

MEMORANDUM

To: Senate

From: Senate Committee on
Undergraduate Studies

Subject: Department of Chemistry -
Calendar Changes

Date: November 6, 1985

Action undertaken by the Senate Committee on Undergraduate Studies at its meeting of October 29, 1985 gives rise to the following motion:

MOTION

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.85-53, the proposed new course

CHEM 363-3 Kinetics and Mechanism"

SIMON FRASER UNIVERSITY

MEMORANDUM

SCUS 85-26

To: R. Heath
Secretary to Senate

From: P. Dobud, Administrative
Assistant to the Dean of
Science

Subject: Calendar Changes: Department
of CHEMISTRY

Date: October 16, 1985

Please find attached the documentation related to the following calendar change for the Department of Chemistry which was approved by the Faculty of Science in its meeting held on October 15, 1985.

I would appreciate it very much if you would place this item on the agenda of the next SCUS meeting for consideration and approval.

New Course proposal: CHEM 363-3. (PAPER: FSC-85-12)

That the new course CHEM 363-3, Kinetics and Mechanism, be approved as follows:

CHEM 363-3, Kinetics and Mechanism

Basic principles of chemical kinetics, rate laws, mechanisms, reactive intermediates, theories of bimolecular reactions, solvent effects, photochemistry, and experimental methods.

Prerequisites: CHEM 261 CHEM 252, CHEM 232 AND MATH 152; or CHEM 362.



Thank you.

c.c. Dr. R. Frindt, Chairman, Faculty of Science Undergraduate Curriculum Committee.
Dr. C.H.W. Jones, Chairman, Department of Chemistry.

SIMON FRASER UNIVERSITY

FSC - 85 - 12

MEMORANDUM

To... R. Frindt, Chairman, Faculty.....
... Undergrad. Curriculum Committee.....
Subjed. Chem. 363 (New course).....

From... E. Kiehlmann, Chairman, Chemistry D.....
... Undergraduate Studies Committee.....
Date... January, 20 1985.....

At its meeting of 18 January 1985 the Chemistry Department has approved the addition of a new course, Chem. 363-3 Kinetics and Mechanism (3-1-0) to its undergraduate curriculum.

This course is now recommended to the Faculty Undergraduate Curriculum Committee for approval and for inclusion in the 1986/7 calendar. We are planning to offer Chem. 363 for the first time in 1985-3, assuming that Senate approval can be obtained by May 1985.

Rationale:

In the course of re-structuring its physical chemistry program, the Chemistry Department has recently deleted Chem. 460, 461 and 464 (the content of these three courses will now be taught in Chem. 469: Selected Topics in Physical Chemistry) and modified the course content of Chem. 261 (deletion of kinetics) and Chem. 362. These changes have already been passed by Senate and will appear in the 1985/86 calendar.

The proposed new course will cover chemical kinetics as a method for elucidation of reaction mechanisms. It will be available primarily to Chemistry and Biochemistry students as an upper-level elective, but also to interested students in Physics, Biology and related interdisciplinary areas.

E. Kiehlmann

E. Kiehlmann

EK/fb

SENATE COMMITTEE ON UNDERGRADUATE STUDIES
NEW COURSE PROPOSAL FORM

1. Calendar InformationDepartment: ChemistryAbbreviation Code: CHEM. Course Number: 363 Credit Hours: 3 Vector: 3-1-0Title of Course: KINETICS AND MECHANISM

Calendar Description of Course: Basic principles of chemical kinetics, rate laws, mechanisms, reactive intermediates, theories of bimolecular reactions, solvent effects, photochemistry, and experimental methods.

Nature of Course:

Prerequisites (or special instructions):

CHEM.261, CHEM.252, CHEM.232 and MATH.152; or CHEM.362.

What course (courses), if any, is being dropped from the calendar if this course is approved:

None.

2. Scheduling

How frequently will the course be offered? Once per year.

Semester in which the course will first be offered? 86-3

Which of your present faculty would be available to make the proposed offering possible? A.G. Sherwood, P. Percival, T.N. Bell.

3. Objectives of the Course

To introduce the principles of chemical kinetics and to provide the base upon which 400 level chemistry and biochemistry courses in mechanisms and reactivity could be based.

4. Budgetary and Space Requirements (for information only)

What additional resources will be required in the following areas:

Faculty: None
Staff: None
Library: None
Audio Visual: None
Space: None
Equipment: None

5. ApprovalDate: 27 March 85. 16-10-85CHW Jones
Department Chairman[Signature]
Dean[Signature]
Chairman, SCUS

CHEM.363-3COURSE OUTLINE

Textbook: Castellan, 3rd Edition, distributed notes, and scientific literature.

Week

- 1 Review of differential rate laws and methods for determining them.
- 2,3,4 Mechanisms, reactive intermediates (radicals, ion pairs, carbenes, excited molecules, etc.) stationary state approximation, chain reactions, catalysis, enzymes, experimental test of mechanisms (including stereochemical and labelling methods).
- 5,6 Theories of bimolecular reactions, Arrhenius' Theory, Transition state theory, potential energy surfaces.
- 7 Solvent effects, cage effects, primary salt effects, acid-base catalysis.
- 8,9 Photochemistry as a method of producing reactive intermediates.
- 10,11,
12,13 Methods - fast flow, stopped flow, NMR lineshape analysis, flash photolysis-kinetic spectroscopy, ESR, beams, matrix isolation, rotating sectors.

SIMON FRASER UNIVERSITY

FSC 85-12

MEMORANDUM

To..... R. Frindt, Chairman, Science
..... Faculty Underg. Curriculum Co
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Subject..... CHEM.363: Revised Prerequisites

From..... E. Kiehlmann, Chairman
..... Chem. Undergrad. Stud. Co
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Date..... March 27, 1985
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File: C.4447, D.74

At a recent meeting the Science Undergraduate Curriculum Committee considered and postponed its decision on the proposed new course CHEM.363, Kinetics and Mechanism, pending clarification on whether CHEM.362 should be allowed as an alternate prerequisite to make the course accessible to Physics and Chemical Physics students.

I have explored this question with the physical chemistry professors who are designated to teach this course, and their answer has been affirmative.

I am, therefore, bringing the revised course proposal form back to the committee for approval.

E. Kiehlmann

E. Kiehlmann

EK:pw