Douglas College

Course Information

A: Division: Instructional Division

B: Dept.: Science & Technology

Program:

Date: 08 January 1998

New Course: X

Revision of Course Information form:

Dated: 02 March 1993

C:	D:	E:
Biology 300	Marine Biology	5
Subject & Course No.	Descriptive Title	Semester Credit

F: Calendar Description:

This course examines the history of marine biology, the physical and chemical characteristics of the marine environment, the diversity of marine life, marine ecology, and the effects of humans on the marine environment.

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

G: Type of Instruction: Hours per Week / per Semester

Lecture\Practice:	2	Hrs.
Laboratory:	3	Hrs.
Seminar:	2	Hrs.
Clinical Experience:		Hrs.
Field Experience:		Hrs.
Practicum:		Hrs.
Shop:		Hrs.
Studio:		Hrs.
Student Directed Learning:		Hrs.
Other:		Hrs.
Total:	7	Hrs.

H Course Prerequisites:

Biology 110, Biology 210

I: Course Corequisites:

NIL

J: Course for which this Course is a Prerequisite:

NIL

K Maximum Class Size:

35

L:

College Credit Transfer	X
College Credit Non-Transfer	
Non-Credit	

M Transfer Credit: Requested: X; Granted:

Specify Course Equivalents or Unassigned Credit as appropriate:

U.B.C. Biol 3

S.F.U. BISC 3

U. Vic. Biol 1.5

Other:

Course Designer(s)

Dean

Vice-President, Instruction

Registrar

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

Webber, H.H. and H.V. Thurman. Marine Biology. 1991. Harper Collins.

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

1. describe the history of marine biology as a field of study.
2. describe the basic divisions of the marine environment
3. describe the properties of sea water
4. explain the causes of water movement
5. describe the taxonomy and characteristics of marine plants and animals.
6. explain ecological concepts and principles
7. describe the physical and biological characteristics of the open ocean; the intertidal, estuaries salt marshes and coral reefs
8. describe the use and over exploitation of marine resources by humans
9. describe sources of marine pollution and their effects on the environment
10. describe national and international efforts to combat pollution and to enhance the marine environment
11. demonstrate an ability to conduct field research

P. Course Content:

1. Introduction to marine biology
   - history of marine biology
   - ocean geography
   - divisions of the marine environment
   - modes of existence in the marine environment
   - marine resources

2. Physical and chemical characteristics of the marine environment
   A. Water properties:
      - salinity
      - temperature
      - light
      - density
      - pressure
      - transparency
      - dissolved gases

   B. Water movement:
      a) horizonal movement:
         - wind patterns
         - surface currents
         - waves
         - tides
      b) vertical movement:
         - langmuir cells
         - upwelling

3. The diversity of marine life
   - classification, distribution and characteristics of:
      - Kingdom Monera
         - Division Cyanobacteria
         - Division Eubacteria

      - Kingdom Protista
         - Phylum Pyrrophyta
         - Phylum Chrysophyta
         - Phylum Sarcodina

      - Kingdom Fungi

      - Kingdom Plantae
         - Division Chlorophyta
         - Division Phaeophyta
         - Division Rhodophyta
         - Division Anthophyta

- Kingdom Animalia
  - Phylum Porifera
  - Phylum Ctenophora
  - Phylum Cnidaria
  - Phylum Platyhelminthes
  - Phylum Nemertea
  - Phylum Mollusca
  - Phylum Annelida
  - Phylum Arthropoda
  - Phylum Echinodermata
  - Phylum Hemichordata
  - Phylum Chordata

4. Marine ecology

A. Ecological principles
- population growth and regulation
- community organization
- productivity
- energy flow
- biogeochemical cycles
- symbiotic relationships
- biological zonation

B. Marine ecosystems

I) Open ocean (pelagic zone, benthic zone)

a) abiotic characteristics:
- water movement
- ocean sediments

b) biotic characteristics:
- spatial distribution of organisms
- trophic structure and energy flow
- adaptations of organisms to the pelagic and benthic environment

II) Intertidal (rocky shores, sandy shores, mud flats)

a) abiotic characteristics:
- waves
- tides
- sediments

b) biotic characteristics:
- spatial distribution of flora and fauna
- causes of intertidal zonation
- energy flow
- adaptations to the environment

III) Estuaries and salt marshes

a) abiotic characteristics:
- tides
- water mixing
- sediments

b) biotic characteristics:
- spatial distribution of flora and fauna
- plankton - based food webs
- detritus - based food webs
- adaptations of organisms

IV) Coral reefs
- a) abiotic characteristics:
  - light
  - temperature
  - dissolved organic matter
- b) biotic characteristics:
  - reef-building organisms
  - trophic structure and energy flow
  - species interactions

5. Effects of humans on the marine environment
- a) Marine resources:
  - fish
  - mariculture
  - chemical compounds
  - oil and gas
  - mining
  - fresh water source
  - energy
- b) Marine pollution
  - oil
  - halogenated hydrocarbons
  - metals
  - radioactive waste
  - thermal pollution
  - solid waste
- c) Protection and enhancement
  - research
  - legislation
  - habitat restoration

Q. Method of Instruction

There will be a weekly lecture and laboratory period. Marine biology theory will be introduced in the lecture period and current marine issues will be discussed.

In the laboratory period, students will examine the flora and fauna of the marine environment, determine the physical and chemical characteristics of marine ecosystems, and carry out field research.

R. Course Evaluation

Evaluation will be carried out in accordance with Douglas College policy. The instructor will present a written course outline with specific evaluation criteria at the beginning of the semester. Evaluation will be based on the following:

1.	Weekly quizzes	10-20%
2.	Laboratory reports	10-20%
3.	Term project/Seminar	10-20%
4.	Midterm examination	20-25%
5.	Final examination	25-30%