

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	海洋工程设计 II: 系泊与基础 Ocean Engineering Design II: Moorings and Offshore Foundations
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	OCE211
4.	课程学分 Credit Value	3
5.	课程类别 Course Type	专业核心课 Major Core Courses
6.	授课学期 Semester	春季 Spring
7.	授课语言 Teaching Language	英语 English
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)	傅勇 海洋科学与工程系 0755-88015254 Yong FU, Department of Ocean Sciences and Engineering, 0755-88015254
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	待公布 To be announced
10.	选课人数限额(可不填) Maximum Enrolment (Optional)	

11. 授课方式 Delivery Method	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
学时数 Credit Hours	32		32		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

通过本课程的教学，对海洋工程领域不同种类的系泊系统及基础类型进行较为系统的介绍，从而让学生对系泊系统及海洋基础的种类、基本工作原理及其设计施工方法、适用范围有所了解，为今后从事海洋领域的工作奠定良好的专业基础、储备基本的专业技能。

Through this course, the basis of different kinds of mooring systems and offshore foundation type will be introduced systematically, so that the students will learn the concepts, basic principles, and design and construction methodologies, as well as applicability of various mooring systems and offshore foundations. It will equip them with fundamental professional knowledges and skills for their future work in the marine engineering industry.

16. 预达学习成果 Learning Outcomes

通过本课程的学习，学生将认识及了解海洋工程领域不同种类的系泊系统和基础类型、工作原理及适用范围，从而培养学生对海洋工程系泊系统、近海基础和深海基础的分析和设计能力，具体包括：

- (1) 将数学、科学和工程知识应用于不同种类海洋基础；
- (2) 能够分析设计多种海洋基础，了解不同种类海洋基础的施工方法；
- (3) 将本课程中涉及的技术、技能和现代工程手段应用到海洋基础问题的工程实践中；
- (4) 认识到发展离岸基础技术的需求，从而发挥主观能动性、积极思考如何对现有技术进行改进从而推动离岸基础技术的不断发展与创新。

By taking this course, students will learn about the concept, principle and applicability of various types of mooring systems and offshore foundation types. It will equip students on the analysis and design of mooring systems, shallow and deep foundations for offshore engineering works:

- (1) Apply knowledge of mathematics, science and engineering to offshore foundations;
- (2) Able to analyse and design offshore foundations and have knowledge of its construction methods;
- (3) Apply the techniques, skills and modern engineering tools covered in the module to engineering practice of offshore foundations problems;
- (4) Recognize the needs for, and have the ability to engage in lifelong learning in view of advancing offshore foundation technologies.

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.)

Part 1 课堂教学 (32 学时)

Lectures (32 hours)

Section 1 课程绪论 (2 学时)

海洋工程结构物及基础的种类

Introduction of the Course (2 credit hours)

Types of onshore and offshore structures and foundations

Section 2 系泊系统 (8 学时)

Mooring systems (8 credit hours)

Section 3 浅基础 (6 学时)

Shallow foundation: stability and settlement (6 credit hours)

Section 4 吸力式沉箱基础 (3 学时)

Suction caisson foundation (3 credit hours)

Section 5 自升式桩脚靴基础 (3 学时)

Jack-up Spudcan Foundation (3 credit hours)

Section 6 深基础：桩基础和锚固基础 (10 学时)

Introduction; Design shear strength profile; Pile types; Temporary support of unpiled platform. (10 credit hours)

Part 2 设计与展示 (32 学时)

Design and student presentations (32 hours)

学生将分组完成以指定工程项目的可行性研究/设计，在课程中以各种形式不断展示个人及团队的研究进展、参与课堂讨论，最终完成可行性研究报告。

Students will form small groups to conduct the feasibility study of a given project. They will participate in-class discussions and debate, progressively present in various forms their individual and group progress, and final complete a feasibility study report. (32 hours).

i. 浅基础设计 (8 学时)

i. Design of shallow foundations (8 credit hours)

ii. 深基础设计 (8 学时)

ii. Design of deep foundations (8 credit hours)

iii. 系泊系统设计 (8 学时)

- iii. Design of moorings (8 credit hours)
- iv. 锚固基础设计 (8 学时)
- iv. Design of anchoring foundations (8 credit hours)

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

教材:

1. 周景星等, 《基础工程》, 清华大学出版社
2. 王世圣等, 《深水平台工程技术》, 上海科学技术出版社
3. 曹静等, 《深水海底管道和立管工程技术》, 上海科学技术出版社
4. 刘君等, 《新型锚固基础——动力锚》, 科学出版社

参考资料:

1. Bai Y. and Bai Q. (2010) Subsea Engineering Handbook. Gulf Professional Publishing, New York
2. Randolph M. and Gourvenec S. (2011) Offshore geotechnical engineering, Spon Press, N.Y.
3. McCarron, W. O. (2011). Deepwater foundations and pipeline geomechanics. J. Ross Publishing.
4. Aubeny, C. (2017). Geomechanics of marine anchors. CRC Press.

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		10		
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		30		
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

