

A. Division: Academic Date: February 12, 1986

B. Department: Sciences and Mathematics New Course:

Revision of Course Information Form:

Dated: September 11, 1981

C. GEOL 421 D. Introduction to Stratigraphy E. 4

Subject & Course No. Descriptive Title Semester Credits

F. Calendar Description: This course is to familiarize the student with the principles and techniques of historical geology. The student should be able to understand the underlying principles in the study of stratigraphic records, viz. chrono- and litho-stratigraphy and the concept of lithofacies and biofacies. The lab work involves study of stratigraphic maps, preparation and interpretation of structure contour maps, isopach maps, facies maps and principles of stratigraphic data processing. Students will be required to participate in field trips.

Summary of Revisions:
 (Enter date and Section Revised)
 e.g. 1982-08-25
 Section C,E,F, and R.

1981-09-11
 Section G,N

| | | |
|--------------------------------------|--|--------------------------|
| G. Type of Instruction: | Hours Per Week / Per Semester | H. Course Prerequisites: |
| | Lecture <u>2</u> Hrs. | <u>GEOL 120</u> |
| Laboratory <u>4</u> Hrs. | I. Course Corequisites: | - |
| Seminar _____ Hrs. | J. Courses for which this Course is a Pre-requisite: | - |
| Clinical Experience _____ Hrs. | K. Maximum Class Size: | <u>15</u> |
| Field Experience _____ Hrs. | | |
| Practicum _____ Hrs. | | |
| Shop _____ Hrs. | | |
| Studio _____ Hrs. | | |
| Student Directed Learning _____ Hrs. | | |
| Other (Specify) _____ Hrs. | | |
| Total <u>6</u> Hrs. | | |

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|--|--|
| L. College Credit Transfer <input checked="" type="checkbox"/> | M. Transfer Credit: Requested <input type="checkbox"/> |
| College Credit Non-Transfer <input type="checkbox"/> | Granted <input checked="" type="checkbox"/> |
| Non-Credit <input type="checkbox"/> | (Specify Course Equivalents or Unassigned Credit as Appropriate) |
| | U.B.C. <u>GEOL 206 (1)</u> |
| | S.F.U. <u>General Elective Geol (4)</u> |
| | U. Vic. <u>GEOL 321 + GEOL 421 = GEOL 201 (3)</u> |
| | Other |

Deborah Wilson Course Designer(s)

Valentin Schaefer Director / Chairperson

B.M. Bigler Divisional Dean

P.H. Dwyer Registrar

N. Textbooks and Materials to be Purchased by Students (Use Bibliographic Form):

Eicher, D. L. (1976) Geologic Time, Prentice Hall

Port, J. M. (1980) Historical Geology, Interpretations and Applications, Burgess

Complete Form with Entries Under the Following Headings: O. Course Objectives; P. Course Content;
Q. Method of Instruction; R. Course Evaluation

O. COURSE OBJECTIVES:

Following completion of this course the student should be able to:

1. Show an understanding of the methods used to date rocks.
2. Explain the methods used to correlate strata and, given appropriate geological and geophysical information, correlate stratigraphic sections.
3. Show an understanding of the principles of facies analysis and be able to apply these principles to specific regional examples in order to reconstruct palaeoenvironments.
4. Show an understanding of the current theories on the origin of the earth and the origin and evolution of life on the earth.
5. Show an understanding of biostratigraphical techniques and be able to apply these techniques to specific examples.
6. Describe the methods used to reconstruct palaeoclimates.
7. Show an understanding of the stratigraphy of selected regions of Western Canada.

P. COURSE CONTENT:

Lectures

1. Origin of the Earth
2. Origin and Early Evolution of Life
3. Geologic Time - Relative Dating Techniques
Absolute Dating Techniques
4. Stratigraphic Principles
 - (a) Laws of Stratigraphy
 - (b) The Stratigraphic Section
 - (c) Correlation techniques
 - (d) Facies Analysis

Lab Topics

1. Dating techniques
2. Correlation techniques
3. Facies maps
4. Palaeontology -
Classification
5. Palaeontology -
Index fossils
6. Palaeoenvironment
interpretation

Lectures

5. Palaeontology
 - (a) Introduction - fossilization
 - (b) Taphonomy
 - (c) Organisms and the Environment
 - (d) Extinction
6. Biostratigraphy
 - (a) Environmental analysis
 - (b) Palaeobotany
 - (c) Ice Ages
 - (d) Climate reconstruction
7. Regional Stratigraphy
 - (a) Lower Mainland
 - (b) Selwyn Basin
 - (c) Western Canada Sedimentary Basin
 - (d) Cordilleran Geology and Plate Tectonics

Lab Topics

7. Structural Geology maps
8. Palaeobotany lab
9. Regional Stratigraphy analysis

Q. METHOD OF INSTRUCTION:

1. The primary mode of instruction will involve lectures and laboratories.
2. Field trips will be scheduled where appropriate.
3. Readings will be assigned to supplement lectures.
4. Audio-visual aids will be used where appropriate.

R. COURSE EVALUATION:

The evaluation for the course will consist of:

- | | |
|---|-----|
| 1. Mid Term Examination | 30% |
| 2. Final Examination | 30% |
| 3. Laboratory Exercises (at least 4) | 40% |