

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

 X Transfer course X A.A. degree applicable course

(check all that apply)

COURSE NUMBER AND TITLE: Oceanography 101 - Oceanography

UNIT VALUE: 4

MINIMUM NUMBER OF SEMESTER HOURS: 96

BASIC SKILLS REQUIREMENTS:

Appropriate language and computational skills.

ENTRANCE REQUIREMENTS:

PREREQUISITE: None

COREQUISITE: None

RECOMMENDED PREPARATION: None

SCOPE OF COURSE:

An introductory course in general oceanography including laboratory and field investigations of marine environments. Topics include: the history and scope of oceanography, properties of sea water, ocean currents, ocean waves and tides, submarine morphology and geology, life in the sea, and the significance of the oceans to man. Laboratory portion includes investigation of marine environments including geologic, chemical, physical, and biological aspects of the ocean and coastal area. Not open to students with prior credit in Oceanography 100 or 100L.

SPECIFIC COURSE OBJECTIVES:

The successful student will be able to:

1. Describe the process of scientific inquiry, commonly called the scientific method, and be able to apply the method as it pertains to oceanographic phenomena.
2. Describe the current hypotheses related to the origin of Earth and development of the atmosphere, oceans, and life.
3. Understand the dynamic processes involved in tectonic plate motions, including the characteristic processes and landforms associated with tectonic plate boundaries.
4. Identify the principal types of physiographic features on the sea floor and discuss their origin relative to tectonic plate processes.
5. Understand the origin of the four major types of marine sedimentary materials and be able to predict the distribution of the types of sediments on the sea floor.
6. Describe the influence of the hydrologic cycle, atmospheric processes, and marine life on the chemical characteristics of seawater.
7. Understand how temperature, salinity, and density characteristics

- determine the physical structure of the ocean.
8. Discuss Earth's heat budget and the influence of oceanic and atmospheric processes in distributing heat.
 9. Explain the Coriolis effect and characterize its role in the dynamics of ocean and atmospheric circulation.
 10. Draw and discuss the idealized global wind system and its affect on global climate patterns and global ocean circulation.
 11. Describe the characteristics, formation and dynamics of wind-driven waves.
 12. Explain the motions of the Earth-moon-sun system and the resulting ideal monthly tidal cycle.
 13. Compare differences between erosional and depositional shoreline processes and their affect on the development of coastal landforms.
 14. Provide examples of how man-made coastal structures affect shoreline processes.
 15. Describe the impact of the tectonic setting of major US coastlines on the general types of coastal features present.
 16. List and describe several types of ocean pollutants that especially affect the water quality of coastal zones.
 17. Compare the physical characteristics of pelagic and benthic marine environments.
 18. Discuss several ways in which marine organisms are specifically adapted to the physical parameters of the marine environment.
 19. Understand the global distribution of primary productivity and its relationship to the physical dynamics of ocean circulation.
 20. Discuss the characteristics of several marine pelagic and benthic ecosystems and the adaptations of and niches of organisms within those ecosystems.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

LECTURE

- I. Introduction to marine science, geography of oceans
- II. Origins of earth, oceans, and atmosphere
- III. Earth structure and plate tectonics
- IV. Features of the sea floor
- V. Marine sediments
- VI. Chemical and physical properties of seawater
- VII. Ocean-atmosphere interactions
- VIII. Ocean circulation
- IX. Waves and water dynamics
- X. Tides
- XI. Coastal oceanography
- XII. Biological productivity
- XIII. Marine ecosystems
- XIV. Marine resources
- XV. Marine pollution

LABORATORY

- I. Introduction to Bathymetric Charts
- II. Interpretation of Bathymetric Charts
- III. Methods of Coastal Navigation
- IV. Plate Boundaries and Sea Floor Topography
- V. Materials on the Sea Floor
- VI. Field Trip: ODP and Scripps Core Repositories
- VII. Properties of Sea Water
- VIII. Field Trip: Coastal Cliff Erosion, Del Mar and Solana Beach
- IX. Ocean Currents
- X. Field Trip: Beach Profiling

- XI. Field Trip: Oceanside Case Study, Oceanside Harbor
- XII. Field Trip: Tide Pools
- XIII. Tides and Interpretation of Tidal Charts
- XIV. Interpretation of Worldwide Coastlines
- XV. Field Trip: Oceanographic Boat Trip (Floating Lab)
- XVI. Field Trip: Stephen Birch Aquarium-Museum

Due to the scheduling of classes and changes in the tides, the following alternate labs may be substituted for any of the above labs:

- 1) El Niño and Climate
- 2) Field Trip: Hubbs/Sea World Fish Hatchery
- 3) Field Trip: Encina Sewage Treatment Plant
- 4) other appropriate investigations of oceanographic processes/phenomena

REQUIRED READING:

Thurman, Harold V. and Alan P. Trujillo. Essentials of Oceanography. Upper Saddle River, NJ: Prentice-Hall Publishers, 1999 (or most current edition).

Deen, Patricia and Al Trujillo. Laboratory and Field Exercises in Oceanography. Lake Geneva, WI: Paladin House Publishing, 1995 (or most current edition).

SUGGESTED READING:

Any pertinent articles that may appear in the daily and/or weekly public press that relate to oceanographic phenomena. A list of publications for further study is included at the end of each chapter in the lecture text.

REQUIRED WRITING:

Writings in the form of 1-paragraph to 1-page short descriptive explanations or definitions of selected concepts will be included on exams. A total of six 2-3 page written field trip reports will be submitted by the student. These reports are completed outside of class.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short term classes.

LECTURE

Outside assignments include but are not limited to:

1. reading the text
2. studying lecture notes
3. practicing skills

In addition, one or more of the following will be required, all of which will require additional outside research on an oceanographic concept:

1. a multi-page research paper.
2. a poster session, including oral presentation.
3. the production of a video/slide presentation.
4. 2-4 pages written review of 3 or more oceanographic journal articles.
5. oral presentation of a journal article
6. other assignments of an appropriate nature.

The minimum bibliography for all of these assignments will require the student to work outside of the class and textbook.

An instructor may also offer as supplementary credit:

1. use of computer software/Internet to investigate oceanographic topics
2. field trip to local oceanographic-related institutions/facilities
3. field trip to local beach/coastal area

LAB

There is required preparatory reading for each lab exercise and review of previous lab exercises for quizzes. Required field trip reports necessitate a certain amount of outside research to satisfactorily complete.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
 laboratory
 lecture-laboratory combination
 directed study

This course may be offered as a distance education course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No

If yes, check all that apply. (See guidelines for preparation for definitions.)

- telecourse
 mediated instruction
 computer assisted instruction

GRADING POLICY AND STANDARDS (include methods for determining whether the stated objectives have been met by students):

LECTURE

75% of the grade in this course is based upon the following:

1. Three to five objective tests, each covering a preassigned block of textbook chapters and lecture material. 50-60% of the lecture part of grade.
2. Outside assignments. 10-20% of lecture part of grade.
3. Comprehensive final exam. 20-25% of lecture part of grade.

LAB

25% of the grade in this course is based upon the following:

1. Exercises worked in class, quizzes, participation on field trips, and field trip reports which are equally weighted.

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

YES NO Number of times course may be taken for credit 1.

If yes, identify specific provision of Division 2 section(s) 55761-55763 and 58161 which qualifies course as repeatable.

CONTACT PERSON:

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SIGNATURES ON FILE