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**	网络地理信息系统 GIS and Web Mapping
2.	**授课院系 Originating Department**	社会科学中心 Center for Social Sciences
3.	**课程编号 Course Code**	SS138
4.	**课程学分 Credit Value**	2
5.	**课程类别 Course Type**	通识选修课程 General Education (GE) Elective Courses
6.	**授课学期 Semester**	2021-2022 学年第三学期（夏季）2021-2022 Summer Semester
7.	**授课语言 Teaching Language**	中英双语 English and Chinese
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）**	朱阿兴 教授 Professor A-Xing ZHU 南方科技大学社会科学中心 Center for Social Sciences 威斯康星大学麦迪逊分校 University of Wisconsin-Madison. USA email:azhu@wisc.edu
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）**	

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	32				32

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	无 NA
14. 其它要求修读本课程的学系 Cross-listing Dept.	无 NA

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

Specifically, this course aims to help the students:

- Understand the nature of geographic information (what it is, why it is unique, how valuable it is).地理信息的特征（是什么？为什么特殊？它的价值？）
- Gain an understanding of the basic concepts/techniques for capturing, representing, analyzing, and presenting geographic information. 理解地理信息的采集、表达、分析和呈现等方面的基本概念和理论
- Gain basic skills in a story telling webGIS.掌握如何利用网络地理信息系统呈现空间故事的技术

16. 预达学习成果 Learning Outcomes

Upon completion of this course, students are expected to:

- Understand basic concepts and principles in GIS; 理解地理信息系统的基本概念和原理
- Develop analytical ability in using GIS;发展利用地理信息系统进行分析的能力
- Gain experience in applying these concepts in story telling.获得利用地理信息系统技术呈现空间故事的经验

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.)

Module 1: Introduction to the nature of geographic information 课程导入与地理信息的特征 (4-credit hours)

- Self-introduction 学生自我介绍
- Course introduction: the syllabus 课程设置
- Requirements for the class 课程要求
- The nature of geographic information 地理信息的特征 (3-credit hours)
  - Uniqueness of geographic information 地理信息的特殊性
  - Elements of the geographic information 地理信息的组成部分

Module 2: Geographic information capture and representation 地理信息获取与表达 (8-credit hours)

- Geographical information capture 地理信息的获取(2-credit hours)
  - Measurement systems for spatial elements 地理信息空间属性的度量系统
  - Measurement systems for aspatial elements 地理信息非空间属性的度量系统
  - Expression of time element 时间维的表达方式

- Spatial database designed and development 空间数据库的设计和构建(6-credit hours)
  - Relational database design 关系数据库的设计
  - Spatial database design 空间数据库的设计
  - Raster data models 栅格模型
  - Spatial data models 矢量模型

Module 3: Geographic information management and processing 地理信息管理与处理 (8-credit hours)

- Geographic information management 地理信息的管理(4-credit hours)
  - Direct file access approach 直接文档管理
  - Database management systems 数据库管理系统
  - Structure Query Language (SQL) 结构化查询语言

- Spatial processing 空间分析(4-credit hours)
  - Spatial query and search 空间查询与搜索
  - Spatial interpolation 空间内插
  - Overlay analysis 空间叠加

Module 4: Geographic information presentation 地理信息的呈现 (4-credit hours)

- Parsing of geographic information for presentation 地理信息的转输 (2-credit hours)
  - Generalization of geographic information for visual presentation 地理信息的概括
  - Visual design (colours and symbols) 视觉设计（颜色与符号）

- Integration of web and GIS technologies 网络技术与地理信息技术的融合 (2-credit hours)
  - Communication agreement methods 通信协议与方法
  - Process of the spatial data exchanges 空间信息的交互过程

Module 5: Practical application of GIS（wechat-based webGIS）地理信息系统的应用（微信小程序下网络地理信息系统）(8-credit hours)

- Conceptual overview of the GIS application 微信地理信息系统开发的宏观规划
  - Objective of the webGIS application 微信网络地理信息系统应用实例的目的
  - Conceptual design and virtual implementation 该系统的概念设计与实现

- Development and implementation of the Wechat Web GIS 微信小程序下网络地理信息系统的开发与实现
  - Coding strategies (pseudo-coding) 代码开发的策略（假代码方法）
  - Actual coding and implementation 真代码开发与实现

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

The course instructor will provide supplementary readings before each session of the lectures 课程所需的材料会在课前或课中以讲义的方式发给学生。

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%		Those who miss more than five classes (10 hours of lectures) will fail
课堂表现				

Class Performance				
小测验 Quiz				
课程项目 Projects		50%		Wechat Mini Web GIS development and implementation, as a summary assessment on student's understanding of key concepts and techniques introduced in this class.
平时作业 Assignments		40%		Assignments on Modules 1-4
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