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www.sfu.ca/vpacademic**MEMORANDUM**

ATTENTION	Senate	DATE	February 5, 2010
FROM	Bill Krane, Chair	PAGES	1/2
RE:	Senate Committee on Undergraduate Studies Faculty of Science		

For information:

Acting under delegated authority at its meeting of February 4, 2010, SCUS approved the following curriculum revisions:

1. Department of Mathematics (SCUS 10-05e)

- (i) Changes to Beginning Level Requirements
- (ii) Changes to upper and lower division requirements in various Math programs:
 - Applied Mathematics Major & Honours,
 - Industrial Mathematics,
 - Mathematics Major and Honours,
 - Mathematics & Computing Science (MACM) Joint Major and Joint Honours
- (iii) Prerequisite, description and title changes to MATH 100, 130, 151, 198, 208, 242, 251, 302, 303, 304, 310, 340, 402, 152, 232, 240, 154, 155, 467 and 308

2. Department of Physics (SCUS 10-11a)

- (i) Changes to the Upper Division requirements for the Mathematical Physics Honors Program
- (ii) Changes to the Program Requirements for the Biological Physics Major Program
- (iii) Changes to the Lower and Upper Division requirements for the Chemical Physics Major and Honors Programs

3. Department of Statistics & Actuarial Science (SCUS 10-11b)

- (i) Prerequisite change to STAT 302

4. Department of Earth Sciences (SCUS 10-11c)

- (i) New course proposal:
EASC 405-3, Water Cycles and Resources: Environmental and Climate Change Impacts

Senators wishing to consult a more detailed report of curriculum revisions may do so on the Web at http://www.sfu.ca/senate/Senate_agenda.html following the posting of the agenda. If you are unable to access the information, please call 778-782-3168 or email bgrant@sfu.ca.



FACULTY OF SCIENCE

SCUS 10-05e
(REVISED)
SUPPLEMENTAL

DEPARTMENT OF MATHEMATICS January 19, 2010

mailing address

Dr. Bill Krane
Dr. Rolf Mathewes

Senate Committee on Undergraduate Studies

Simon Fraser University

Dear Senate Committee on Undergraduate Studies,

Please find below the Math Department's comments on their proposed prerequisite changes for the 2010/2011 calendar:

Comments on Changes to Pre-requisites for 2010/2011 calendar

MATH 100: clarifying BC 12 pre-requisite to explicitly state SFU FAN credit.

Implications: There is no real change to the pre-requisite. But students are often confused about the Q-requirement for MATH 100 -- this explicitly states this policy as a pre-requisite.

Background: The SFU Q-requirement means that eligibility for MATH 100 is a 70% grade in BC 12 -- the SIMS programming for this is a C in BC 12 AND SFU FAN credit.

contact info

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Burnaby, BC V5A 1S6

MATH 151-3: Math 100 (pre-calc) pre-requisite increased from B- to B.

Implications: This **does not** change the eligibility for first-year calculus. Students with B- in MATH 100 can still enroll in the MATH 150-4 version of Calc I. Alternatively, students can still qualify for Math 151-3 with a satisfactory score on the Calculus Readiness test.

Background: There are two versions of the first-term calculus courses for the main science (Calc III) stream: these are MATH 150-4 and 151-3. Both courses cover the same material, but the MATH 150-4 sections have an additional lecture hour for the benefit of students with weaker mathematical backgrounds. Although our original intent was to have students self-select for the extra lecture hour (based on advising, and the first-week diagnostic test), this has proven to be infeasible -- an unintended consequence of the additional credit is the accompanying increase in the tuition expense to the student. Many students choose to gamble with the less costly choice.

Despite our advising efforts, we feel it necessary to direct the students' 150/151 choice via pre-requisites.

MATH 152: MATH 154 pre-requisite increased from C- to B.

MATH 251: MATH 155 pre-requisite increased from C- to B.

Implications: Students switching from the BIO-SCI calculus stream will now need a minimum grade of B to move onto Calc II or Calc III within the Pre- Calc III stream.

Background: For the 2009/2010 calendar year, the BC 12 requirements for the first-term calculus courses (Calc III stream) were increased MATH 150-4 (to B+) and 151-3 (to A-). This change was precipitated by the removal of the BC provincial Mathematics Exam as an SFU entry requirement, after which there was a measureable change (at SFU & UBC) in the correlation between BC 12 grades and success in MATH 150 & 151. However, there was no noticeable change in the applied calculus streams (bio-science calc I, MATH 154; and business calc I, MATH 157), and so those BC 12 pre-requisites were left unchanged (at B).

In this past year, we have noticed instances of students with grades of B in BC 12, attempting to by-pass their shortfall in the 150/151 science calc pre-requisites through the applied calculus streams. Furthermore, we have also heard that some non-science advisors have been suggesting the applied calculus courses for students at the three-time failure limit in 150/151/152. We feel that pre-requisite grades of B in 154/155 for changing calculus streams should provide adequate discouragement for students trying to game the system, while maintaining standards that best serve those who are sincerely changing their major of study.

Overall comments

When the background system alters (as in the case of recent changes to curriculum and examination procedures in BC high schools) it often takes a while for all of the implications to be sorted out. The adjustments presented here are minor and the necessity of them was not anticipated initially due to the relatively small number of students implicated.



FACULTY OF SCIENCE

The department recently sent a recommendation to Student Services for a certain set of responses to yet another change in high school mathematics. That recommendation was in part based on the fact that we are able to set prerequisites in order to ensure that students have some possibility of passing courses to which they are initially to be admitted. We therefore count on SCUS to understand that we are attempting to exercise our best judgement, based on how students are doing in the courses.

Sincerely,

Dr. Thomas Archibald
Mathematics Chair

and

Dr. David Murkai
Mathematics Undergraduate Studies Committee Chair

Department of Mathematics

Beginning Level Requirements

From:

MATH 100

BC principles of mathematics 11 (or equivalent) with a grade of at least B- or Simon Fraser University FAN X99 with a grade of at least B-, or achieving a satisfactory grade on the Simon Fraser University Quantitative Placement Test...

MATH 151

BC principles of mathematics 12 (or equivalent) with a grade of at least A; or MATH 100 with a grade of at least B-, or achieving a satisfactory grade on the Simon Fraser University Calculus Readiness Test.

MATH 150, 154, 157

BC principles of mathematics 12 (or equivalent) with a grade of at least B; or MATH 100 with a grade of at least C, or achieving a satisfactory grade on the Simon Fraser University Calculus Readiness Test.

To:

MATH 100

BC principles of mathematics 11 (or equivalent) with a grade of at least B-, or BC principles of mathematics 12 (or equivalent) with a grade of at least C and SFU FAN credit, or SFU FAN X99 course with a grade of at least B-, or achieving a satisfactory grade on the Simon Fraser University Quantitative Placement Test.

MATH 151

BC principles of mathematics 12 (or equivalent) with a grade of at least A, or MATH 100 with a grade of at least B, or achieving a satisfactory grade on the Simon Fraser University Calculus Readiness Test.

MATH 150

BC principles of mathematics 12 (or equivalent) with a grade of at least B+ (75%); or MATH 100 with a grade of at least B-, or achieving a satisfactory grade on the Simon Fraser University Calculus Readiness Test.

MATH 154, 157

BC principles of mathematics 12 (or equivalent) with a grade of at least B; or MATH 100 with a grade of at least C, or achieving a satisfactory grade on the Simon Fraser University Calculus Readiness Test.

Department of Mathematics

Applied Mathematics Major Program

FROM:

Applied Mathematics Major Program

Lower Division Requirements

Students complete either

CMPT 126-3 Introduction to Computer Science and Programming
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

MACM 202-4 Mathematical Modeling and Computation

MATH 152-3 Calculus II

MATH 240-3 Algebra I: Linear Algebra

MATH 242-3 Introduction to Analysis I

MATH 251-3 Calculus III

MATH 252-3 Vector Calculus

PHYS 211-3 Intermediate Mechanics

STAT 270-3 Introduction to Probability and Statistics

...

Note: With a C grade or better in the relevant course, these substitutions are permitted: MATH 154 or 157 for MATH 151; MATH 155 or 158 for MATH 152. Also, with a B grade or better, MATH 232 for MATH 240.

However, where possible, students are strongly encouraged to complete MATH 151, 152 and 240.

Upper Division Requirements

Students complete all of

MACM 316-3 Numerical Analysis I

MATH 310-3 Introduction to Ordinary Differential Equations

MATH 314-3 Boundary Value Problems

MATH 320-3 Introduction to Analysis II

MATH 322-3 Complex Variables

MATH 418-3 Partial Differential Equations

plus at least one of

MATH 461-3 Continuous Mathematical Models

MATH 462-3 Fluid Dynamics

plus 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 Introduction to Optimization

MATH 309-3 Continuous Optimization

...

TO:

Applied Mathematics Major Program

Lower Division Requirements

Students complete either

CMPT 126-3 Introduction to Computer Science and Programming

or both of

CMPT 120-3 Introduction to Computing Science and Programming I

CMPT 125-3 Introduction to Computing Science and Programming II

or

CMPT 128-3 Introduction to Computing Science and Programming for Engineers

and all of

MATH 152-3 Calculus II

MATH 240-3 Algebra I: Linear Algebra

MATH 242-3 Introduction to Analysis I

MATH 251-3 Calculus III

MATH 252-3 Vector Calculus

PHYS 211-3 Intermediate Mechanics

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

...

Note: With a B grade or better in the relevant course, these substitutions are permitted: MATH 154 or 157 for MATH 151; MATH 155 or 158 for MATH 152.

Also, with a B grade or better, MATH 232 for MATH 240.

However, where possible, students are strongly encouraged to complete MATH 151, 152 and 240.

* If necessary, and subject to prior program approval, this computing requirement may be satisfied by completing one of MACM 401, 409, 416, or MATH 461, 462.

467, 470, 495. This course cannot be used to satisfy other upper-division degree requirements.

Upper Division Requirements

Students complete 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

plus at least one of
MATH 461-3 Continuous Mathematical Models
MATH 462-3 Fluid Dynamics

plus 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

...

Department of Mathematics

Applied Mathematics Honors Program

FROM:

Lower Division Requirements

Students complete either

CMPT 126-3 Introduction to Computer Science and Programming
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 225-3 Data Structures and Programming
MACM 202-4 Mathematical Modeling and Computation

MATH 152-3 Calculus II

MATH 240-3 Algebra I: Linear Algebra

MATH 242-3 Introduction to Analysis I

MATH 251-3 Calculus III

MATH 252-3 Vector Calculus

PHYS 125-3 Mechanics and Special Relativity

PHYS 126-3 Electricity, Magnetism and Light

PHYS 211-3 Intermediate Mechanics

STAT 270-3 Introduction to Probability and Statistics and one of

MATH 150-4 Calculus I with Review

MATH 151-3 Calculus I

Note: With a C grade or better in the relevant course, these substitutions are permitted: MATH 154 or 157 for MATH 151; MATH 155 or 158 for MATH 152. Also, with a B grade or better, MATH 232 for 240. However, where possible, students are strongly encouraged to complete MATH 151, 152 and 240.

Upper Division Requirements

Students complete all of

MACM 316-3 Numerical Analysis I

MATH 310-3 Introduction to Ordinary Differential Equations

MATH 314-3 Boundary Value Problems

MATH 320-3 Introduction to Analysis II

MATH 322-3 Complex Variables

MATH 418-3 Partial Differential Equations

...

plus at least six additional courses chosen from
MACM 409-3 Numerical Linear Algebra and Optimization
MACM 416-3 Numerical Analysis II
MATH 308-3 Introduction to Optimization
MATH 309-3 Continuous Optimization
MATH 338-3 Advanced Linear Algebra
...

To:

Lower Division Requirements

Students complete either
CMPT 126-3 Introduction to Computer Science and Programming
or both of
CMPT 120-3 Introduction to Computing Science and Programming I
CMPT 125-3 Introduction to Computing Science and Programming II
or
CMPT 128-3 Introduction to Computing Science and Programming for Engineers

and all of
CMPT 225-3 Data Structures and Programming
MATH 152-3 Calculus II
MATH 240-3 Algebra I: Linear Algebra
MATH 242-3 Introduction to Analysis I
MATH 251-3 Calculus III
MATH 252-3 Vector Calculus
PHYS 125-3 Mechanics and Special Relativity
PHYS 126-3 Electricity, Magnetism and Light
PHYS 211-3 Intermediate Mechanics
STAT 270-3 Introduction to Probability and Statistics and one of
MATH 150-4 Calculus I with Review
MATH 151-3 Calculus I

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

Note: With a B grade or better in the relevant course, these substitutions are permitted: MATH 154 or 157 for MATH 151; MATH 155 or 158 for MATH 152. Also, with a B grade or better, MATH 232 for 240. However, where possible, students are strongly encouraged to complete MATH 151, 152 and 240.

* If necessary, and subject to prior program approval, this computing requirement may be satisfied by completing one of MACM 401, 409, 416, or MATH 461, 462.

467, 470, 495. This course cannot be used to satisfy other upper-division degree requirements.

Upper Division Requirements

Students complete 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

...

plus at least six additional courses chosen from
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

...

Department of Mathematics

Industrial Mathematics

FROM:

...

Major Program

...

Lower Division Core Requirements

Students complete either

CMPT 126-3 Introduction to Computer Science and Programming

or both of

CMPT120-3 Introduction to Computer Science and Programming I

CMPT 125-3 Introduction to Computer Science and Programming II

...

*with a grade of C or better, these substitutions are permitted: MATH 154 or 157 for 151 (or 150); MATH155 or 158 for MATH 152. With a grade of B or better, MATH 232 for MATH 240.

Area Requirements:

Students complete the requirements for one of option A, B or C.

Option A: Operations Research and Applied Statistics (offered at Simon Fraser University Surrey)

For this option, students must complete all of

MATH 208-3 Introduction to Operations Research

MATH 308-3 Introduction to Optimization

MATH 309-3 Continuous Optimization

...

Table I

ACMA 445-3 Loss Models: Estimation and Selection*

BUEC 433-5 Forecasting in Business and Economics

STAT 390-3 Selected Topics in Probability and Statistics

STAT 400-3 Data Analysis
 STAT 402-3 Generalized Linear and Nonlinear Modelling
 STAT 410-3 Statistical Analysis of Sample Surveys
 STAT 430-3 Statistical Design and Analysis of Experiments
 STAT 460-3 Bayesian Statistics
 STAT 490-3 Selected Topics in Probability and Statistics
 *students must meet the entry requirements for the actuarial science program to enrol in this course

Table II:

...

Option B: Scientific Computing

(offered at the main Burnaby campus)

For this option students must complete all of

MACM 202-4 Mathematical Modeling and Computation

MACM 316-3 Numerical Analysis I

MACM 409-3 Numerical Linear Algebra and Optimization

MATH 252-3 Vector Calculus

MATH 308-3 Introduction to Optimization

MATH 310-3 Introduction to Differential Equations...

MATH 314-3 Boundary Value Problems

MATH 402-4 Industrial Mathematics Project

MATH 418-3 Partial Differential Equations

plus two of

MACM 416-3 Numerical Analysis II

MATH 309-3 Continuous Optimization

MATH 320-3 Introduction to Analysis II

MATH 322-3 Complex Variables

MATH 462-3 Fluid Dynamics

MATH 467-3 Dynamical Systems

MATH 470-3 Variation Calculus

plus two additional courses from Table II below.

Option C: Discrete Mathematics

(offered at the main Burnaby campus)

For this option, students must complete all of

MACM 201-3 Discrete Mathematics II

MACM 202-4 Mathematical Modeling and Computation

MACM 316-3 Numerical Analysis I

MATH 308-3 Introduction to Optimization

MATH 310-3 Introduction to Differential Equations

MATH 340-3 Algebra II: Rings and Fields

MATH 343-3 Applied Discrete Mathematics

MATH 345-3 Introduction to Graph Theory

plus two of

MACM 401-3 Introduction to Computational Algebra

MACM 442-3 Cryptography

MATH 408-3 Discrete Optimization
MATH 447-4 Coding Theory

plus two additional courses from Table III below.

Table III

...

MACM 316-3 Numerical Analysis I
MACN 401-3 Introduction to Computational Algebra
MACM 409-3 Numerical Linear Algebra
MACM 416-3 Numerical Analysis II
MACM 442-3 Cryptography
MATH 309-3 Continuous Optimization
MATH 310-3 Introduction to Ordinary Differential Equations
MATH 314-3 Boundary Value Problems
MATH 320-3 Introduction to Analysis II

...

MATH 438-3 Linear Algebra
MATH 443-3 Combinatorial Theory
MATH 445-3 Graph Theory
MATH 447-4 Coding Theory

...

TO:

...

Major Program

...

Lower Division Core Requirements

Students complete either

CMPT 126-3 Introduction to Computer Science and Programming
or both of

CMPT 120-3 Introduction to Computing Science and Programming I

CMPT 125-3 Introduction to Computing Science and Programming II

or

CMPT 128-3 Introduction to Computing Science and Programming for Engineers

...

*with a grade of B or better, these substitutions are permitted: MATH 154 or 157 for 151 (or 150); MATH155 or 158 for MATH 152. With a grade of B or better, MATH 232 for MATH 240.

Area Requirements:

Students complete the requirements for one of option A, B or C.

Option A: Operations Research and Applied Statistics (offered at Simon Fraser University Surrey)

For this option, students must complete all of

MATH 208-3 Introduction to Operations Research

MATH 308-3 Linear Optimization

MATH 309-3 Continuous Optimization

...

Table I

ACMA 445-3 Loss Models: Estimation and Selection*

BUEC 433-5 Forecasting in Business and Economics**

STAT 390-3 Selected Topics in Probability and Statistics

STAT 400-3 Data Analysis

STAT 402-3 Generalized Linear and Nonlinear Modelling

STAT 410-3 Statistical Analysis of Sample Surveys

STAT 430-3 Statistical Design and Analysis of Experiments

STAT 460-3 Bayesian Statistics

STAT 490-3 Selected Topics in Probability and Statistics

*students must meet the entry requirements for the actuarial science program to enrol in this course

** Prerequisite: BUEC 333 and 60 credit hours

Table II:

...

Option B: Scientific Computing

(offered at the main Burnaby campus)

For this option students must complete all of

MACM 316-3 Numerical Analysis I

MACM 409-3 Numerical Linear Algebra and Optimization

MATH 252-3 Vector Calculus

MATH 308-3 Linear Optimization

MATH 310-3 Introduction to Differential Equations...

MATH 314-3 Introduction to Fourier Methods and Partial Differential Equations

MATH 402-4 Industrial Mathematics Project

MATH 418-3 Partial Differential Equations

plus two of

MACM 416-3 Numerical Analysis II

MATH 309-3 Continuous Optimization

MATH 320-3 Introduction to Analysis II

MATH 322-3 Complex Variables

MATH 462-3 Fluid Dynamics

MATH 467-3 Dynamical Systems
MATH 470-3 Variation Calculus
plus 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

plus two additional courses from Table III below.

Option C: Discrete Mathematics

(offered at the main Burnaby campus)

For this option, students must complete all of

MACM 201-3 Discrete Mathematics II

MACM 316-3 Numerical Analysis I

MATH 308-3 Introduction to Optimization

MATH 310-3 Introduction to Differential Equations

MATH 340-3 Algebra II: Rings and Fields

MATH 343-3 Applied Discrete Mathematics

MATH 345-3 Introduction to Graph Theory

plus two of

MACM 401-3 Introduction to Computational Algebra

MACM 442-3 Cryptography

MATH 408-3 Discrete Optimization

MATH 447-3 Coding Theory

plus 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

plus two additional courses from Table III below.

* If necessary, and subject to prior program approval, this computing requirement may be satisfied by completing one of MACM 401, 409, 416, or MATH 461, 462, 467, 470, 495. This course cannot be used to satisfy other upper-division degree requirements.

Table III

...

MACM 316-3 Numerical Analysis I

MACM 401-3 Introduction to Computational Algebra

MACM 409-3 Numerical Linear Algebra

MACM 416-3 Numerical Analysis II

MACM 442-3 Cryptography
MATH 309-3 Continuous Optimization
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 438-3 Linear Algebra
MATH 443-3 Combinatorial Theory
MATH 445-3 Graph Theory
MATH 447-3 Coding Theory

...

Department of Mathematics

Mathematics Major and Honors Programs

FROM:

Lower Division Requirements

Students complete either

CMPT 126-3 Introduction to Computer Science and Programming
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

MACM 101-3 Discrete Mathematics I
MACM 201-3 Discrete Mathematics II
MACM 202-4 Mathematical Modeling and Computation
MATH 152-3 Calculus II
MATH 240-3 Algebra I: Linear Algebra
MATH 242-3 Introduction to Analysis I
MATH 251-3 Calculus III
STAT 270-3 Introduction to Probability and Statistics

and one of

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

Note: With a C grade or better in the relevant course, these substitutions are permitted: MATH 154 or 157 for MATH 151, MATH 155 or 158 for MATH 152. Also, with a B grade or better, MATH 232 for 240. However, where possible, students are strongly encouraged to complete MATH 151, 152 and 240.

Upper Division Requirements

...

and at least one from each of the following four groups of courses.

MATH 308-3 Introduction to Optimization
MATH 343-3 Applied Discrete Mathematics
MATH 345-3 Introduction to Graph Theory

TO:

Lower Division Requirements

Students complete either

CMPT 126-3 Introduction to Computer Science and Programming

or both of

CMPT 120-3 Introduction to Computing Science and Programming I

CMPT 125-3 Introduction to Computing Science and Programming II

or

CMPT 128-3 Introduction to Computing Science and Programming for Engineers

and all of

MACM 101-3 Discrete Mathematics I

MACM 201-3 Discrete Mathematics II

MATH 152-3 Calculus II

MATH 240-3 Algebra I: Linear Algebra

MATH 242-3 Introduction to Analysis I

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

and one of

MATH 150-4 Calculus I with Review

MATH 151-3 Calculus I

Note: With a B grade or better in the relevant course, these substitutions are permitted: MATH 154 or 157 for MATH 151, MATH 155 or 158 for MATH 152.

Also, with a B grade or better, MATH 232 for 240. However, where possible, students are strongly encouraged to complete MATH 151, 152 and 240.

* If necessary, and subject to prior program approval, this computing requirement may be satisfied by completing one of MACM 401, 409, or MATH 439. This course cannot be used to satisfy other upper-division degree requirements.

Upper Division Requirements

...

and at least one from each of the following four groups of courses.

MATH 308-3 Linear Optimization
MATH 343-3 Applied Discrete Mathematics
MATH 345-3 Introduction to Graph Theory

Department of Mathematics

Mathematics and Computing Science (MACM) Joint Major and Joint Honors Program

FROM:

Lower Division Requirements

Joint Major Program

Students complete either

CMPT 126-3 Introduction to Computer Science and Programming
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

MACM 101-3 Discrete Mathematics I

MACM 201-3 Discrete Mathematics II

MATH 152-3 Calculus II

MATH 240-3 Algebra I: Linear Algebra

MATH 242-3 Introduction to Analysis

MATH 251-3 Calculus III

STAT 270-3 Introduction to Probability and Statistics

plus one of

MATH 150-4 Calculus I with Review

MATH 151-3 Calculus I

plus one of

CMPT 275-4 Software Engineering

MACM 202-4 Mathematical Modeling and Computation

Note: With a C grade or better in relevant course, these substitutions are permitted: MATH 154 or 157 for MATH 151; MATH 155 or 158 for MATH 152. Also, with a B grade or better, MATH 232 for MATH 240. However, where possible, students are strongly encouraged to complete MATH 151, 152 and 240. In addition, students must complete writing and breadth requirements in accordance with the regulations of both the department and the school.

Joint Honors Program

Students pursuing the MACM joint honors program must complete both of the following courses as well as the remaining requirements of the MACM major.

CMPT 275-4 Software Engineering

MACM 202-4 Mathematical Modeling and Computation

...

Upper Division Requirements

Joint Major Program

...

plus one of
MATH 308-3 Introduction to Optimization
MATH 309-3 Continuous Optimization

TO:

Lower Division Requirements

Joint Major Program

Students complete either
CMPT 126-3 Introduction to Computer Science and Programming
or both of
CMPT 120-3 Introduction to Computing Science and Programming I
CMPT 125-3 Introduction to Computing Science and Programming II
or
CMPT 128-3 Introduction to Computing Science and Programming for Engineers

and all of
CMPT 150-3 Introduction to Computer Design
CMPT 225-3 Data Structures and Programming
MACM 101-3 Discrete Mathematics I
MATH 152-3 Calculus II
MATH 240-3 Algebra I: Linear Algebra
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
plus one of
MATH 150-4 Calculus I with Review
MATH 151-3 Calculus I
plus one of

CMPT 275-4 Software Engineering
MACM 202-4 Mathematical Modeling and Computation

Note: With a B grade or better in relevant course, these substitutions are permitted: MATH 154 or 157 for MATH 151; MATH 155 or 158 for MATH 152. Also, with a B grade or better, MATH 232 for MATH 240. However, where possible, students are strongly encouraged to complete MATH 151, 152 and 240. In addition, students must complete writing and breadth requirements in accordance with the regulations of both the department and the school.

* If necessary, and subject to prior program approval, this computing requirement may be satisfied by completing one of MACM 401, 409, or MATH 439. This course cannot be used to satisfy other upper-division degree requirements.

Joint Honors Program

Students pursuing the MACM joint honors program must complete of the following courses as well as the remaining requirements of the MACM major.

CMPT 275-4 Software Engineering

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

* If necessary, and subject to prior program approval, this computing requirement may be satisfied by completing one of MACM 401, 409, or MATH 439. This course cannot be used to satisfy other upper-division degree requirements.

Upper Division Requirements

Joint Major Program

...

plus one of

MATH 308-3 Introduction to Optimization

MATH 309-3 Linear Optimization



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 100-3** _____ Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Precalculus

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

DESCRIPTION

PREREQUISITE

BC principles of mathematics 11 (or equivalent) with a grade of at least B-, or BC principles of mathematics 12 (or equivalent) with a grade of at least C, or SFU FAN X99 course with a grade of at least B-, or achieving a satisfactory grade on the Simon Fraser University Quantitative Placement Test. Students with credit for MATH 150 or 151 or 154 or 157 may not take MATH 100 for further credit. MATH 100 may not be counted towards the mathematics minor, major or honors degree requirements. Quantitative.

BC principles of mathematics 11 (or equivalent) with a grade of at least B-, or BC principles of mathematics 12 (or equivalent) with a grade of at least C and SFU FAN credit, or SFU FAN X99 course with a grade of at least B-, or achieving a satisfactory grade on the Simon Fraser University Quantitative Placement Test. Students with credit for MATH 150 or 151 or 154 or 157 may not take MATH 100 for further credit. MATH 100 may not be counted towards the mathematics minor, major or honors degree requirements. Quantitative.

Rationale

To clarify SFU admissions requirements.

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 2010** _____



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 130-3** _____ Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Geometry for Computer Graphics

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

DESCRIPTION

PREREQUISITE

Principles of Mathematics 12 or Applications of Mathematics 12, both with a grade of at least B. Quantitative.

Principles of Mathematics 12 or Applications of Mathematics 12, both with a grade of at least B, or Math 100 with a grade of at least C and SFU FAN credit. Quantitative.

RATIONALE

To make consistent with other first year math courses.

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 151-3** _____ Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Calculus I

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

DESCRIPTION

PREREQUISITE

BC principles of mathematics 12 (or equivalent) with a grade of at least A, or MATH 100 with a grade of at least B-, or achieving a satisfactory grade on the Simon Fraser University Calculus Readiness Test. Students with credit for either MATH 150, 154 or 157 may not take MATH 151 for further credit. Quantitative.

BC principles of mathematics 12 (or equivalent) with a grade of at least A, or MATH 100 with a grade of at least B, or achieving a satisfactory grade on the Simon Fraser University Calculus Readiness Test. Students with credit for either MATH 150, 154 or 157 may not take MATH 151 for further credit. Quantitative.

RATIONALE

Increases MATH 100 pre-requisite grade (B- to B) to differentiate from Calc I with Review (MATH 150) requirement, which is currently B-.

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 2010**



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 198-4** _____ Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Introduction to Quantitative Reasoning

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

DESCRIPTION

PREREQUISITE

BC Principles of Mathematics 11 (or equivalent) with a grade of at least C, taken within the past 10 years, or Simon Fraser University FAN X99 course with a grade of at least C. This course is only open for credit to students in the Integrated Studies programs within the Bachelor of General Studies degree. Quantitative.

BC Principles of Mathematics 11 (or equivalent) with a grade of at least B, or Simon Fraser University FAN X99 course with a grade of at least C. This course is only open for credit to students in the Integrated Studies programs within the Bachelor of General Studies degree. Quantitative.

Rationale

To be consistent with other intro-level math courses.

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number MATH 208-3 Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Introduction to Operations Research

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

DESCRIPTION

PREREQUISITE

MATH 152 or 155 or 158,
and
CMPT 101 or 104 or 125 or 126.

MATH 150 or 151 or 154 or 157.
Quantitative.

RATIONALE

To target students early in their studies; in current offering, we've seen that students can handle the software in the course well enough without the CMPT background.

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 242-3** Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Introduction to Analysis I

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

DESCRIPTION

PREREQUISITE

MATH 152 or 155. Quantitative.

MATH 152; or MATH 155 or 158 with a grade of B. Quantitative.

RATIONALE

Add 155/158 grade to B for program consistency

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number MATH 251-3 Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Calculus III

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

DESCRIPTION

PREREQUISITE

MATH 152 or 155; or MATH 158 with a grade of at least B. Recommended: It is recommended that MATH 240 or 232 be taken before or concurrently with MATH 251. Quantitative.

MATH 152; or MATH 155 or 158 with a grade of at least B. Recommended: It is recommended that MATH 240 or 232 be taken before or concurrently with MATH 251. Quantitative.

RATIONALE

Unified pre-requisite grades within both applied calculus streams: calc I 154/157 and calc II 155/158.

Effective term and year Fall 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 302** Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Computing with Mathematics

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

DESCRIPTION

PREREQUISITE

MATH 152 and 232 or 240. There may be additional prerequisites depending on the course's topics. Recommended: MACM 202 or equivalent computing experience. Department permission is required to complete this course more than once.

MATH 152 or 155 or 158 and MATH 232 or 240. There may be additional prerequisites depending on the course's topics. Recommended: MACM 202, 203 or 204 or equivalent computing experience. Department permission is required to complete this course more than once.
Quantitative

RATIONALE

Include applied calculus II.
Addition of MACM 203/204 and MATH 294 to program

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number MATH 303-3 Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Perspectives on Geometry

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

DESCRIPTION

PREREQUISITE

MATH 152 and 232 or 240. There may be additional prerequisites depending on the course's topics. Recommended: MACM 202 or equivalent computing experience. Department permission is required to complete this course more than once.

MATH 152 or 155 or 158 and MATH 232 or 240. There may be additional prerequisites depending on the course's topics. Recommended: MACM 202 or equivalent computing experience. Department permission is required to complete this course more than once. Quantitative.

RATIONALE

Include applied calculus II

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number MATH 304-3 Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Quantifying Uncertainty

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

DESCRIPTION

PREREQUISITE

MATH 152 and 232 or 240. There may be additional prerequisites depending on the course's topics. Recommended: MACM 202 or equivalent computing experience. Department permission is required to complete this course more than once.

MATH 152 or 155 or 158 and MATH 232 or 240. There may be additional prerequisites depending on the course's topics. Recommended: MACM 202 or equivalent computing experience. Department permission is required to complete this course more than once. Quantitative.

RATIONALE

Include applied calculus II

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number MATH 310-3 Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Introduction to Ordinary Differential Equations

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

DESCRIPTION

PREREQUISITE

MATH 152 or 155 (or MATH 158 with a grade of A or B) and MATH 240 or 232. Quantitative.

MATH 152; or MATH 155/158 with a grade of at least B. MATH 232 or 240.

RATIONALE

Change applied calculus grade for program consistency.

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 340-3** Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Algebra II: Rings and Fields

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

DESCRIPTION

PREREQUISITE

MATH 240 (or MATH 232 with a grade of at least B). Students with credit for MATH 322 cannot take MATH 340 for further credit.

MATH 240 (or MATH 232 with a grade of at least B). Students with credit for MATH 332 cannot take MATH 340 for further credit. Quantitative.

RATIONALE

Typo Correction.

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 402-4** Course Number _____ Credit _____

Hour _____ Credit Hour _____

TITLE

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

Industrial Mathematics Project

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

DESCRIPTION

PREREQUISITE

MACM 202, 316; MATH 251, 308, 310; STAT 285. Quantitative.

MACM 202 or two of MACM 203, MACM 204 or MATH 294; MACM 316; MATH 251, 308, 310; STAT 285. Quantitative.

RATIONALE

Addition of MACM 203/204/294 to program

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 152-3** Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Calculus II

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

DESCRIPTION

Riemann sum, Fundamental Theorem of Calculus, definite, indefinite and improper integrals, approximate integration, integration techniques, applications of integration. First-order separable differential equations. Sequences and series, series tests, power series, convergence and applications of power series. Complex numbers.

Riemann sum, Fundamental Theorem of Calculus, definite, indefinite and improper integrals, approximate integration, integration techniques, applications of integration. First-order separable differential equations. Sequences and series, series tests, power series, convergence and applications of power series.

PREREQUISITE

MATH 150, 151 or 154. Students may also use MATH 157 with a grade of at least B. Students with credit for MATH 155 or 158 may not take MATH 152 for further credit. Quantitative.

MATH 150 or 151; or MATH 154 or 157 with a grade of at least B. Students with credit for MATH 155 or 158 may not take MATH 152 for further credit. Quantitative.

RATIONALE

Complex numbers deleted from syllabus -- now taught in MATH 240/232 (Linear Algebra). Unified pre-requisite grades within both applied calculus streams: calc I 154/157 and calc II 155/158.

Effective term and year Fall 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 232-3** _____ Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Applied Linear Algebra

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

DESCRIPTION

Linear equations, matrices, determinants. Introduction to vector spaces and linear transformations and bases. Eigenvalues and eigenvectors; diagonalization. Inner products and orthogonality; least squares problems. Applications. The course emphasizes matrix and vector calculations and applications.

Linear equations, matrices, determinants. Introduction to vector spaces and linear transformations and bases. Complex numbers. Eigenvalues and eigenvectors; diagonalization. Inner products and orthogonality; least squares problems. An emphasis on applications involving matrix and vector calculations.

PREREQUISITE

MATH 150 or 151 (or equivalent) or MACM 101 or MATH 154/157 with a grade of at least B. Students with credit for MATH 240 cannot take MATH 232 for further credit. Quantitative.

MATH 150 or 151; or MACM 101; or MATH 154 or 157, both with a grade of at least B. Students with credit for MATH 240 cannot take MATH 232 for further credit. Quantitative.

RATIONALE

Corrects omission in description from current standard syllabus.
Clarifies application-oriented emphasis, in contrast to the more abstract MATH 240.
Removes outdated parenthetical requirement.

Effective term and year Fall 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number **MATH 240-3** _____ Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Algebra I: Linear Algebra

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

DESCRIPTION

Linear equations, matrices, determinants. Real and abstract vector spaces, subspaces and linear transformations; basis and change of basis. Eigenvalues and eigenvectors; diagonalisation. Inner products and orthogonality; least squares problems. Applications. The course has a more theoretical emphasis than MATH 232, including proving true statements and giving counterexamples.

Linear equations, matrices, determinants. Real and abstract vector spaces, subspaces and linear transformations; basis and change of basis. Complex numbers. Eigenvalues and eigenvectors; diagonalization. Inner products and orthogonality; least squares problems. Applications. Subject is presented with an abstract emphasis and includes proofs of the basic theorems.

PREREQUISITE

MATH 150 or 151 or equivalent or MACM 101 or MATH 154/157 with a grade of at least B+. Students with credit for MATH 232 cannot take MATH 240 or further credit. Quantitative.

MATH 150 or 151; or MACM 101; or MATH 154 or 157, both with a grade of at least B. Students with credit for MATH 232 cannot take MATH 240 or further credit. Quantitative.

RATIONALE

Corrects omission in description from current standard syllabus.
Clarifies abstract emphasis, in contrast to the applications-oriented MATH 232.
Removes outdated parenthetical requirement and changes 154/157 grade to B for program consistency.

Effective term and year Fall 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number MATH 154-3 Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Calculus I for the Biological Sciences

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

DESCRIPTION

Designed for students specializing in the biological and medical sciences. Topics include: limits, growth rate and the derivative; logarithmic, exponential and trigonometric functions and their applications in population study; optimization and approximation methods.

Designed for students specializing in the biological and medical sciences. Topics include: limits, growth rate and the derivative; elementary functions, optimization and approximation methods, and their applications; mathematical models of biological processes.

PREREQUISITE

RATIONALE

Consistent course description for the MATH 154/MATH 155 sequence and deletion of redundant items.

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number MATH 155-3 Course Number _____ Credit _____

Hour _____ Credit Hour _____

TITLE

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

Calculus II for the Biological Sciences

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

DESCRIPTION

The integral and its applications, partial derivatives, differential equations and their applications in ecology, mathematical models of biological processes.

Designed for students specializing in the biological and medical sciences. Topics include: the integral, partial derivatives, differential equations, linear systems, and their applications; mathematical models of biological processes.

PREREQUISITE

RATIONALE

Consistent course description for the MATH 154/MATH 155 sequence and deletion of redundant items.

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number MATH 155-3 Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Calculus II for the Biological Sciences

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

DESCRIPTION

The integral and its applications, partial derivatives, differential equations and their applications in ecology, mathematical models of biological processes.

Designed for students specializaing in the biological and medical sciences. Topics include: the integral, partial derivatives, differential equations, linear systems, and their applications; mathematical models of biological processes.

PREREQUISITE

RATIONALE

Consistent course description for the MATH 154/MATH 155 sequence and deletion of redundant items.

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number MATH 467-3 Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Dynamical Systems

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

DESCRIPTION

Stability and bifurcation in vector fields and discrete maps. Centre manifold theory and applications of normal forms. Introduction to chaos, Lyapunov exponents, and normal hyperbolicity.

Stability and bifurcation in continuous and discrete dynamical systems, with applications. The study of the local and global behaviour of linear and nonlinear systems, including equilibria and periodic orbits, phase plane analysis, conservative systems, limit cycles, the Poincaré-Bendixson theorem, Hopf bifurcation and an introduction to chaos.

PREREQUISITE

Rationale

Description updated to reflect current course content.

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 2010



EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s)

Course number Credit Title Description Prerequisite Deletion

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM :

TO:

Course Number MATH 308-3 Course Number _____

Credit Hour _____ Credit Hour _____

TITLE

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

Introduction to Optimization

Linear Optimization

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

DESCRIPTION

Introduction to Optimization: Convex sets and convex functions. Minimization of convex functions. Lagrange multipliers. Linear programming and duality, Applications and computation.

Linear programming modelling. The simplex method and its variants. Duality theory. Post-optimality analysis. Applications and software. Additional topics may include: game theory, network simplex algorithm, and convex sets.

PREREQUISITE

MATH 240 or 232. Recommended: MACM 201. Intended to be particularly accessible to students who are not specializing in mathematics.
Quantitative.

Math 150, 151, 154, or 157 and Math 240 or 232. Quantitative.

RATIONALE

The title is changed to avoid confusion with the "Introduction to Operations Research" course (Math 208) that was added last year. The description and prerequisites are changed to allow for the optional inclusion of non-linear material.

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 2010



TO: Bill Krane, Chair, SCUS

FROM: Rolf Mathewes, Associate Dean
Faculty of Science

RE: Faculty of Science
Undergraduate Curriculum
Items

DATE: January 8, 2010

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.

Physics

Program changes to Mathematical Physics, Biological Physics, Chemical Physics

Mathematical Physics and Biological Physics Programs: Add PHYS 395 as an elective. PHYS 395 is a course in Computational Physics. It has been dormant for a number of years because of faculty retirements, but has now been revitalized. This change will provide students in these programs with more options.

Chemical Physics Programs: Revise wording and introduce a program specific waiver for an alternate prerequisite. The proposed changes in wording eliminate ambiguity in the number of UD units required for these programs. The proposed alternate prerequisite waiver will allow students who take PHYS 285 instead of CHEM 260 to enroll in CHEM 366W. At present, students in these programs are asked to choose between PHYS 285 and CHEM 260, but then need credit for CHEM 260 in order to enroll in CHEM 366W, which is a required course. Current practice is to allow students with credit for PHYS 285 to take CHEM 366W. This proposed change is supported by the Chemistry Undergraduate Studies Committee.

A handwritten signature in black ink, appearing to read "R. Mathewes".

R. Mathewes

Enclosures

c. J. Hinchliffe, M. Plischke

SIMON FRASER UNIVERSITY
Program Change Form

Program: MAPH program
Changes for 10/11 calendar

Deletions

Additions

Mathematical Physics Honors Program

This program is offered jointly by the Departments of Mathematics and Physics. Entry requires permission of both. Graduates may do graduate work in mathematics or physics depending on interest. Some additional work in either mathematics or physics may be required. Students should speak with an advisor as soon as possible to schedule their programs.

Lower Division Requirements
(46 units)

Students complete one of
 CMPT 126-3 Introduction to Computing Science and Programming[†] (or CMPT 120 and CMPT 125)
 CMPT 102-3 Introduction to Scientific Computer Programming

and all of

MATH 152-3 Calculus II
 MATH 242-3 Introduction to Analysis
 MATH 251-3 Calculus III
 MATH 252-3 Vector Calculus
 PHYS 131-2 Physics Laboratory I*
 PHYS 211-3 Intermediate Mechanics
 PHYS 231-3 Physics Laboratory II
 PHYS 233-2 Physics Laboratory III
 PHYS 255-3 Vibrations and Waves
 PHYS 285-3 Introduction to Relativity and Quantum Mechanics
 STAT 270-3 Introduction to Probability and Statistics

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

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 121-3 Optics, Electricity and Magnetism
 PHYS 126-3 Electricity, Magnetism and Light[†]
 PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism*

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

[†] recommended

Upper Division Requirements

(58 units)

Students complete all of

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

and one of

MATH 419-3 Linear Analysis
MATH 424-3 Complex Analysis
MATH 425-3 Real Analysis

and one of

MATH 461-3 Continuous Mathematical Models
MATH 462-3 Fluid Dynamics
MATH 495-3 Selected Topics in Applied Mathematics

and one of

MACM 401-3 Introduction to Computer Algebra
MACM 416-3 Numerical Analysis II
MATH 467-3 Dynamical Systems

and all of

PHYS 321-3 Intermediate Electricity and Magnetism
PHYS 332W-4 Optics Laboratory
PHYS 344-3 Thermal Physics
PHYS 384-3 Methods of Theoretical Physics I
PHYS 385-3 Quantum Mechanics I
PHYS 413-3 Advanced Mechanics
PHYS 415-3 Quantum Mechanics II
PHYS 421-3 Electromagnetic Waves
PHYS 445-3 Statistical Physics

and two of

PHYS 390-3 Astrophysics
PHYS 395-3 Computational Physics
PHYS 432-5 Undergraduate Honors Thesis
PHYS 455-3 Modern Optics
PHYS 465-3 Solid State Physics
PHYS 484-3 Nonlinear Physics
PHYS 485-3 Particle Physics
PHYS 490-3 General Relativity and Gravitation

Other Requirements

Please see "Requirements for Honors and Honors First Class" on page 181. CHEM 121 and 122 should be included among the elective courses.

Rationale: The topics and techniques covered in PHYS 395 (Computational Physics) are a natural fit for the Mathematical Physics program, and will provide students with more options.

SIMON FRASER UNIVERSITY
Program Change Form

BIPH programs
Changes for 10/11 calendar

Additions

~~Deletions~~

Biological Physics Major Program

This program is designed 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.

Lower Division Requirements

(64 units)

Students must complete 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 281-4 Organic Chemistry I

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 Cell 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 101-3 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 take PHYS 131.

[†] recommended

Upper Division Requirements

(40 units)

Students complete 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 Thermal Dynamics 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 395-3 Computational Physics

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

Biological Physics Honors Program (15-17 additional upper division credits)

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

Additional Upper Division Requirements

Students complete 15-17 upper division credit hours in addition to the biological physics major program (see "Biological Physics Major Program" on page 204) by choosing either Option A or Option B as stipulated below.

Option A

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

PHYS 384-3 Methods of Theoretical Physics I

PHYS 415-3 Quantum Mechanics II

PHYS 432-5 Undergraduate Honors Thesis

PHYS 445-3 Statistical Physics

Rationale: The topics and techniques covered in PHYS 395 (Computational Physics) are relevant to the modeling of biological systems, and will provide students in this program with more options.

SIMON FRASER UNIVERSITY
Program Change Form

Program: CHPH program
Changes for 10/11 calendar

Deletions

Additions

Chemical Physics Major Program

This program is offered jointly by the Departments of Chemistry and Physics. Entry requires permission of both. Students are strongly encouraged to complete at least three lower division computing science units.

Lower Division Requirements

(57 units)

Students complete 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 281-4 Organic Chemistry I

MATH 152-3 Calculus II

MATH 251-3 Calculus III

MATH 252-3 Vector Calculus

PHYS 131-2 Physics Laboratory I*

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

PHYS 125-3 Mechanics and Special Relativity (or PHYS 120 or 140)

PHYS 126-3 Electricity, Magnetism and Light (or PHYS 121 or 141)

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 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 121-3 Optics, Electricity and Magnetism

PHYS 126-3 Electricity, Magnetism and Light[†]

PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism*

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

† recommended

Upper Division Requirements

(40 units)

CHEM 340-3 Materials Chemistry

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

CHEM 366W-3 Physical Chemistry Laboratory I †

CHEM 462-3 Molecular Spectroscopy

MATH 310-3 Introduction to Ordinary Differential Equations

PHYS 321-3 Intermediate Electricity and Magnetism

PHYS 421-3 Electromagnetic Waves

and one of

PHYS 326-4 Electronics and Instrumentation

PHYS 332W-4 Optics Laboratory*

and one of

CHEM 360-3 Thermodynamics and Chemical Kinetics

PHYS 344-3 Thermal Physics

and one of

CHEM 460-3 Advanced Physical Chemistry

PHYS 445-3 Statistical Physics

and one of

CHEM 464-3 Quantum Chemistry

PHYS 385-3 Quantum Mechanics I

~~plus 10 upper division chemistry, nuclear science or physics units chosen to maintain a minimum of 15 upper division units in both chemistry and physics.~~

plus upper division chemistry, nuclear science or physics units chosen to bring the total number of upper division units to 40, and maintain a minimum of 15 upper division units in both chemistry and physics

*the requirement of PHYS 233 as a prerequisite for PHYS 332 is waived for students in the chemical physics major and honors programs.

†students in the chemical physics major and honors programs may substitute PHYS 285 for CHEM 260 as a prerequisite for CHEM 366W

Other Requirements

Please see "Requirements for Major" on page 181.

Chemical Physics Honors Program

This program is offered jointly by the Departments of Chemistry and Physics. Entry requires permission of both. Honors program graduates may do graduate work in either chemistry or physics and should choose their courses accordingly. Students are strongly encouraged to take at least three lower division computing science units.

Lower Division Requirements

Requirements are the same as for the chemical physics major program.

Upper Division Requirements

(51 units)

Students complete all of

CHEM 340-3 Materials Chemistry

~~CHEM 366W-2 Physical Chemistry Laboratory I~~

CHEM 366W-3 Physical Chemistry Laboratory I †

CHEM 462-3 Molecular Spectroscopy
MATH 310-3 Introduction to Ordinary Differential Equations
PHYS 321-3 Intermediate Electricity and Magnetism
PHYS 384-3 Methods of Theoretical Physics I
PHYS 415-3 Quantum Mechanics II
PHYS 421-3 Electromagnetic Waves

and one of
CHEM 360-3 Thermodynamics and Chemical Kinetics
PHYS 344-3 Thermal Physics

and one of
CHEM 460-3 Advanced Physical Chemistry
PHYS 445-3 Statistical Physics

and one of
CHEM 464-3 Quantum Chemistry
PHYS 385-3 Quantum Mechanics I

and one of
CHEM 440-3 Solid State Materials Chemistry
PHYS 465-3 Solid State Physics

and one of
CHEM 481-5 Undergraduate Research
PHYS 432-5 Undergraduate Honors Thesis

and one of
PHYS 326-4 Electronics and Instrumentation
PHYS 332W-4 Optics Laboratory*

plus upper division chemistry, nuclear science or physics credit hours chosen to bring the total number of upper division units to 51 and maintain a minimum of 21 UD credits in both chemistry and physics.

*the requirement that PHYS 233 be completed as a prerequisite for PHYS 332 is waived for students in the chemical physics major and honors programs.

†students in the chemical physics major and honors programs may substitute PHYS 285 for CHEM 260 as a prerequisite for CHEM 366W

Other Requirements

Please see "Requirements for Honors and Honors First Class" on page 181.

Rationale: CHEM 366 was recently converted from a 2 unit course to a 3 unit writing intensive course. The revisions outlined here remove an ambiguity in the total number of additional upper division units required for completion of the Chemical Physics Majors program and correct other errors. Additionally, the program presently forces students to choose CHEM 260 over PHYS 285 in order to complete the prerequisite for CHEM 366W, which is a required course. The Chemistry department is satisfied that PHYS 285 provides suitable preparation for CHEM 366W, and has regularly granted waivers. The proposed change formalizes current practice and provides students with more options.



TO: Bill Krane, Chair, SCUS

FROM: Rolf Mathewes, Associate Dean
Faculty of Science

RE: Faculty of Science
Undergraduate Curriculum
Item

DATE: January 19, 2010

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.

Statistics & Actuarial Science

Prerequisite change – STAT 302-3

A handwritten signature in blue ink that reads "Rolf Mathewes". The signature is written in a cursive style with a long horizontal flourish at the end.

R. Mathewes

Enclosure

c. J. Hinchliffe, M. Plischke

SIMON FRASER UNIVERSITY
Senate Committee on Undergraduate Studies
Course Change/Deletion Form

Existing Course Number/Title: STAT 302-3/ Analysis of Experimental and Observational Data

Please check appropriate revision(s) being recommended:

Course Number: _____ Credit Hour: _____ Title: _____

Description: _____ Prerequisite: x State number of hours for:
Lect (3) Sem () Tut () Lab ()

Course deletion: _____

FROM:

The standard techniques of multiple regression analysis, analysis of variance, and analysis of covariance, and their role in experimental research. Prerequisite: any STAT course, or BUEC 232, or ARCH 376. Students cannot obtain credit for STAT 302 if they already have credit for STAT 350, or if they are simultaneously registered in STAT 302 and STAT 350. Stat major and honors students may not use this course to satisfy the required number of elective hours of upper division statistics. However, they may include the course to satisfy the total number of required hours of upper division credit. Quantitative.

TO:

The standard techniques of multiple regression analysis, analysis of variance, and analysis of covariance, and their role in experimental research. Prerequisite: any STAT course except STAT100, or BUEC 232, or ARCH 376. Students cannot obtain credit for STAT 302 if they already have credit for STAT 350, or if they are simultaneously registered in STAT 302 and STAT 350. Stat major and honors students may not use this course to satisfy the required number of elective hours of upper division statistics. However, they may include the course to satisfy the total number of required hours of upper division credit. Quantitative

RATIONALE:

STAT 100 is a Breadth course and does not cover all the technical details required for STAT 302.

Effective semester and year: fall 2010



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MEMORANDUM

ATTENTION Dr Bill Krane
Chair, SCUS
DATE January 27, 2010

FROM Dr. Brent Ward
Chair, Earth Sciences Undergraduate curriculum
Committee

RE: Earth Science Second Response to Suggested Name Change of EASC 405.

The Department of Geography continues to have concerns about the name for EASC 405. Initially this course was called **Water, Environment and Climate Change**. Because of concerns over the broadness of this title it was changed to **Water Resources, Environment and Climate Change**. This was still considered unacceptable by Geography and they suggested changing Water Resources to "Cycles". We are somewhat unclear as to what Geography's issue is with the term "Water Resources". Diana Allen is already teaching a graduate course called Groundwater Resource Evaluation (EASC 623), so there is already precedence for the use of "Resources" in relation to water in Earth Sciences.

Although Water Cycles is an important component of EASC 405, the course also deals with the storage of water and it's use, thus water resources are equally important. We have proposed the title "**Water Cycles and Resources: Environmental and Climate Change Impacts**" to combine these two important concepts. Earth Sciences still prefers Water Resources, Environment and Climate Change as the title for this course but we hope that Geography finds this newest proposal a reasonable variation of one of their suggested titles. We have also modified the course and calendar description to more clearly state what the course covers. We sincerely hope that Geography finds this title acceptable.



COURSE NUMBER EASC 405

COURSE TITLE

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

Water Cycles and Resources: Environmental and Climate Change Impacts

AND

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

Water, Environment, Climate

CREDITS

Indicate number of credits for: Lecture 2 Seminar 1 Tutorial 0 Lab 0

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

Applies and integrates concepts from hydrological science to assess the various impacts to water cycles over a range of scales, considering both climate and other environmental stressors. Secondary impacts of climate change on water resources (including water for humans and aquatic ecosystems) are explored, focusing on current issues to generate ideas for potential mitigative and adaptive solutions.

PREREQUISITE

EASC 304, EASC 412, GEOG 311

Recommended: GEOG 411

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 prerequisite.

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

NOTE: APPROPRIATE DOCUMENT FOR DELETION MUST BE SUBMITTED TO SCUS

RATIONALE FOR INTRODUCTION OF THIS COURSE

The topics are current and highly relevant to water science and the course will be a popular elective course in Earth Sciences (and also accessible to Physical Geography and Environmental Science students). In addition, it is a required course for the proposed "Applications in Water Science" stream in Environmental Science.



SCHEDULING AND ENROLLMENT INFORMATION

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

Spring 2011 - every 2 years

(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 20

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

D. Allen will develop the course, and will be the primary instructor

Dirk Kirste, Gwenn Flowers could also teach the course

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 _____

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?

Diana Allen's regular course load can accommodate this new course
every 2nd year in the spring semester.

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

Course only needs a lecture room.

Articulation agreement reviewed? YES NO Not applicable

OTHER IMPLICATIONS

This course is currently listed as a required course in the proposed Environmental Science
BSc Major Program "Applications in Water Science".