

Foundation of Marine Biology

“海洋生物基础”教学大纲

1. Introduction/课程介绍 错误！未定义书签。

2. General Aims & Specific Learning Outcomes/学习目标及可测量结果 错误！
未定义书签。

2.1 General Aims/学习目标..... 错误！未定义书签。

2.2 Specific Learning Outcomes/可测量结果..... 错误！未定义书签。

3. Curriculum Requirement/课程要求 错误！未定义书签。

4. Course Arrangements/教学安排 错误！未定义书签。

References/参考教材及相关资料 错误！未定义书签。

Website/课程教学网站 错误！未定义书签。

Foundation of Marine Biology

“海洋生物基础”教学大纲

Module Code/课程代码:

Module Title/课程名称: Foundation of Marine Biology /海洋生物基础

Credit Weighting/学分: 2

Periods per Week/周学时: 4

Target Students/面向对象: International Students/留学生

Pre-requisites/预修课程要求: None/无

1. INTRODUCTION/课程介绍

This course is a degree program for graduate students, especially the foreign students majoring in marine biology, marine ecology, marine chemistry and marine pharmacology. Marine biology is the study of the sea's diverse inhabitants and their relationships to each other and their environment, and this course introduces the basic knowledge and the research development of marine biology, including the history and introduction of marine biology, characteristic and nature of marine microbiology, marine plants, and marine animal, the marine biodiversity, as well as marine ecosystem. This course is to deepen and broaden the students' insight and practical skills in marine biology at an advanced level. The course will also train and facilitate the students to logically formulate relevant research agenda by presentations and colloquial discussions in the class.

海洋生物基础这门课是为海洋生物学、海洋生态学、海洋化学、海洋药物等海洋科学相关专业留学生开设的研究生课程。海洋生物学研究的内容极为丰富，且随着海洋调查手段和开发技术的改进而不断地发展。可以说生物学的各个领域，在海洋生物学中均有相应的发展。本课程注重海洋生物相关基础知识的介绍，同时兼顾海洋生物研究热点领域的最新进展。本课程将阐述海洋里生命的起源和演化，生物的分类和分布、发育和生长、生理、生化和遗传。其目的是阐明生命的本质，海洋生物的特点和习性，及其与海洋环境间的相互关系，海洋中

发生的各种生物学现象及其变化规律，进而利用这些规律为人类生活和生产服务。

2. GENERAL AIMS& SPECIFIC LEARNING OUTCOMES/学习目标及可测量结果

2.1 GENERAL AIMS/学习目标

To introduce the basic knowledge and the research development of marine biology, including the history and introduction of marine biology, characteristic and nature of marine microbiology, marine plants, and marine animal, the marine biodiversity, as well as marine ecosystem. By the study of this course, the students' insight and practical skills in marine biology should be broadened at an advanced level.

通过本课程的学习，使学生了解海洋里生命的起源和演化，熟悉海洋生物的种类（海洋微生物，海洋植物和海洋动物）和分布、发育和生长、生理、生化和遗传，海洋生物多样性等等。其目的是阐明生命的本质，海洋生物的特点和习性，及其与海洋环境间的相互关系，海洋中发生的各种生物学现象及其变化规律，激发学生对海洋生物及相关科学研究，特别是海洋科学研究的兴趣，同时为学生将来能够在海洋生物、海洋天然药物或与其相关的其他领域从事工作和科研打下坚实的基础。

2.2 SPECIFIC LEARNING OUTCOMES/可测量结果

- ✧ Acquire basic knowledge on the marine environment and marine biology;

了解海洋环境和海洋生物基础概念；

- ✧ Acquire the knowledge and the research development of marine biology, including the history and introduction of marine biology, characteristic and nature of marine microbiology, marine plants, and marine animal, the marine biodiversity, as well as marine ecosystem.

掌握海洋生物学的基本知识和研究进展，包括海洋生物学的历史和以及海洋微生物学、海洋植物和海洋动物的特征和习性、海洋生物多样性以及海洋生态系统。

- ✧ Acquire the skills of searching professional papers as well as giving a technical report.

掌握如何搜索专业知识，并在课堂进行展示。

All the outcomes could be evaluated by discussions during class, homework and peer assessment, presentation.

注：以上结果可以通过课堂讨论、课堂 PPT 展示、作业、作业互评和期末报告等环节测量。

3. CURRICULUM REQUIREMENT/课程要求

This course will combine theory teaching and self-practicing by students together. It is aimed to improve the students' ability of doing research, and mainly focus on evaluating the study process and ability improvement. Besides the teaching part, students are encouraged to share and present their understanding and opinion to marine biology in class. After taking this course, students will improve their understanding about the principle of marine biology, which will be very helpful for further research. To find the specific content, please refer to the COURSE ARRANGEMENTS section. The evaluation of the study process (application and homework assignment of each section), together with the average grade (attendance and class participation, etc.) consist the whole assessment of this course, and the specification is as follows (Full marks: 100):

课程内容通过课堂讲授和学生课堂 PPT 展示两种方式实现，采用过程化、多元化的课程考核和评价体系，旨在通过作业、优秀作业上台分享、交流互动等，促使学生认真学习，提高对海洋生物及其衍生知识的认识，为将来的科研活动打下良好基础。具体参见教学安排。注重学习过程、每个教学环节内容的学习和应用情况，每个环节布置课堂展示任务，作为成绩的主要组成，另外记载平时成绩（包括到课率、课堂问答等）。具体考评标准详如下（满分 100）：

- Attendance(16 marks): totally 16 times(2■8), 1 for each attendance;
到课率：16 次(2■8)，每次 1 分，共 16 分；
- Class participation (14 marks): ask and answer questions in class;
课堂讨论互动情况：14 分：参与课堂问答；
- Homework (30 marks): totally 3 times, 10 for each time (The homework should be completed on time. Each time, 3 or 4 outstanding ones will be invited to show their homework in class.) ;

作业：共 3 次，每次 10 分；共 30 分；（每次作业要按期提交，每次作业选择优秀的 3-4 上台展示）；

■ Class presentation: Presentation of research (40 marks): present your own research work;

课堂 PPT 展示：口头学术报告（共 40 分）：展示自身研究成果；

■ Rewards (up to 2 marks): valued suggestions for this course.

奖励分（额外，最多 2 分）：有价值的课程建议等。

4. COURSE ARRANGEMENTS/教学安排

Week	Outline		Content	Period s	Teaching method
Week 1	1	Introduction	The general information about this course, including: the aims and requirements, the outline and arrangement, the assessment and so on.	4.0	Teaching and Discussion
	2	Interaction with students	Students introduce themselves and their own research subject to all the others.		
	3	Brief overview	The origin and evolution of life in the ocean (different hypothesis); Marine Biology: A History of Changing Perspectives: <ul style="list-style-type: none">• Early studies of marine organisms• Renewed interest in marine organisms		
	4	Homework 1	Describe the understanding the origin and evolution of life in the ocean		
教学模块	教学单元		内容提要	学时数	授课方式和相关环节
第1章 海洋生物基础介绍	1	课程概况	课程教学要求与目标，课程基本内容与安排，参考书目、考核和成绩评定方法等。	4.0	课堂讲授、课堂交互讨论
	2	学生讨论	学生介绍自己的研究课题背景以及问题		
	3	第一章简介	海洋中生命起源和演变假说 海洋生物学：观点变化历史： <ul style="list-style-type: none">•海洋生物的早期研究•对海洋生物的新认识		
		课堂练习	查找自己研究课题相关的文献		
	4	作业1	描述下对海洋中生命起源和演化的理解		
Week	Outline		Content	Period s	Teaching method
Week 2	1	Review and Excellent class presentation	Review of the content of last week; 3-4 students show their homework.	4.0	Teaching and Discussion

	2	Presentations by students	Each student give the presentation referring to an international conference procedure (15 min talking + 3 min Q&A) Note: the grade of the presentation is decided by both the other students (50%) and the teacher (50%)		
	3	Marine environment and biological adaptation	1) Introduction of marine environment 2) The problem of marine environmental pollution 3) The adaptation strategy of marine biota 4) Influence of human activity of the biota adaptation		
	4	Homework 2	Describe one marine pollution you concerned and write the opinion		
教学模块	教学单元		内容提要	学时数	授课方式和相关环节
第2章 海洋环境和生物适应机制	1	复习回顾与口头学术报告展示	复习回顾，并请3-4名同学展示自己的见解：每位学生做完后，请其他同学就报告内容进行提问（15分钟报告，3分钟提问）。老师总结出现的问题。（学生和老师共同打分，各占50%）	4.0	提问式复习回顾，课堂讲授与互动
	2	章节内容介绍	海洋环境介绍 海洋环境污染问题 海洋生物群的适应战略 人类活动对生物群落适应的影响		
	3	作业2	描述一个你认为需重视的海洋环境问题，并展开意见		
Week	Outline		Content	Periods	Teaching method
Week 3	1	Review and Excellent class presentation	Review of the content of last week; 3-4 students show their homework.	4.0	Teaching and Discussion
	2	Presentations by students	Each student give the presentation referring to an international conference procedure (15 min talking + 3 min Q&A) Note: the grade of the presentation is decided by both the other students (50%) and the teacher (50%)		

	3	Marine microbiology	Definition; Classification of marine microbiology; Diversity of marine microbiology; Importance of marine microbiology; Brief history and products.		
	4	Homework 3	Describe the understanding on marine microboilogy		
教学模块	教学单元		内容提要	学时数	授课方式和相关环节
第 3 章 海洋微生物	1	复习回顾与优秀作业展示	复习回顾，上周优秀作业学生上台交流	4.0	课堂讲授
	2	口头学术报告展示	3-4 名同学展示自己的见解： 每位学生做完后，请其他同学就报告内容进行提问（15 分钟报告，3 分钟提问）。老师总结出现的问题。（学生和老师共同打分，各占 50%）		
	3	章节内容讲授	海洋微生物学分类； 海洋微生物学多样性； 海洋微生物学的重要性； 海洋微生物学简史和衍生品。		
	4	作业 3	描述对海洋微生物的认识		
Week	Outline		Content	Periods	Teaching method
Week 4	1	Review and Excellent class presentation	Review of the content of last week; 3-4 students show their homework.	4.0	Teaching and Discussion
	2	Presentations by students	Each student give the presentation referring to an international conference procedure (15 min talking + 3 min Q&A) Note: the grade of the presentation is decided by both the other students (50%) and the teacher (50%)		
	3	Phytoplankton and primary production	Definition; The relation between marine planktology; and other disciplines of oceanography; Ecological group of plankton and the primary production; Economic importance; Brief history and products.		
	4	Homework 4	Describe one phytoplankton you are familiar with or interested in, and introduce it to your classmate		

教学模块	教学单元		内容提要	学时数	授课方式和相关环节
第 4 章 海洋浮游植物和初级生产力	1	复习回顾与优秀作业展示	复习回顾，上周优秀作业学生上台交流	4.0	课堂讲授
	2	口头学术报告展示	3-4 名同学展示自己的见解： 每位学生做完后，请其他同学就报告内容进行提问（15 分钟报告，3 分钟提问）。老师总结出现的问题。（学生和老师共同打分，各占 50%）		
	3	章节内容讲授	海洋科学与海洋学其他学科的关系； 海洋浮游生物的生态群和初级生产； 经济重要性； 海洋浮游植物衍生产品。		
	4	作业 4	描述一个你熟悉或感兴趣的浮游植物，并介绍给大家		
Week	Outline		Content	Periods	Teaching method
Week 5	1	Review and Excellent class presentation	Review of the content of last week; 3-4 students show their homework.	4.0	Teaching and Discussion
	2	Presentations by students	Each student give the presentation referring to an international conference procedure (15 min talking + 3 min Q&A) Note: the grade of the presentation is decided by both the other students (50%) and the teacher (50%)		
	3	Zooplankton, nekton, and fisheries	Ecological group Classification of zooplankton and nekton Modes of reproduction		
	4	Homework 5	Describe one Zooplankton you are familiar with or interested in, and introduce it to your classmate		
教学模块	教学单元		内容提要	学时数	授课方式和相关环节
第 5 章 海洋浮游动物，浮游生物和渔业	1	复习回顾与优秀作业展示	复习回顾，上周优秀作业学生上台交流	4.0	课堂讲授
	2	口头学术报告展示	3-4 名同学展示自己的见解： 每位学生做完后，请其他同学就报告内容进行提问（15 分钟报告，3 分钟提问）。老师总结出现的问题。（学生和老师共同打分，各占 50%）		

	3	章节内容讲授	海洋浮游动物的分类 海洋浮游生物的分类 繁殖模式		
	4	作业 5	描述一个你熟悉或感兴趣的海洋浮游动物，并介绍给大家		
Week	Outline		Content	Periods	Teaching method
Week 6	1	Review and Excellent class presentation	Review of the content of last week; 3-4 students show their homework.	4.0	Teaching and Discussion
	2	Presentations by students	Each student give the presentation referring to an international conference procedure (15 min talking + 3 min Q&A) Note: the grade of the presentation is decided by both the other students (50%) and the teacher (50%)		
	3	Marine benthos	Marine benthic environment and the main biological groups; Classification of marine benthos; Modes of reproduction.		
	4	Homework 6	Describe one marine benthos you are familiar with or interested in, and introduce it to your classmate		
教学模块	教学单元		内容提要	学时数	授课方式和相关环节
第 6 章 海洋底栖生物	1	复习回顾与优秀作业展示	复习回顾，上周优秀作业学生上台交流	4.0	课堂讲授
	2	口头学术报告展示	3-4 名同学展示自己的见解： 每位学生做完后，请其他同学就报告内容进行提问（15 分钟报告，3 分钟提问）。老师总结出现的问题。（学生和老师共同打分，各占 50%）		
	3	章节内容讲授	海洋底栖环境和主要生物群体； 海洋底栖生物的分类； 繁殖模式。		
	4	作业 6	描述一个你熟悉或感兴趣的海洋底栖生物，并介绍给大家		
Week	Outline		Content	Periods	Teaching method
Week 7	1	Review and Excellent class presentation	Review of the content of last week; 3-4 students show their homework.	4.0	Teaching and Discussion

	2	Presentations by students	Each student give the presentation referring to an international conference procedure (15 min talking + 3 min Q&A) Note: the grade of the presentation is decided by both the other students (50%) and the teacher (50%)		
	3	Marine algae and mangrove	Economic importance of algae; Importance of mangrove to the coastal ecological restoration; Diversity of marine algae and mangrove; Modes of reproduction.		
	4	Homework 7	Describe one Marine algae or mangrove you are familiar with or interested in, and introduce it to your classmate		

教学模块	教学单元		内容提要	学时数	授课方式和相关环节
第 7 章 海 洋 藻 类 和红树林	1	复习回顾与优秀作业展示	复习回顾，上周优秀作业学生上台交流	4. 0	课堂讲授
	2	口头学术报告展示	3-4 名同学展示自己的见解： 每位学生做完后，请其他同学就报告内容进行提问（15 分钟报告，3 分钟提问）。老师总结出 现的问题。（学生和老师共同打分，各占 50%）		
	3	章节内容讲授	定义； 海洋藻类的经济重要性； 红树林对沿海生态恢复的重要性； 海洋藻类和红树林的多样性； 繁殖模式。		
	4	作业 7	描述一个你熟悉或感兴趣的海洋藻类或红树林，并介绍给大家		

Week	Outline		Content	Periods	Teaching method
Week 8	1	Review and Excellent class presentation	Review of the content of last week; 3-4 students show their homework.	4.0	Teaching and Discussion
	2	Presentations by students	Each student give the presentation referring to an international conference procedure (15 min talking + 3 min Q&A) Note: the grade of the presentation is decided by both the other students (50%) and the teacher (50%)		
	3	Human impacts on marine biota	Introduction;		

			Influence of anthropogenic pollutant to marine biota; Influence of ocean Fishery to marine biota; Interaction between marine aquaculture and coastal environment.		
	4	Review and Summary	Review the whole course and a summary about the problems of each section.	4.0	Discussion
Total Periods: 32					
教学模块	教学单元		内容提要	学时数	授课方式和相关环节
第 8 章 人类活动对海洋生物的影响、课堂讨论、课堂总结	1	复习回顾与优秀作业展示	复习回顾，上周优秀作业学生上台交流	4.0	课堂交流讨论
	2	口头学术报告展示	3-4 名同学展示自己的见解： 每位学生做完后，请其他同学就报告内容进行提问（15 分钟报告，3 分钟提问）。老师总结出现的问题。（学生和老师共同打分，各占 50%）		
	3	章节内容讲授	人为污染物对海洋生物的影响； 海洋渔业对海洋生物群的影响； 海水养殖与沿海环境之间的相互作用。		
	4	课堂回顾与讨论	对整个课程内容进行回顾，总结各个实践环节的问题；学生通过本课程的收获及建议		
	合计学时：32				

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