南方科技大学 SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 Course Title	**海洋环境生物学实验 Biology of the Marine Environment Lab**
2.	授课院系 Originating Department	海洋科学与工程系 Department of Ocean Science and Engineering
3.	课程编号 Course Code	OCE205
4.	课程学分 Credit Value	2
5.	课程类别 Course Type	专业选修课 Major Elective Courses
6.	授课学期 Semester	秋季 Fall
7.	授课语言 Teaching Language	中英双语 English & Chinese
8.	授课教师、所属学系、联系方式（如属团队授课，请列明其他授课教师） Instructor(s), Affiliation& Contact （For team teaching, please list all instructors）	郭静，海洋科学与工程系，创园 9 栋 602，guoj@mail.sustc.edu.cn Guo Jing, Department of Ocean Science and Engineering, Chuangyuan 9-602 Tel. 18126401114
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	无 NA
10.	选课人数限额(可不填) Maximum Enrolment（Optional）	20

11. 授课方式 Delivery Method / 学时数 Credit Hours

讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other（Please specify）	总学时 Total
		64		64

12.	先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	
13.	后续课程、其它学习规划 Courses for which this course is a pre-requisite	
14.	其它要求修读本课程的学系 Cross-listing Dept.	

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

完成本实验课程后，学生将了解海洋生物及其环境，海洋生物群落的结构和功能及其在海洋环境过程作用，以及人类活动对海洋生物的影响。一些实验是观察性的，而其他实验是动手操作的。了解海洋生物与环境之间的关系，对海洋科学、微生物学、环境科学领域的学生十分重要，对未来学科交叉和相关研究有重要潜在意义。

Upon completion of this laboratory course, students will have an understanding of marine organisms and their environments, the structure and function of marine communities, how biological processes operate in marine environments, and the effect of human activities on sea life. Some of the laboratory activities are observational while other laboratory exercises are experimental. Understanding the relationship between marine life and the environment is very important for students in marine science, microbiology, and environmental science. And it has important potential implications for future interdisciplinary and related research.

16. 预达学习成果 Learning Outcomes

通过对实验课的系统学习，学生可以加深对理论知识的理解，提高学习兴趣；能够对海洋生物主要生态类群的基本知识有更深入的了解，初步具备分析相关问题的能力和实验研究的技能，为参与海洋生物学相关工作和进一步深造垫定良好基础。

Through systematic study of the lab class, students can deepen their understanding of theoretical knowledge and enhance their interest in learning; they can have a deeper understanding the ecology of marine life, and have the ability to analyze related problems and experimental research skills. To lay a good foundation for participating in the work and further study of marine biology.

1）掌握代表性海洋浮游植物、浮游动物的形态观察及分类鉴定

Observe the morphological structure of representative marine microalgae (cyanobacteria, diatoms, dinoflagellates and green algae, etc.), marine zooplankton (Chaetognatha, Coelenterata, Crustacea, etc.), understand their species, and master their classification characteristics.

2）掌握海藻调查、海洋浮游生物、海洋底栖生物的采集、标本制作与保存

Master the survey of seaweed marine plankton, marine benthic organism, sample collection, production and preservation of the specimen.

3) 掌握大型海藻形态结构观察和分类鉴定

Observation of morphological structure from large seaweed and their classification

4）海洋原生动物-有孔虫、海洋腔肠动物、海洋底栖动物、海洋软体动物、海洋节肢动物和海洋棘皮动物的形态观察与解剖

4) Morphological observation and anatomy of marine protozoa – foraminifera, Coelenterata, marine benthic animals, Gastropoda, marine arthropods, and marine echinoderms

5）海洋多孔动物-海绵的形态观察与分类

,Morphological observation and classification of Prorifera -sponge

6）极端环境下冷泉和热液生物-管虫的形态观察

Morphological observation of tube worms in extreme environments.

17. 课程内容及教学日历 （如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）
Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

第一周，实验一、海洋浮游植物的形态观察及分类鉴定 （4 学时）

观察代表性海洋微藻形态结构（蓝藻门、硅藻门、甲藻门和绿藻门等），了解其种类，掌握其分类特征。

Week1, Lab 1, Morphological observation and classification identification of marine phytoplankton (4 hours)

Observe the morphological structure of representative marine microalgae (cyanobacteria, diatoms, dinoflagellates and green algae, etc.), understand their species, and master their classification characteristics.

第二周，实验二、海洋浮游动物的形态观察及分类鉴定 （4 学时）

观察代表性海洋浮游动物的形态结构（毛颚动物门、栉水母门、甲壳纲动物等），了解其种类，掌握其分类特征。

Week 2, Lab 2, Morphological observation and classification identification of marine zooplankton (4 hours)

Observe the morphological structure of representative marine zooplankton (Chaetognatha, Coelenterata, Crustacea, etc.), understand its species, and master its classification characteristics.

第三周，实验三、海藻调查、采集、标本制作与保存（4 学时）

通过潮间带海藻的生物量及多样性调查，了解其生态分布、生活状态和生物多样性；通过海藻的采集和标本制作，学习掌握海藻标本的制作。

Week 3, Lab 3, Investigation, collection, specimen production and preservation of seaweed (4 hours)

Through the survey of biomass and diversity of intertidal seaweed, we can understand its ecological distribution, living status and biodiversity. Through the collection of seaweed and the production of specimens, the students can master the production of seaweed specimens.

第四周，实验四、大型海藻形态结构观察和分类鉴定（4 学时）

观察主要大型海藻红藻、绿藻及褐藻等底栖海藻，以及海草的外部、表面和内部形态结构，了解掌握主要海藻种类的形态结构特征，认知海藻生殖器官，并掌握基本分类鉴定知识。

Week 4, Lab 4, Observation of morphological structure from large seaweed and their classification (4 hours)

Observed the benthic algae(such as red algae, green algae and brown algae,etc.), as well as the external, surface and internal morphological structure of seaweed, to understand the morphological and structural characteristics of the main seaweed species, to recognize the algae, and to master the classification and identification of benthic algae .

第五周，实验五、海洋腔肠动物的观察与分类（4 学时）

掌握腔肠动物的一般特征和特殊构造，了解腔肠动物的一般分类学知识。（海月水母、海蜇和海葵目）

Week 5, Lab 5, Morphological observation and classification of Coelenterata (4 hours)

Master the general characteristics and special structures of coelenterates and understand the general taxonomic knowledge of coelenterates. (*Aurelia aurita; Rhopilema esculentum; Actiniaria*)

第六周，实验六、海洋底栖动物，长牡蛎的形态观察与解剖（4 学时）

了解贝类的外部形态，熟悉长牡蛎的外部形态和内部各器官、系统。

Week 6, Lab 6, Morphological observation and anatomy of marine benthic animals-long oysters (4 hours)

Understand the external morphology of shellfish, be familiar with the external morphology of the long oyster and the internal organs and systems.

第七周 ，实验七、海洋软体动物，腹足纲生物的的形态观察与解剖（4 学时）

了解腹足纲（Gastropoda）生物脉红螺（*Rapana Venosa*）等的形态观察，掌握软骨动物门（Mollusca）腹足纲生物的一般特征。了解腹足纲的代表性生物和分类知识。

Week 7, Lab 7, Morphological observation and anatomy of marine mollusks, gastropods (4 hours)

To understand the morphological observations of Gastropoda, *Rapana Venosa*, etc., and to grasp the general characteristics of the gastropods (Mollusca). Learn about representative organisms and classification knowledge of gastropods.

第八周，实验八、海洋节肢动物，虾蟹类的形态观察与解剖（4 学时）

通过十足目生物中国明对虾[(*Fenneropenaeus chinensis* (Osbeck, 1765)]和三友梭子蟹[*Portunus trituberculatus* (Miers, 1876)]等的形态观察，掌握节肢动物门（Arthropoda）经济甲壳类的一般特征。

Week 8, Lab 8, Morphological observation and anatomy of marine arthropods, shrimps and crabs (4 hours)

The general characteristics of the economical crustaceans of *Fenneropenaeus chinensis* and *Portunus trituberculatus* were grasped by morphological observations .

第九周，实验九、海洋原生动物-有孔虫的形态观察与分类（4 学时）

通过海洋古老原生生物有孔虫的形态观察，掌握原生动物的形态结构和主要分类。了解有孔虫定年和孔虫演化学基本知识。

Week 9, Lab 9, Morphological observation and classification of marine protozoa - foraminifera (4 hours)

Through the observation of the morphology of foraminifera in the marine ancient protozoa, the morphological structure and main classification of protozoa are mastered. Understand the basic knowledge of foraminiferal dating and foraminifera chemistry.

第十周，实验十、海洋多孔动物-海绵的形态观察与分类（4 学时）

通过海洋多孔动物-多种海绵形态观察与比较，掌握多孔动物（Prorifera）的一般特征和特殊构造，了解多孔动物在系统发生中的地位。

Week 10, Lab 10, Morphological observation and classification of Prorifera -sponge (4 hours)

Through the observation and comparison of Prorifera -multiple sponge morphology, master the general characteristics and special structures of Prorifera to understand the its status in phylogeny.

第十一周，实验十一、冷泉生物-管虫的形态观察（4 学时）

通过了解冷泉区海底，观察冷泉管虫的形态特征，了解冷泉生物。

Week 11, Lab 11, Morphological observation of cold spring organisms - tube worms (4 hours)

By understanding the seabed in the cold spring area, observe the morphological characteristics of the cold spring tubeworm and understand the cold spring creatures.

第十二周，实验十二、热液生物-管虫的形态观察（4 学时）

通过了解海底热液喷发口，观察热液管虫的形态特征，了解海底热液喷发口生物特征。

Week 12, Lab 12, Morphological observation of hydrothermal organisms - tube worms (4 hours)

By understanding the hydrothermal eruption mouth of the seabed, observe the morphological characteristics of the hydrothermal tube worm and understand the biological characteristics of the hydrothermal eruption mouth of the seabed.

第十三周，实验十三、海洋棘皮动物-海星和海参的形态观察与分类（4 学时）

通过海洋棘皮动物-海星和海参形态观察与比较，掌握海洋棘皮动物的一般特征和特殊构造。

Week 13, Lab 13, Morphological observation and classification of marine echinoderms - starfish and sea cucumber (4 hours)

Through the observation and comparison of marine echinoderms - sea stars and sea cucumbers, the general characteristics and special structures of marine echinoderms are mastered.

第十四周，实验十四、浮游动物调查（4 学时）

浮游动物调查工具和设备介绍；样品采集、处理；常见浮游动物、常见浮游幼虫活体标本观察。

Week 14, Lab 14, Zooplankton survey (4 hours)

Introduction of zooplankton survey tools and equipment; sample collection and processing; observation of common zooplankton and common planktonic larvae living specimens.

第十五周，实验十五、浮游植物调查（4 学时）

浮游植物调查工具和设备介绍；样品采集、处理；浮游硅藻类、浮游甲藻类活体标本观察；

Week 15, Lab 15, Phytoplankton Survey (4 hours)

Introduction of phytoplankton survey tools and equipment; sample collection and processing; observation of planktonic diatoms and planktonic algae living specimens;

第十六周，实验十六、底栖生物调查（4 学时）

底栖生物调查工具和设备介绍；样品采集、处理；常见底栖生物活体标本观察。

Week 16, Lab 16, benthic survey (4 hours)

Introduction to benthic survey tools and equipment; sample collection and processing; observation of common benthic organisms.

18. 教材及其它参考资料 Textbook and Supplementary Readings

自编教材
参考资料：
1. 巩宁，海洋生物学实验，大连海事大学出版社，2018
2. 张青田，海洋生物学实验，化学工业出版社，2018
3. 朱丽岩等，海洋生物学实验，中国海洋大学出版社，2007
4. Marine Biology, 9th edition, Castro & Huber, 2013
5. A Photographic Atlas of Marine Biology (1 edition), Gary D. Wisehart, Erin C. Rempala, Michael J. Leboffe,2012
6. [美] R.E. Lee 著，段德麟等译，藻类学，科学出版社，2012
7. 钱树本等，海藻学，中国海洋大学出版社，2014

课程评估 ASSESSMENT

19.

评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance		10		
课堂表现 Class Performance		20		
小测验 Quiz				
课程项目 Projects				
平时作业 Assignments		50		
期中考试 Mid-Term Test				
期末考试 Final Exam				
期末报告 Final Presentation		20		
其它（可根据需要改写以上评估方式） Others (The above may be modified as necessary)				

20. 记分方式 GRADING SYSTEM

☑ A. 十三级等级制 Letter Grading
☐ B. 二级记分制（通过/不通过） Pass/Fail Grading

课程审批 REVIEW AND APPROVAL

21. 本课程设置已经过以下责任人/委员会审议通过
This Course has been approved by the following person or committee of authority

海洋科学与工程系本科教学委员会
Department of Ocean Science and Engineering Undergraduate Committee