a new course because the course outline is now finalized and because of the need to to distinguish it from STAT302.



**SCHEDULING AND ENROLLMENT INFORMATION**

Indicate effective **term and year** course would first be offered and planned **frequency** of offering thereafter:

**First Offering: Spring 2012; Planned Frequency: Once per year**

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(NOTE: There is a two-term wait for implementation of any new course.)

Indicate if there is a waiver required:  YES  NO Will this be a required or elective course in the curriculum?  Required  Elective

What is the probable enrollment when offered? Estimate 175

Which of your present CFL faculty have the expertise to offer this course?

Altman, Bingham, Campbell, Cao, Dean, Graham, Hu, Insley, Lockhart, Loughin, McNeney, Routledge, Schwarz, Swartz, Tang, Thompson, Zeng

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Are there any proposed student fees associated with this course other than tuition fees?  YES  NO  
(If yes, attach mandatory supplementary fee approval form.)

**RESOURCE IMPLICATIONS**

NOTE: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Campus where course will be taught Burnaby

Library report status The course is included in the list at <http://www.lib.sfu.ca/collections/course-assessments>

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For example, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering?

We have included a special offering of STAT 302 once a year for the last two years to accommodate health science students.

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List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc:

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Articulation agreement reviewed?  YES  NO  Not applicable

**OTHER IMPLICATIONS**

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APPROVALS

- 1 Departmental approval indicates that the Department or School has approved the content of the course, and has consulted with other Departments/Schools/Faculties regarding proposed course content and overlap issues.

*R. Albert*

2011 / 01 / 31

Chair, Department/School

Date

*Rayman*

2011 / 05 / 29

Chair, Faculty Curriculum Committee

Date

- 2 Faculty approval indicates that all the necessary course content and overlap concerns have been resolved, and that the Faculty/School/Department commits to providing the required Library funds.

*Clayton*

29 March 2011

Dean or designate

Date

LIST which other Departments, Schools and Faculties have been consulted regarding the proposed course content, including overlap issues. Attach documentary evidence of responses.

Faculty of Health Sciences

Other Faculties approval indicated that the Dean(s) or Designate of other Faculties AFFECTED by the proposed new course support(s) the approval of the new course.

*K. H. ...*

Date Jan 17, 2011

Date

- 3 SCUS approval indicates that the course has been approved for implementation subject, where appropriate, to financial issues being addressed.

COURSE APPROVED BY SCUS (Chair of SCUS):

Date

APPROVAL IS SIGNIFIED BY DATE AND APPROPRIATE SIGNATURE.

Date: Wed, 2 Feb 2011 15:17:32 -0800 (PST)  
From: Julian Christians <jkchrist@sfu.ca>  
To: Robin Insley <insley@sfu.ca>  
Subject: Re: New STAT 305 course  
X-Originating-IP: [142.58.115.241]  
X-Mailer: Zimbra 6.0.7\_GA\_2476.RHEL4 (ZimbraWebClient - FF3.0 (Win)/6.0.7\_GA\_2473.MACOSXx86)  
X-Authenticated-User: jkchrist@sfu.ca

Hi

Looks fine, thanks for asking. Is it easy to describe how STAT 305 differs from STAT 302? We require students in one of our streams (ecology, evolution and conservation) to take STAT 302, so we are wondering if we could/ should allow them to take 302 or 305.

Cheers

Julian

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

From: "Robin Insley" <insley@sfu.ca>  
To: jkchrist@sfu.ca  
Sent: Tuesday, 1 February, 2011 12:31:19 PM  
Subject: New STAT 305 course

Hi Julian: Yesterday I submitted a new course proposal (STAT 305) to Rolf. He asked me if I would run it by you and the Biology department for course duplication. I have put a copy of everything that I submitted to Rolf in your mailbox. When you are finished would you please get back to me. (I will be away from Feb. 11 to Feb. 28)

Cheers, Robin

Robin Insley  
Undergraduate Chair  
Department of Statistics  
and Actuarial Science.  
Simon Fraser University  
778-782-3805  
insley@sfu.ca  
K 10552



# STAT 305

## Introduction to Biostatistical Methods for Health Sciences Day Course Statistics Workshop

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*Students requiring accommodations as a result of disability, must contact the Centre for Students with Disabilities 778-782-3112 or csdo@sfu.ca*

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### Prerequisite:

Completion of STAT 201 or 203.

### Textbook:

*Principles of Biostatistics, 2nd Edition, Pagano M, Gauvreau K. Pacific Grove, CA: Duxbury, 2000.*

### Calendar Description:

Intermediate statistical techniques for the health sciences. Review of introductory concepts in statistics and probability including hypothesis testing, estimation and confidence intervals for means and proportions. Contingency tables and the analysis of multiple 2x2 tables. Correlation and regression. Multiple regression and model selection. Logistic regression and odds ratios. Basic concepts in survival analysis.

### Outline:

This course provides an opportunity for the further development of analytic skills acquired in basic courses in statistics and the health sciences. It concentrates on the relatively few techniques that are currently most used in health research, but it also seeks to provide a conceptual basis for understanding other techniques as well. An attempt is made to focus on unifying principles and widely applicable methods as opposed to presenting an array of unrelated ad hoc methods. The material is presented descriptively, from the point of view of understanding and practical use.

The emphasis of the course is on analysis (rather than design) of primarily observational studies where there is one outcome variable of primary interest and where the data are made up of multiple independent observations. Important areas not covered are: classical multivariate analysis (e.g., factor analysis, discriminant analysis, etc.), longitudinal data analysis, time series, random effects models, and experimental design considerations (e.g., Latin squares, etc.).

### Objectives:

By the end of the course the participant should:

1. understand the concept of a statistical model and how such models correspond to specific hypotheses or questions,
2. be able to interpret the results of an analysis in relation to the original questions or hypotheses that motivated the analysis,
3. be familiar with data analysis methods commonly used in health sciences and understand the basic limitations of competing methods,
4. understand and be able to critique the analysis methods described in published health research papers,
5. be able to communicate effectively with statistical consultants.

## **Topics:**

The scheduling of the following topics is approximate:

1. Review of introductory statistics: Hypothesis testing, estimation and confidence intervals for means and proportions.
2. Review of basic concepts of probability with applications including diagnostic testing, sensitivity and specificity, the relative risk and the odds ratio.
3. Contingency Tables: The Chi-square test,  $r \times c$  tables, multiple  $2 \times 2$  tables, Simpson's paradox, Mantel-Haenszel method.
4. Correlation and simple linear regression: Regression concepts, estimation and testing for regression coefficients, evaluation of the model.
5. Multiple linear regression: Inference for regression coefficients, confounding and interaction, indicator variables, model selection, prediction, model assumptions and checking.
6. Logistic regression: Odds ratios, inference for regression coefficients, model assumptions and checking, case-control studies.
7. Time permitting: Survival analysis including life tables, censoring, Kaplan-Meier method, log-rank test.

## **Grading Scheme:**

Assignments – 25%

Quizzes – 25%

Final Exam – 50%

## **Examinations:**

There will be in-class quizzes and final which are closed book examinations. Exam questions will be of a general nature and emphasize the interpretation of analysis results rather than complex formula calculations. The students will not be required to memorize formulas and may bring a two-sided formula sheet into the exams.

## **Assignments:**

In completing assignments, consultation with other students regarding computer programming methods and difficulties is allowed and encouraged. You should, however, come to your own conclusions, and be prepared to defend them. Methods used should be described and shown, and brief computer output should be included with the answer. Some familiarity with the JMP statistical package will be helpful.

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*Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester. Students are reminded that Academic Honesty is a cornerstone of the acquisition of knowledge. Scholarly integrity is required of all members of the University. Please consult the General Guidelines of the calendar for more details.*

Revised January 2011

STAT305-HealthSciencesConsultation.txt

Date: Mon, 10 Jan 2011 16:32:23 -0800 (PST)  
From: Kitty Corbett <kcorbett@sfu.ca>  
To: CB Dean <dean@stat.sfu.ca>  
Cc: Lawrence McCandless <lmccandl@sfu.ca>  
Subject: Re: New Course Proposal Form for STAT 305

Dear Charmaine,  
I reviewed the new course form and course outline for STAT 305. As you know, Health Sciences is very pleased about having this upper division stats course tailored so it meets our majors' needs. The outline looks fine.

[...]

Best,  
Kitty

--

Kitty Corbett, PhD, MPH  
Professor and Director, Undergraduate Programs  
Faculty of Health Sciences  
Simon Fraser University  
Blusson Hall Rm 11024  
8888 University Drive  
Burnaby BC V5A1S6 Canada  
778 782-7190  
fax 778 782-5927

STAT305-LibraryApproval.txt

Subject: Re: New Course Proposal Form STAT 305  
From: Leslie Rimmer <lsrimmer@sfu.ca>  
Date: Thu, 13 Jan 2011 16:14:54 -0800 (PST)  
To: CB Dean <dean@stat.sfu.ca>  
CC: walter <walter@sfu.ca>, Ursula Ellis <ursula\_ellis@sfu.ca>, Gwen Bird <gbird@sfu.ca>

Dear Charmaine ,

I have completed reviewing the proposal for STAT 305, Biostatistical Methods for Health Sciences, and have determined that no additional library resources will be required to support it.

I have added the course to the appropriate list at <http://www.lib.sfu.ca/collections/course-assessments>. This will be adequate proof of library sign-off.

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

Best regards,

Leslie

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Leslie Rimmer  
Collections Librarian  
Liaison Librarian for Biological Sciences

WAC Bennett Library  
Simon Fraser University  
8888 University Drive  
Burnaby, B.C. V5A 1S6 Canada

Email: [lsrimmer@sfu.ca](mailto:lsrimmer@sfu.ca) / Tel: 778-782-4962 / Fax: 778-782-3023  
\*\*I am on campus Tuesdays through Thursdays and alternate Fridays\*\*