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MEMORANDUM

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ATTENTION	Senate	DATE	May 7, 2010
FROM	Rolf Mathewes, Acting Chair	PAGES	1/2
RE:	Senate Committee on Undergraduate Studies Faculty of Science		

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**For information:**

Acting under delegated authority at its meeting of May 6, 2010, SCUS approved the following curriculum revisions:

1. Department of Mathematics (SCUS 10-24)
  - (i) W-designations for MATH 208W and 402W.
2. Department of Chemistry ( SCUS 10-29a)
  - (i) Changes to course prerequisites (outdated course references)
3. Department of Molecular Biology and Biochemistry (SCUS 10-29b)
  - (i) Change to major program requirements

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

**For information:**



**MEMORANDUM**

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**ATTENTION** Rolf Mathewes, **DATE** March 29, 2010  
Chair, Faculty of Science Curriculum Committee

**FROM** Daniel Leznoff, **PAGES** 1/1  
Chair, Chemistry Undergraduate Studies Committee

**RE:** Change to the Undergraduate Chemistry Course Catalogue

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The Department of Chemistry would like to remove outdated course references from the Undergraduate Course Catalogue. These course numbers have not been used in over ten years. Rather than submit a separate form for each housekeeping change, this omnibus document outlines all of the changes. The specific references for deletion are shown with a line through them below (only affected courses are shown):

**CHEM 120-3 General Chemistry I**

Atomic and molecular structure; chemical bonding; thermochemistry; elements; periodic table; gases, liquids, solids, and solutions. This course has the same lecture component as CHEM 121 but no laboratory work. Students who intend to take further laboratory courses in chemistry must take CHEM 121. Prerequisite: BC high school chemistry 12 or CHEM 111 or CHEM 110 (~~or 104~~). Students may not count both CHEM 120 and 121 for credit. Recommended: MATH 151 (or 154) and PHYS 120 (or 101) as a corequisite. Quantitative/Breadth-Science.

**CHEM 121-4 General Chemistry and Laboratory I**

Atomic and molecular structure; chemical bonding; thermochemistry; elements; periodic table; gases liquids, solids, and solutions. This course includes a laboratory component. Prerequisite: BC high school chemistry 12 or CHEM 111 (~~or 101 and 106~~). Students may not count both CHEM 120 and 121 for credit. Recommended: MATH 151 (or 154) and PHYS 120 (or 101) as a corequisite. Quantitative/Breadth-Science.

**CHEM 122-2 General Chemistry II**

Chemical equilibria; electrochemistry; chemical thermodynamics; kinetics. Students who intend to take further laboratory courses in chemistry should take CHEM 122 concurrently with CHEM 126. Prerequisite: CHEM 121 or 120 (~~or 102~~) Recommended: MATH 152 (or 155) and PHYS 121 (or 102) as a corequisite. Quantitative.

**CHEM 126-2 General Chemistry Laboratory II**

Experiments in chemical equilibrium, acids and bases, qualitative analysis, electrochemistry and chemical kinetics. Prerequisite: CHEM 121 (~~or 102 and 115~~). Corequisite: CHEM 122. Quantitative.

**CHEM 215-4 Introduction to Analytical Chemistry**

The principles of analytical chemistry and their practical application to solution samples. Titrimetric and electrochemical methods. Prerequisite: CHEM 122 (~~or 103~~) and 126 (~~or 118~~). Quantitative.

**CHEM 230-3 Inorganic Chemistry**

The chemistry of the elements and their inorganic compounds in terms of fundamental concepts of periodicity of properties, valence, ionization potential, electron affinity, electronegativity, stability of oxidation states, bonding, structure and stereochemistry. Co-ordination complexes and organometallic chemistry. Prerequisite: CHEM 122 (~~or 103~~). Corequisite: students who expect to take further courses in inorganic chemistry should take the laboratory course CHEM 236 concurrently with 230. Quantitative.

### **CHEM 236W-3 Inorganic Chemistry Laboratory**

An introduction to the synthetic and spectroscopic techniques used in the preparation and characterization of both main group and transition metal compounds. Prerequisite: CHEM 122 and 126 (~~or 103 and 118~~). Corequisite: CHEM 230. Writing/Quantitative.

### **CHEM 260-4 Atoms, Molecules, Spectroscopy**

Elements of physical chemistry from the molecular point of view. Introduction to quantum chemistry, atomic and molecular structure, and spectroscopy. Prerequisite: CHEM 122 (~~or 103~~), MATH 152, PHYS 121. Recommended: MATH 232. Quantitative.

### **CHEM 281-4 Organic Chemistry I**

Structure, bonding, physical and chemical properties of simple organic compounds. Introduction to spectroscopy. Kinetics and mechanisms of organic reactions. This course includes a laboratory component. Prerequisite: CHEM 121. Corequisite: CHEM 122 (~~or 103~~). Quantitative.

### **CHEM 316-4 Introductory Instrumental Analysis**

Principles and applications of basic analytical instrumentation based upon spectroscopy, chromatography and electrochemistry. Prerequisite: CHEM 215 (~~or 218~~) and CHEM 260, or permission of the department. Students may not count both CHEM 316 and 416 for credit. Quantitative.

### **CHEM 333-3 Inorganic Chemistry of Biological Processes**

An introduction to the principles governing the formation, properties and investigation of metal-ligand complexes with special reference to the role of metals in biological processes. Prerequisite: MBB 321 (~~or BICH 301 or 321~~); or CHEM 282 (~~or 250~~) and CHEM 230 (~~or 232~~). Quantitative.

### **CHEM 360-3 Thermodynamics and Chemical Kinetics**

Elements of physical chemistry from the macroscopic point of view. Thermodynamics, and its applications to chemical equilibrium. Chemical kinetics and reaction rate theories. Prerequisite: CHEM 122 (~~or 103~~), MATH 152 (or 155), PHYS 121 (or 102). Recommended: MATH 251. Quantitative.

### **CHEM 371-3 Chemistry of the Aqueous Environment**

An introduction to chemical processes in the aqueous environment. Quantitative treatment of the variables determining the composition of natural systems. Chemistry of aqueous toxic agents, wastewater treatment, and related matters. Prerequisite: CHEM 281 (~~or 150~~) and CHEM 360 (~~or 261~~). Quantitative.

### **CHEM 372-3 Chemistry of the Atmospheric Environment**

Quantitative treatment of chemical and physical processes in the atmospheric environment. Chemistry of the troposphere including air pollution and climate change. Chemistry of the stratosphere including ozone depletion. Environmental radioactivity. Current topics. Prerequisite: CHEM 281 (~~or 150~~) and CHEM 360 (~~or 261~~). Quantitative.

### **CHEM 380-4 Chemical and Instrumental Methods of Identification of Organic Compounds**

Basic principles of infrared, ultraviolet, nuclear magnetic resonance and mass spectroscopy as applied to the identification of organic compounds. Prerequisite: CHEM 260 and 282 and 286 (~~or 250 and 255~~), or permission of the department.

### **CHEM 450-3 Physical Organic Chemistry**

A study of the structure, stereochemistry and conformation of molecules and their effect on the reactivity of organic molecules. The physical basis of organic chemistry. Prerequisite: CHEM 360 (~~or 261~~) and 380. Quantitative.

### **CHEM 460-3 Advanced Physical Chemistry**

Statistical thermodynamics, kinetic theory of gases, transport properties, intermolecular forces, electrical properties of molecules, properties of ionic solutions, Debye-Hückel theory, electrochemistry. Prerequisite: MATH 251; CHEM 260 and 360, or PHYS 385 and 344 (~~or 244~~). Quantitative.

### **CHEM 469-3 Special Topics in Physical Chemistry**

Selected topics of physical chemistry not regularly covered in the chemistry undergraduate course offerings. Topics may vary from year to year and may include (but are not limited to): chemical kinetics, electrochemistry, magnetic resonance, polymer chemistry, surface chemistry. Prerequisite: CHEM 260 and 360 (~~or 261 and 361~~) or permission of the instructor.



MEMO

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ATTENTION <b>Rolf Mathewes</b>	TEL
FROM <b>Ingrid Northwood; undergrad prog. coordinator-MBB</b>	
RE <b>Course Change Form and Program Change Form</b>	
DATE <b>February 11, 2010</b>	TIME

**Course Change Form:** A course change form is being submitted for MBB426 – Immune System I: Basis of Innate and Adaptive Immunity. Student evaluations over the years have clearly indicated that the work load and amount of content in MBB426 exceeds that of other 400 level MBB courses. Meetings with the course instructor have determined that any decrease in content or workload would negatively impact the integrity of the course. MBB therefore proposes to change the number of units of MBB426 from 3 to 4 and to increase the number of lecture hours a week from 3 to 4.

**Program Change Form:** MBB323-Introduction to Physical Biochemistry is currently a required course for all MBB majors. The department has determined that while it is essential that all MBB majors be exposed to the core content of MBB323 as part of their MBB program, it is not essential that all MBB majors be required to study the more advanced aspects of MBB323. The MBB department has identified the core content of MBB323 and has determined that this core content can be included in existing required MBB courses without significantly impacting the content of those existing courses. MBB 323 will remain an important part of our undergraduate program, but as an elective rather than a required course and the content of MBB323 will be adjusted to reflect an emphasis on the more advanced aspects of Physical Biochemistry.

Since MBB323 would no longer be a required course, Chem360 can be removed as an alternative to MBB323 for MBB majors. Chem360 had largely been included as an alternative to MBB323 for historical reasons.

# SIMON FRASER UNIVERSITY

## Program Change Form

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

**From:**

Upper Division Core Requirements  
(22 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

*CHEM 360-3 Chemical Kinetics and Thermodynamics*  
*MBB 323-3 Introduction to Physical Biochemistry*

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 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 426-3 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)**

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

*CHEM 360-3 Chemical Kinetics and Thermodynamics*

*MBB 323-3 Introduction to Physical Biochemistry*

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

**Rationale:**

It is essential that all MBB majors are exposed to the core content of MBB323-3 Physical Biochemistry, as part of their MBB program, but it is not essential that all MBB majors be required to study the more advanced aspects of MBB323. The MBB department has identified the core content of MBB323 and has determined that this core content can be included in existing required MBB courses without significantly impacting the content of these existing courses. MBB 323 will remain an important part of our undergraduate program, but as an elective rather than a required course and the content of MBB323 will be adjusted to reflect an emphasis on the more advanced aspects of Physical Biochemistry.

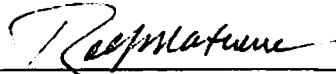
Effective date: Fall, 2010 (1107)

**Approvals**



Chair, Department/School

April 6, 2010  
Date



Chair, Faculty Curriculum Committee

April 13, 2010  
Date

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

\_\_\_\_\_  
Date



**Existing Course, Changes Recommended**

Please check appropriate revision(s):

Course number     Credit     Title     Description     Prerequisite     Course deletion

Indicate number of hours for:

FROM: Lecture 3 Seminar \_\_\_\_\_ Tutorial 1 Lab \_\_\_\_\_

TO: Lecture 4 Seminar \_\_\_\_\_ Tutorial 1 Lab \_\_\_\_\_

**FROM** Course Number MBB 426-3 **TO** Course Number MBB 426 -4

Unit Hour 3 Unit Hour 4

**TITLE**

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

Immune System I: Basis on Innate and Adaptive Immunity      Immune System I: Basis on Innate and Adaptive Immunity

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

Immune System I      Immune System I

The basic organization of the immune system, including structure, function and genetics of antibodies, T-cell receptors, innate immune receptors, and the complement system. Innate, antibody and cellular immune responses and their control, and development of the cells involved in these responses.

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**PREREQUISITE**

MBB 331. Students who have taken HSCI 325 or 426 cannot take MBB 426 for further credit

**PREREQUISITE :**

MBB 331. Students who have taken HSCI 325 or 426 cannot take MBB 426 for further credit

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.**

**Rationale: The workload for students in this course is already reflective of a 4 unit rather than a 3 unit course and it is not possible to reduce the amount of material in this course without compromising the integrity of the course. Adding the extra unit hour will not only ensure that students receive the credit that is appropriate for the workload and amount of material, but also ensure that students are aware coming into the course that the workload is more than that of a 3 unit, 400 level MBB course. Adding the extra hour of lecture per week will insure that students will be able to have all the material presented to them in the most effective way.**

Effective term and year Fall, 2010 (1117)

**Approvals:**

Chair, Department/School

Chair, Faculty/Curriculum Committee

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

April 6, 2010  
Date

April 13, 2010  
Date

\_\_\_\_\_  
Date