

## COURSE PROFICIENCY OUTLINE

### MARINE SCIENCE II - 1391

10 Credits

#### Purpose

Marine Science II is offered for students who have taken Marine Science I and are interested in advancing their knowledge of Marine Biology. Students will become scientifically literate, technologically advanced and environmentally aware through their coursework. This course will study the living marine environment with a focus on estuaries and marine organisms. System analysis will be included as well as visitation of marine systems and interaction with living species. Extensive hands-on, field and lab-based research form an important portion of the course work. Technology will also be an integral tool used in this curriculum.

- I. Student Outcomes 5.1, 5.2, 5.3, 5.6, 5.8 5.10; WR 2, 3, 4
  - A. Students will demonstrate an understanding of the terminology, facts, concepts and applications of marine science learnings and materials and of the other sciences as related to the course content.
  - B. Students will demonstrate the ability to utilize science learnings and materials in everyday life and in the further study of science.
  - C. Students will demonstrate an understanding of science and technology and the interrelationships of humankind, resources, energy and the environment.
  - D. Students will develop competencies in science critical thinking skills, study and learning skills, reading, report writing, and listening skills, and laboratory manipulative and investigative skills.
  - E. Students will demonstrate an understanding of and the ability to apply the latest findings in physical and chemical oceanography and environmental science.
  
- II. Content 5.1, 5.2, 5.3, 5.4, 5.5, 5.10, WR 1, 2, 3, 4, 5
  - A. Estuaries and Living Cycles of Organisms
    1. Maintenance of carbon dioxide and oxygen
    2. Identification of algae growth
    3. Environmental Conditions
    4. Basic Life Structures
  - B. Life Cycles and Organisms Analysis
    1. Plants
    2. Microorganisms including planktons
    3. Protists
    4. Invertebrates
      - a. Phylum – Porifera
      - b. Phylum – Mollusca
      - c. Phylum – Arthropoda
      - d. Phylum – Echinodermata
    5. Phylum – Chordata (the vertebrates)
      - a. Class Chondrichthyes
      - b. Class Osteichthyes
      - c. Class Amphibia

- d. Class Reptilia
- e. Class Aves
- f. Class Mammalia

C. Systems Analysis

- 1. Circulatory
- 2. Skeletal
- 3. Respiratory
- 4. Digestive
- 5. Reproductive
- 6. Nervous
- 7. Endocrine
- 8. Renal
- 9. Protection

D. Career Development and Science-Related Careers and Opportunities

- 1. General Principles of career education- attitudes, work habits and competencies
- 2. Career information related to all of the science, science and engineering and related careers

III. Activities and Materials

A. Text - Sverdrup, Duxbury, Duxbury; An Introduction to the World's Oceans

B. Classwork

- 1. Lectures and audio-visual materials, note-taking, discussions, demonstrations, report development, critical thinking activities, and regular tests and quizzes will be utilized.
- 2. Basic skills such as reading, writing, math, listening, information processing and science learning will be stressed.

C. Hands-On Investigation

- 1. Field Studies to gather data and investigate related topics
- 2. Laboratory investigations and development
- 3. Computer skills utilized with an emphasis on Internet research

D. Assignments - to be carefully reviewed and checked by the teacher and the students and to include stress on the skills of reading, writing, and science organization and thinking.

- 1. Readings - text and other sources, outlining and the organization of information
- 2. Written answers to questions
- 3. Laboratory and other reports utilizing varying techniques and methods
- 4. Independent Research encompassing field and laboratory data analysis, Internet research and outside readings

IV. Evaluation

A. Students will bring needed materials to class and be ready to work for the full class period.

B. Students will complete classwork and homework learning assignments, laboratory work and reports on time, and make up missed work as specified by the teacher.

C. Students will demonstrate a level of proficiency commensurate with the

homogeneous group expectations for this course. The evaluation of student outcomes shall consist of tests, quizzes, written assignments and reports, lab reports, independent research and the teacher's regular observations of student involvement and achievement in classroom, laboratory and field activities.

D. Students will take a comprehensive final examination. This exam will count as 20% of the final grade.

E. The final grade represents the teacher's professional judgment of the student's performance and all of the aforementioned activities and/or requirements are included in the evaluative process.

Teachers in every discipline will include opportunities wherein students will reinforce writing skills through homework assignments, classwork activities, and special assignments (reports) if required, by writing in complete sentences, using correct spelling and punctuation.

Reviewed and revised: August 2010