OCES 4202 Marine Biotechnology

Course description

Ocean is the largest ecosystem on the planet and it contains more than 80% of current living organisms. Having a high biodiversity, the marine ecosystem is considered as a huge reservoir of various active compounds. Biotechnology is a powerful tool to utilize the valuable resources provided by marine organisms. This course introduces the current development and future directions of marine biotechnology. Students will learn the diversity of marine organisms, their bioactive compounds and production methods.

Course Intended Learning Outcomes

1. Understand the basic concepts and principles of biotechnology

2. Describe the biodiversity of marine organisms and their ecological functions

3. Evaluate the production process of bioactive compounds

4. Recognize the importance of marine biotechnology to sustain our society

5. Propose new methods for the utilization of novel compounds

Pre-requisites: OCES 4201 Environmental Microbiology

Course instructor

Prof. Qinglu Zeng

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Course assessment:
Midterm Examination (35%)
Final Examination (35%)
Presentation (20%)
Project report (10%)

Textbooks: Springer Handbook of Marine Biotechnology

https://link.springer.com/book/10.1007/978-3-642-53971-8

Course calendar

Topic
Introduction to marine biotechnology
Marine microorganisms
Marine viruses
Seaweeds in Hong Kong
Bioprocess engineering
Novel bioreactors for culturing marine organisms
Marine enzymes – production and applications
Microfluidic systems for marine biotechnology
Transgenic technology in marine organisms I
Transgenic technology in marine organisms II
Mid term exam
Bioinformatics I
Bioinformatics II
Bioinformatics III
Marine metagenomics I
Marine metagenomics II
Marine proteomics
Monitoring marine microbial communities
Environmental DNA to monitor disease outbreaks
Mid Term Break
Biofuels from algae
Coral engineering
Guest Lecture
Project presentation