

课程大纲

COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	ESE5032 环境遥感 Environment Remote Sensing
2.	课程性质 Compulsory/Elective	Elective
3.	课程学分/学时 Course Credit/Hours	3/48
4.	授课语言 Teaching Language	中文/英文
5.	授课教师 Instructor(s)	冯炼
6.	先修要求 Pre-requisites	高等数学/Advanced mathematics
7.	教学目标 Course Objectives	
	<p>通过本课程学习，使学生掌握以下内容：了解遥感物理基础、遥感成像机理和影像解译原理；了解遥感技术系统，并掌握遥感图像专题信息提取方法和遥感应用技术，具备应用遥感技术从事资源、环境和地理条件调查和分析的方法与技能；了解并掌握航空照片、多光谱遥感图像、热红外遥感图像、雷达图像和高光谱遥感图像等不同类型遥感图像解译方法，以及运用遥感图像进行环境科学研究方法与技能；了解遥感技术进展和遥感图像计算机智能解译与定量遥感等先进技术在资源调查、环境监测与灾害评估等领域中的应用。</p> <p>Students can realize and command the following learning outcomes by learning the course:</p> <p>After successful completion of this course students are expected to be able to:</p> <ul style="list-style-type: none"> - Understand fundamental physics of remote sensing, principles of remote sensing imaging and image interpretation. - Understand remote sensing technological systems and master information extraction from remote sensing images. - Apply remote sensing technologies on nature resource, environmental and geographical inventory and analytical study. - Understand and master different approaches to interpreting remote sensing images including aerophoto, multispectral image, thermal infrared image, radar image and hyperspectral image - Understand the development of remote sensing technology. <p>- understand the application of intelligent image interpretation and quantitative remote sensing on nature resource, environmental monitoring, and disaster assessment etc.</p>	
8.	教学方法 Teaching Methods	
	<p>教师授课与启发式讨论相结合。通过课堂授课进行知识传授，结合具体问题，启发学生主动思考。结合遥感图像对课程中各抽象的概念、原理等知识点，充分利用多媒体技术，作深入浅出介绍和阐述，帮助学生建立起正确的概念，深入理解教学内容。上课过程中，结合大量遥感分析案例，加深学生对遥感的理解和遥感软件的应用能力，使学生真正具备利用遥感技术进行环境问题分析的能力。</p> <p>The course pays attention to the rule of reciprocity between teaching and studying: topic discussion in class is also the way in our teaching. According to students psychological characteristics, to set up doubt, ask questions r from practical problems. To full use of multimedia technology will help students establish a correct concept of deep understanding of the teaching content. Furthermore, it widens their knowledge, trains their ability to gain knowledge actively and solve problems. It makes the students get a deeper understanding of the theory with case analysis. This course can strengthen the application status of remote sensing technology on resource and ecology survey.</p>	
9.	教学内容 Course Contents	
	Section 1	遥感概述 Overview of remote sensing (2 学时)

Section 2	电磁波谱与地物波谱特征 E Electromagnetic spectrum and feature spectrum characteristics (6 学时)
Section 3	遥感成像和影像增强 Remote sensing image and image enhancement (6 学时)
Section 4	遥感图像分类技术 Remote sensing image classification technology (6 学时)
Section 5	遥感光谱 Remote sensing spectrum (6 学时)
Section 6	遥感图像环境建模 I Remote sensing image environment modeling I (10 学时)
Section 7	遥感图像环境建模 II Remote sensing image environment modeling II (6 学时)
Section 8	定量遥感基础 Quantitative remote sensing basis (6 学时)
10.	课程考核 Course Assessment
	平时成绩 30%+课程设计 40%+期末考试 30% Average Grade & Attendance 30%+ Project 40%+ Final term examination 30%
11.	教材及其它参考资料 Textbook and Supplementary Readings
	<ol style="list-style-type: none"> 1. Jensen, John R. (2006) Remote Sensing of the Environment: an Earth Resources Perspective, Hall and Prentice, New Jersey, 2nd ed. 2. Jones, H. G and Vaughan, R. A. (2010) Remote Sensing of Vegetation, OUP, Oxford. 3. Lillesand, T., Kiefer, R. and Chipman, J. (2004) Remote Sensing and Image Interpretation. John Wiley and Sons, NY, 5th ed.