

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.

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| 1. | 课程名称 Course Title | 海洋地球动力学前沿 Frontiers in Marine Geodynamics |
| 2. | 授课院系 Originating Department | 海洋科学与工程系 |
| 3. | 课程编号 Course Code | OCE313 |
| 4. | 课程学分 Credit Value | 1 |
| 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 | 英文 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) | Jason Phipps Morgan, 海洋科学与工程系 jason@sustech.edu.cn 137 2374 3084 |
| 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) | |

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|---|----------------|-----------------------|------------------------|-------------------------------------|--------------|
| 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 |
| | 16 | 0 | 0 | 0 | 16 |
| 学时数 Credit Hours | | | | | |
| 12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements | NA / 无 | | | | |
| 13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite | NA / 无 | | | | |
| 14. 其它要求修读本课程的学系 Cross-listing Dept. | NA / 无 | | | | |

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

To give people an overview of several frontier areas of research in this field. It is meant to complement standard courses that teach basic principles in more depth.

作为针对现有的海洋科学标准基础课程的有一定深度的补充，本课程将介绍海洋地球动力学研究的若干前沿领域的概况，拓展学生的专业视野。

16. 预达学习成果 Learning Outcomes

Introductory knowledge of ~5-6 frontier areas of marine geodynamics that are not covered yet in standard textbooks.

预计在完成课程之后，学生们能对 5 到 6 个海洋地球动力学的前沿领域有初步的认识和了解。本课程中涉及的这几个前沿领域在现有的通用教材中往往还没有相关内容的描述。

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.)

Unit 1, 2 hours: Bend-Fault Serpentinization: Plate Bending and Unbending

单元 1, 2 课时: 弯折断层蛇纹石化作用: 板块弯折与反弯折

Unit 2, 2 hours: Bend-Fault Serpentinization and Earth's Water and Carbon Cycles

单元 2, 2 课时: 弯折断层蛇纹石化作用与地球的水循环, 碳循环

Unit 3, 2 hours: Non-Volcanic Seismic Tremor: A Surprising Form of Seismic Activity

单元 2, 2 课时: 非火山性质的小型地震: 一种令人惊讶的地震活动的形式

Unit 4, 2 hours: Seismic Tremor and Slow Slip at Subduction Zones

单元 2, 2 课时: 小型地政以及俯冲带的缓慢滑动

Unit 5, 2 hours: The Geodynamics of Mantle Plumes with a Plume-Fed Asthenosphere

单元 2, 2 课时: 地幔涌流以及充满涌流的软流层的地球动力学

Unit 6, 2 hours: The Geochemistry of Mantle Convection with Plumes and a Plume-fed Asthenosphere

单元 2, 2 课时: 涌流以及充满涌流的软流层的地幔对流地球化学

Unit 7, 2 hours: The Ophiolite Record and its implications for the Wilson Cycle

单元 2, 2 课时: 蛇绿岩记载以及其关于威尔森循环的推断

Unit 8, 2 hours: The Evolution of Oceanic and Continental Crust

单元 2, 2 课时: 海洋和大陆地壳的演变

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

Self-written lecture notes and teaching modules for this course.

参考资料:

Geodynamics, 3rd Edition. Donald Turcotte, Gerald Schubert. ISBN: 9780521186230 / 0521186234.

The Solid Earth: An Introduction to Global Geophysics, 2nd Edition. C. M. R. Fowler, 2004. ISBN: 9780521893077 / 0521893070.

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 | 教学过程 | 10 | | |
| 课堂表现 Class Performance | 教学过程 | 10 | | |
| 小测验 Quiz | 期中一次, 期末一次 | 80 | | |
| 课程项目 Projects | | | | |
| 平时作业 | | | | |

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| Assignments | | | | |
| 期中考试 Mid-Term Test | | | | |
| 期末考试 Final Exam | | | | |
| 期末报告 Final Presentation | | | | |
| 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

