

Course Description

OCB1010 | Introduction to Marine Biology | 3.00 credits

An introduction to the biology of the seas. Emphasis is placed on the variety of marine organisms and their structural, physiological, and behavioral adaptations within specific marine environments. Special attention is directed to marine communities, e.g., coral reefs and shallow grass flats, and the factors limiting the distribution of organisms within those communities. Discussions will also be directed toward the geological, chemical, and physical characteristics of the world's oceans.

Course Competencies:

Competency 1: The student will demonstrate knowledge of the nature of science and its application within the field of marine biology by:

1. Describing a brief history of the development of marine biology as a science, including, but not limited to, essential contributions of individuals, events, and data-gathering techniques
2. Applying the scientific method to past and present marine biological hypotheses, theories, and facts
3. Discussing selected examples of past and present marine biological research
4. Explaining that scientific investigations are conducted to explore new phenomena, check on previous results, and test how well new theories predict known results

Competency 2: The student will demonstrate an understanding of the basic geological processes, physical features of the oceanic environment, and chemical nature of seawater by:

1. Identifying the names of the world's oceans and seas and describing the geological provinces of the ocean bottom
2. Describing chemical and physical properties of pure water and seawater
3. Explaining factors affecting wind patterns, surface currents, waves, and tides
4. Explaining basic geological processes like plate tectonics and continental drift in relation to the formation of land masses
5. Explaining the basic processes of how climatic patterns of the Earth are influenced by the interplay of land, sea, and astronomical events

Competency 3: The student will demonstrate knowledge and comprehension of groups of living organisms found within the marine environment by:

1. Identifying and describing taxonomic classification, characteristics, and examples of the vast array of marine organisms, i.e., microbes, plants, invertebrates, and vertebrates
2. Explaining the basic anatomy, physiology, and behavior of the above groups of marine organisms
3. Explaining the relationships and adaptations of marine organisms to the ever-challenging marine environment

Competency 4: The student will demonstrate knowledge and comprehension of basic marine ecological communities, ecosystems, and principles by:

1. Identifying and describing characteristics of marine communities and ecosystems, including, but not limited to, shorelines, estuaries, subtidal continental shelf, coral reefs, pelagic zone, and deep ocean
2. Explaining and discussing ecological principles that govern the habitability, stability, and distribution of the above communities and ecosystems
3. Explaining and discussing factors attributing to the distribution of organisms within the above communities and ecosystems
4. Explaining the interconnectedness/ interlinking of the various organisms in the marine environment.
5. Relating that the flow of energy within the marine ecosystem through the various niches, i.e., producers, consumers, and decomposers, is in a delicate balance

Competency 5: The student will demonstrate an understanding of the human influences on the marine environment with emphasis on local and regional issues by:

1. Describing the past, present, and future potential resources available from the marine environment
2. Demonstrating that small changes in a part of the ecosystem will have unpredictable effects on the entire marine environment and the global biosphere
3. Identifying and describing the numerous impacts humans impose on the marine environment, including, but not limited to, pollution, coastal development, overfishing, oil-drilling, ethics of marine animals in captivity, and recreation
4. Discussing various potential or active solutions to alleviate or eliminate negative human impacts on marine environments
5. Relating personal choices and actions to large-scale human impacts on marine environments
6. Discussing the value of an increasing importance of science and technology in helping resolve practical problems while taking into account human needs and environmental concerns

Learning Outcomes:

- Communicate effectively using listening, speaking, reading, and writing skills
- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Describe how natural systems function and recognize the impact of humans on the environment