

A: Division: Instructional

 DATE: March 2, 1993

 B: Department: SCIENCE & TECHNOLOGY

 New Course: X

Revision of Course Information form: _____

DATED: _____

 C: GEOL 201
 Subject & Course No.

 D: Marine Geology
 Descriptive Title

 E: 4
 Semester Credit

F: Calendar Description

The oceans cover some 70% of the earth's surface and have an enormous impact on the climatic, physical and biological character of the planet. The character and history of development of the ocean basins will be discussed in terms of topics such as ocean sediments, circulation patterns, topography, coastal processes and marine pollution. Occasional weekend field trip may be required.

Summary of Revisions:
 (Enter date & section)
 Ex: Section C,E,F, &R

G: Type of Instruction:	Hours Per Week/	Per Semester
Lecture	<u>2</u>	Hrs.
Laboratory	<u>4</u>	Hrs.
Seminar	_____	Hrs.
Clinical Experience	_____	Hrs.
Field Experience	_____	Hrs.
Practicum	_____	Hrs.
Shop	_____	Hrs.
Studio	_____	Hrs.
Student Directed Learning	_____	Hrs.
Other	_____	Hrs.
TOTAL	<u>6</u>	HOURS

H: Course Prerequisites:
 Geol 120, Geol 121

I: Course Corequisites:
J: Course for which this course is a pre-requisite
K: Maximum Class Size:
 35

M: Transfer Credit:
 Requested X
 Granted _____

Specify Course Equivalents or Unassigned Credit as Appropriate

 U.B.C. GEN GEOL 3
 S.F.U. GEN GEOL 3
 U. Vic. GEN. EOS 1.5
 OTHER:

 L: College Credit Transfer X
 College Credit Non-Transfer _____



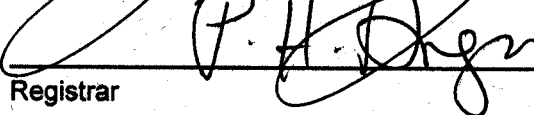
Course Designer(s)



Dean



Vice-President - Instruction



Registrar

N: Textbooks and materials to be purchased by students
(Use Bibliographic Form):

Davis Jr., Richard A., (1991) Oceanography: An Introduction to
the Marine Environment, 2nd Ed., Wm. C. Brown Pub.

Complete Form with Entries Under the Following Headings:

- O. Course Objectives; P. Course Content; Q. Method of Instruction;
R. Course Evaluation

O. Course Objectives:

Upon successful completion of this course the student will be able to:

1. Describe and draw plan and profile sketches of the major topographic features of the ocean floor.
2. Describe the formation of the major topographic features of the ocean floor in terms of plate tectonic processes.
3. Show an understanding of the physical and chemical properties of sea water.
4. Show an understanding of the origin and character of surface and deep ocean currents.
5. Describe the formation of tides and waves and their effect of ocean basins and coastal margins.
6. Describe the processes of erosion and deposition at coastlines and the resulting coastal landforms.
7. Describe and identify sediment found in coastal margins and their ancient lithified analogs. Show an understanding of the processes involved in the formation of such sediment.
8. Describe and show an understanding of the physical and biological processes which control the development of deltaic and estuarine environments.
9. Describe the character of the Fraser Delta and its development over geologic time.
10. Show an understanding of the sedimentation process and resulting sediment character and distribution on the ocean floor.
11. Describe the change in land/sea relationship over time, how this is determined, and its effect on the distribution of life in the oceans.
12. Describe the formation of a variety of oil/gas and ore deposits in the ocean.
13. Describe the importance of the oceans as generators of weather and climate patterns and the interaction of the oceans and the atmosphere.
14. Describe the likely sources of contamination of the oceans and discuss the various remedial methods used to mitigate the impact of these contaminants.

P. Course Content:

Topics discussed in this course will include:

1. Introduction - The Hydrosphere
- Origin of the Oceans
- Early Exploration of the Oceans
2. Structure of the Ocean Basins:
 - a) Ocean Ridges
 - b) Ocean trenches
 - c) Abyssal Plains
 - d) Guyots
 - e) Continental Shelves
3. Plate Tectonics and the Formation of the Oceans Basins:
 - a) Spreading Ridges
 - b) Subduction Zones
 - c) Transform Faults
 - d) Seismicity in the oceans
4. Physical Aspects of the Oceans:
 - a) Chemistry of Sea Water
 - b) Physical Properties of Sea Water
 - c) Surface Currents
 - d) Deep Ocean Currents
5. Coastal Margins:
 - a) Tides and Waves
 - b) Coastal Geomorphology
 - c) Coastal Sediment - detritus - source/transport/deposition
 - d) Coastal Sediments - orthochemical - corals/sabkhas
6. Deltas/Estuaries:
 - a) Physical characteristics
 - b) The Fraser Delta - character and development
 - c) Ancient Deltas
7. Ocean Sediments:
 - a) Source and transport mechanisms
 - b) Continental shelves
 - c) Turbidity currents - turbidite facies
 - d) Deep Ocean Sediments - origin/character/distribution
8. Ancient Oceans:
 - a) Palaeogeography/Palaeoceanography - Sea Level change
 - b) Facies models - Western Canadian Sedimentary Basin
 - c) Climate history
 - d) Ancient life in the oceans
9. Physical Resources of the Oceans
 - a) Ore Deposits
 - b) Oil/gas deposits
 - c) Ancient analogs

- 10. Oceans and the Environment:
 - a) The Atmosphere and the Oceans - the carbon cycle
 - b) Oil Spills
 - c) Sewage disposal - marine dumping

Q. Method of Instruction:

Lectures and associated laboratory problems will constitute the main mode of instruction. Audio-visual aids will be used where appropriate. Field trip will be conducted out of class time.

R. Course Evaluation:

The evaluation for this course shall consist of:

1.	Midterm	20%
2.	In class quizzes	10%
3.	Laboratory problem sets (4)	40%
4.	Final Exam	<u>30%</u>
		100%