

课程大纲

COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	能源与环境 Energy and the Environment
2.	课程性质 Compulsory/Elective	选修 Elective
3.	课程学分/学时 Course Credit/Hours	3/48
4.	授课语言 Teaching Language	中文 Chinese
5.	授课教师 Instructor(s)	沈惠中 Huizhong Shen
6.	先修要求 Pre-requisites	无 None
7.	教学目标 Course Objectives	
	<p>该课程主要讲授能源消耗及其环境影响，包括化石燃料、可再生能源和新能源的开采和利用，污染物排放及其对大气、水、土壤等不同环境介质的影响，能源系统及生命周期评估，节能减排和可持续发展等。通过该课程的学习，学生将掌握能源与环境研究的基础和专业知识，了解能源与环境的最前沿研究方向。学生通过该课程的学习将对能源及其环境影响有完整的认识，对能源与环境研究的未来方向有自己的思考。</p> <p>This course will introduce world energy consumption and its impacts on the environment. Topics include the exploration and consumption of fossil fuel, renewable energy, and new energy; pollutants emissions and their impacts on multiple environmental media such as the atmosphere, water, and soil; energy system and life cycle assessment; energy conservation, emission control, and sustainable development. Through this course, students will comprehend energy consumption and its impact on the environment and come away with a vision of future direction of the research in this field.</p>	
8.	教学方法 Teaching Methods	
	<p>课程将采用专业知识讲授和前沿研究介绍相结合的方式。教学大纲的每一部分将分为两个子部分，第一个子部分讲授理论知识，拟通过该部分学习熟练掌握相关内容的专业背景知识；第二个子部分介绍前沿研究，将选取典型的研究案例介绍，促进科学思维能力的提升，</p> <p>This course will introduce both specialized knowledge of and frontier research on energy and the environment. It consists of 14 sections with each section including two sub-sections. The first sub-section introduces the concepts, background, and some specialized knowledge of the corresponding topic; the second sub-section provides some excellent examples related to the topic.</p>	
9.	教学内容 Course Contents	
	Section 1	能源与环境概论（一） Introduction of energy and the environment (I)
	Section 2	能源与环境概论（二） Introduction of energy and the environment (II)
	Section 3	化石能源与环境（一）：煤炭 Fossil fuel and the environment (I): coal
	Section 4	化石能源与环境（二）：石油和天然气 Fossil fuel and the environment (II): petroleum and natural gas
	Section 5	可再生能源与环境（一）：太阳能、地热能

	Renewable energy and the environment (I): solar energy and geothermal energy
Section 6	可再生能源与环境（二）：风能、水能 Renewable energy and the environment (II): wind energy and hydroenergy
Section 7	可再生能源与环境（三）：生物质能源 Renewable energy and the environment (III): biofuel
Section 8	核能与环境 Nuclear energy and the environment
Section 9	氢能与环境 Hydrogen energy and the environment
Section 10	能源系统分析 Energy system analysis
Section 11	生命周期评估 Life cycle assessment
Section 12	节能减排 Energy conservation and emission control
Section 13	能源与可持续发展 Energy and sustainable development
Section 14	分组汇报和讨论 Final presentation by group
10. 课程考核 Course Assessment	
	请再此注明：①考查/考试；②分数构成。 学生分数将由考勤（20%）、平时作业（50%）、期末汇报决定（30%） Students will be evaluated based on their class participation (20%), homework (50%), and oral presentation (30%).
11. 教材及其它参考资料 Textbook and Supplementary Readings	
	本课程无固定教材。授课教师会上传参考资料至课程网站，学生可以免费获取。 There is no required textbook. Supplementary readings will be freely available and can be downloaded through the course website.