

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	自然灾害学 Introduction to Natural Disaster Science
2.	授课院系 Originating Department	地球与空间科学系 Department of Earth and Space Sciences
3.	课程编号 Course Code	ESS208
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	春季, 秋季
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 Instructor(s), Affiliation & Contact (For team teaching, please list all instructors)	韩鹏, 地球与空间科学系 邮箱: hanp@sustech.edu.cn 电话: 0755-88015515 办公室: 创园 9 栋 307 Peng Han, Department of Earth and Space Sciences Email: hanp@sustech.edu.cn Tel: 0755-88015515 Office: Innovation Park #9 307
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)	40

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
	32				32
学时数 Credit Hours					
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	无 NA				
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

通过课堂讲授，让学生了解自然灾害（主要是地震、火山、海啸、滑坡、磁暴等）的基本类型及其成因，认识我国所面临的自然灾害形势，掌握自然灾害防治的基本手段和科学方法。

This is a specialized course for students in Geophysics, or other related areas. Upon completing the course, students should be able to know main natural disasters and the formation mechanisms, the situation of natural hazards in our country, and basic methodologies and techniques for natural disaster prevention.

16. 预达学习成果 Learning Outcomes

学生完成本课程后，将会掌握以下知识：

1. 地震的成因、时空分布特征、及防震减灾的主要方法；
2. 火山的成因、时空分布特征、及减灾方法；
3. 海啸的成因、时空分布特征、及减灾方法；
4. 滑坡的成因、时空分布特征、及治理方法；
5. 磁暴的成因及危害。

Upon completing the course, students will be able to:

1. Mechanism of earthquakes, spatial and temporal distribution characteristics of earthquakes, methodologies and techniques for earthquake disaster prevention and mitigation;
2. Mechanism of volcanoes, spatial and temporal distribution characteristics of volcanoes, methodologies and techniques for volcano disaster prevention and mitigation;
3. Mechanism of tsunamis, spatial and temporal distribution characteristics of tsunamis, methodologies and techniques for tsunami disaster prevention and mitigation;
4. Mechanism of landslides, spatial and temporal distribution characteristics of landslides, methodologies and techniques for landslide disaster prevention and mitigation;
5. Mechanism of geomagnetic storms and the related hazards.

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.)

第一章：课程简介（2 学时）

讲授：自然灾害学课程介绍（2 学时）

第二章：地震灾害（12 学时）

1. 地震的成因、地震波的基本类型、地震的定位及量度（4 学时）

2. 地震的烈度、地震预警、抗震设计（4 学时）

3. 地震的时空分布、地震区划、地震中长期预测（4 学时）

第三章：火山灾害（8 学时）

1. 火山的成因、构造、火山喷发的量度（4 学时）

2. 火山的时空分布特征、火山监测预警（4 学时）

第四章：海啸灾害（4 学时）

1. 海啸的成因及海啸的传播（2 学时）

2. 海啸的时空分布及监测预警（2 学时）

第五章：滑坡灾害（4 学时）

1. 滑坡的成因及机理，滑坡的时空分布（2 学时）

2. 滑坡的监测、预警、及治理（2 学时）

第六章：磁暴的成因及危害（2 学时）

1. 磁暴的成因及危害。

Chapter 1: Introduction (2 hours)

Lecture: Fundamental of natural disaster science (2 hours)

Chapter 2: Earthquakes (12 hours)

1: Mechanisms of earthquakes, seismic waves, earthquake location and magnitude (4 hours)

2: Seismic intensity, earthquake early warning, aseismic design (4 hours)

3: spatial and temporal distribution characteristics of earthquakes, earthquake forecast (4 hours)

Chapter 3: Volcanoes (8 hours)

1: Mechanisms of volcanoes, volcanic structure, volcano size (4 hours)

2: spatial and temporal distribution characteristics of volcanoes, volcano monitoring and early warning (4 hours)

Chapter 4: Tsunami (4 hours)

1: Mechanism of tsunamis, tsunami wave propagation (2 hours)

2: spatial and temporal distribution characteristics of tsunamis, tsunami early warning (2 hours)

Chapter 5: Landslides (4 hours)

- 1: Mechanisms of landslides, spatial and temporal distribution characteristics of landslides (2 hours)
- 2: Landslide monitoring, early warning, and management (2 hours)

Chapter 6: Geomagnetic storms (2 hours)

- 1: Mechanism of geomagnetic storms and the related hazards.

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

- 1. Coch, Nicholas K., 1995, Geohazards, Natural and Human. Prentice Hall;
- 2. An Introduction to Seismology, Earthquakes and Earth Structures, Seth Stein and Michael Wysession, Wiley-Blackwell, 2002/9/1. ISBN-13: 978-0865420786;
- 3. Fundamentals of Physical Volcanology, Liz Parfitt and Lionel Wilson, Wiley-Blackwell, 2008/2/11. ISBN-13: 978-0632054435;
- 4. Landslides: Theory, Practice and Modelling (Advances in Natural and Technological Hazards Research), S.P. Pradhan, V. Vishal, T.N. Singh, Springer, 2018/6/29. ISBN-13: 978-3319773766.

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		20		
期中考试 Mid-Term Test				
期末考试 Final Exam		40		
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

地球与空间科学系本科教学指导委员会