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**	**水资源评价与管理 Water resources assessment and management**
2.	**授课院系 Originating Department**	环境科学与工程学院 School of Environmental Science and Engineering
3.	**课程编号 Course Code**	ESE316
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）**	刘俊国， 环境科学与工程学院，0755-88018012 LIU Junguo，School of Environmental Science and Engineering, Email: liujg@sustech.edu.cn
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	46	2			48

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

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

Students will be expected to acquire a basic understanding of:

(1) Basic concepts for water resources

(2) The hydrological cycle: where does the water come and where does it go?

(3) Water resources assessment: methods and applications

(4) Water resources planning and management

(5) New ideas for water management

学生将通过本课程获得以下知识：

（1）水资源的基本概念

（2）水文循环：水的来源与去向

（3）水资源评价的方法与应用

（4）水资源规划与管理

（5）水资源管理新思路

16. 预达学习成果 Learning Outcomes

Undergraduates who have undertaken the Hydrology and Water Resources specialization will be equipped with:

(1) An in-depth understanding of theories and concepts in water resources

(2) A thorough awareness of natural and human-induced variations of water systems

(3) Good knowledge of the literature and contemporary research questions in water resources

(4) Evaluate and analyse hydrological systems and processes at a wide range of scales in both space and time for the purpose of water resources assessment, planning and management.

预期能够达到的学习成果包括：

（1）加深对水资源的理解

（2）理解自然和人类活动引起的水资源系统变化

（3）了解水资源研究前沿科学问题

（4）学会应用水文知识开展水资源评价、规划与管理

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.)

主要内容框架：

（1）绪论

简要介绍水资源学科定位，介绍水资源评价与管理的重要性，介绍当前水资源评价与管理的国际发展态势。

目的与要求：要求学生掌握水资源学科定位和发展现状，初步认识水资源评价与管理的重要性。

(1) Introduction

This section introduces the main target of water resources discipline, presents the importance of water resources assessment and management, and demonstrates the global trend of water resources research.

Purpose and requirements: Students are required to understand the status of water resources discipline, understand the basic concepts for water resources, and understand the importance of water resources assessment and management.

（2）水文简史

本章介绍水文学的发展历程、基本概念和全球流域水资源问题，讲解水文循环过程及水量平衡方程。

目的与要求：要求学生掌握水文学的发展历程，熟悉水文循环基本过程、主要组成要素及水量平衡方程。

(2) Brief history of hydrology

This section introduces the history of hydrology, basic concepts and water problems in major river basins in the world, and discusses hydrological cycle processes and water balance equations.

Purpose and requirements: Students are required to understand the development history of hydrology，master the hydrological cycle processes and water balance equations.

（3）全球水资源

本章主要讲述全球水资源时空分布特征，介绍水资源分类与计算方法，并分析典型流域与国家的水资源状况。

目的与要求：要求学生掌握全球水资源时空分布特征和水资源计算方法。

(3) Global Water Resources

This chapter introduces the spatial and temporal distribution of water resources at the global scale, clarifies the classification and calculation methods of water resources, and analyzes the water resources of typical river basins and countries.

Purpose and requirements: Students are required to get familiar with the spatial and temporal distribution of water resources at global scale, the calculation methods of water resources, and the differences of water resources among

river basins and countries in the world.

（4）水资源评价

本章讲述水资源评价的概念、意义与评价方法，包括地表水资源、地下水资源、水量与水质评价等。

目的与要求：要求学生掌握水资源评价概念、基本方法及其应用。

(4) Water resources assessment

This chapter deals with the concept, significance and methods of water resources assessment, including surface water resources assessment, groundwater resources assessment, water quantity and quality assessment.

Purpose and requirements: Students are required to master the concepts, methods and applications regarding water resources assessment.

（5）水资源短缺评价

本章重点介绍水资源短缺评价的指标与方法，并说明水资源短缺评价在水资源管理中的重要性。

目的与要求：要求学生了解水资源短缺现状，掌握水资源短缺评价指标与评价方法及其应用。

(5) Water scarcity assessment

This chapter introduces the indicators and methods for water scarcity assessment, and demonstrates the importance of water scarcity assessment in water resources management.

Purpose and requirements: Students need to understand the current situation of water scarcity, and to master the indicators and evaluation methods for water scarcity.

（6）水足迹评价

本章主要介绍水足迹概念的提出与发展历程，水足迹的分类及核算方法，以及水足迹可持续评价。

目的与要求：要求学生掌握水足迹评价的概念与核算方法。

(6) Water footprint assessment

This chapter mainly introduces the concept and development of the water footprint, the classification and accounting methods for water footprint assessment, as well as sustainability assessment of water footprint.

Purpose and requirements: Students need to understand the concepts and accounting methods for water footprint assessment.

（7）水资源规划与管理

本章介绍水资源规划与管理的基本概念、指导思想、水资源规划管理制度与方法、典型应用案例等。

目的与要求：要求学生掌握水资源规划与管理的概念、原则、方法与应用。

(7) Water resources planning and management

This chapter introduces the basic concepts, guiding ideology, methods for water resources planning management systems, and typical applications for water resources planning.

Purpose and requirements: Students are required to master the concepts, principles, methods and applications of

water resources planning and management.

（8）水生态修复

本章讲述生态修复概念及水生态修复的重要性，并介绍水生态修复的主要技术手段及典型案例。

目的与要求：要求学生掌握水生态修复的概念，掌握水生态修复主要方法。

(8) Hydro-ecological restoration

This chapter describes the concepts of ecological restoration, shows the importance of hydro-ecological restoration, and introduces the key methods and typical applications for hydro-ecological restoration.

Purpose and requirements: Students are required to master the concepts of ecological restoration and the main methods for ecological restoration.

（9）课程回顾/辅导

课程知识回顾，疑难点答疑。

(9) Review/ tutorials

Course review，question and answer.

序号 NO.	内容 Content	学时 Hours				汇总 Sub-total
		理论 Theoretic Teaching	实验 Experiment	实践 Exercise	上机操作 Computer Operation	
1	绪论 Introduction	2				2
2	水文简史 Brief history of hydrology	10				10
3	全球水资源 Global water resources	10				10
4	水资源评价 Water resources assessment	4				4
5	水资源短缺评价 Water scarcity assessment	4				4
6	水足迹评价 Water footprint assessment	6				6
7	水资源规划与管理 Water resources planning and management	6				6
8	水文生态修复 Hydro-ecological restoration	4				4
9	课程回顾/辅导 Review/ tutorials	2				2
Total		**48**				**48**

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

1. Dingman S.L., 2014. Physical Hydrology (Third Edition). Waveland Press, Long Grove, Illinois.

2. Joseph Holden, 2013. Water Resources: An Integrated Approach. Routledge, London.

3. Hoekstra et al., 2011. The Water Footprint Assessment Manual: Setting the Global Standard. Earthscan, London.

4. Liu J. and Clewell A., 2017. Management of Ecological Rehabilitation Projects. Science Press, Beijing.

5. Palmer M.A., Liu J., Mattews J.H., Mumba M., D'Odorlco P., 2015. Manage Water in a Green Way. Science. 349 (6248).

6. Liu J., Zang C., Tian S., Liu J., Yang H., Jia S., You L., Liu B., Zhang M., 2013. Water conservancy projects in China: achievements, challenges and way forward. Global Environmental Change 23(3): 633-643.

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		60		
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