



School of Geography
Nanjing Normal University



Cartography: an Online Open Course

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Outline

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- 03** Course Structure
- 04** Teaching and Learning System
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PART ONE

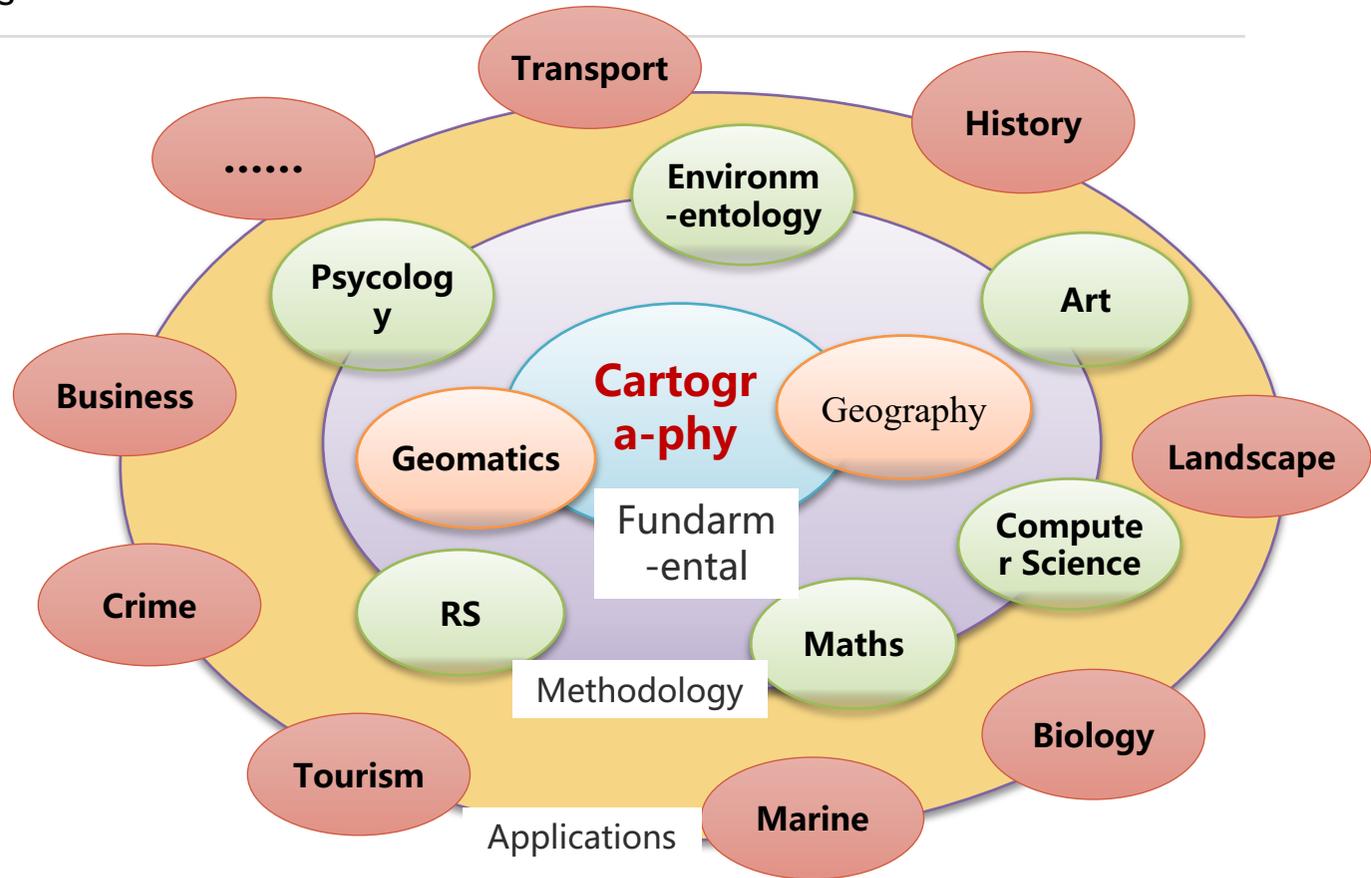
Background



Background

Challenges | Opportunities

Geographic Information is obviously instrumental for mankind to understand the status of the well being of our planet, but also to achieve social inclusion, economic growth, and environmental sustainability. In this context **maps are the interface between this reality and humans**. They communicate understanding and support decision making, and expand human abilities to act, think, plan, understand space.





Background

Challenges | Opportunities

- Rapidly developing technology, increasing methodology and theoretical knowledge of cartography
- Core curriculum for all disciplines of geography at NNU
- Great development of GIS education in China

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PART TWO

Course Introduction

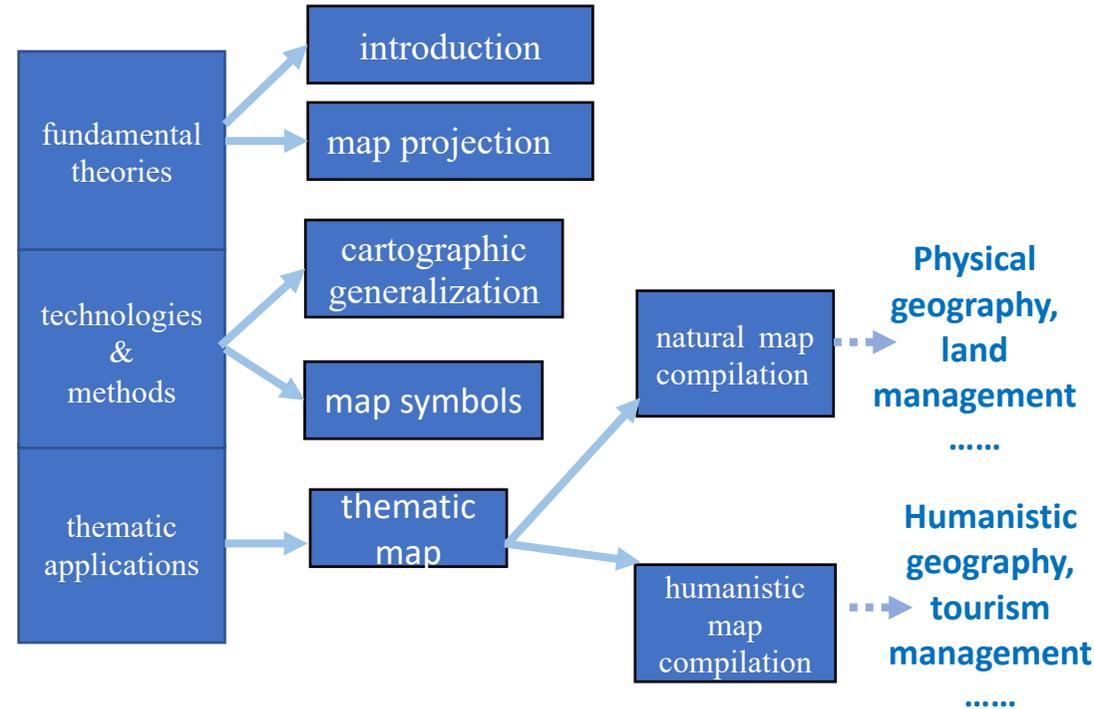


Course Introduction

Description | Learning Outcomes

Considering the different needs of the students from different disciplines, The course team put forward the idea of:

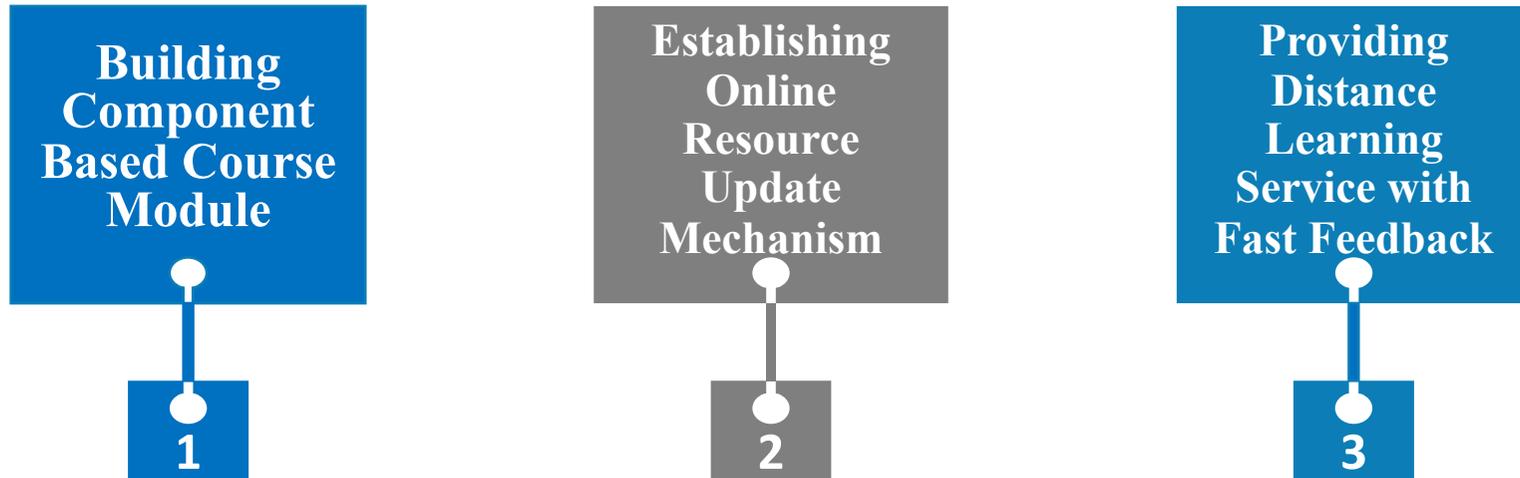
- ◆ Based on the fundamental theories
- ◆ Combined with contemporary information technologies
- ◆ For various applications,
- ◆ Component-based modules.



Course Introduction

Description | Learning Outcomes

In view of the characteristics of **multidisciplinary, rapid updating and wide applications** of cartography course, we have promoted the content and method innovation of teaching in the cloud.





Course Introduction

Description | Learning Outcomes

- ◆ Gain knowledges with the map projection, generalization, map symbolization, color theory, thematic map design.
- ◆ Be able to abstract geographical phenomena, spatial cognition and thinking
- ◆ Be skilled to collect, processing and generalization of spatial data
- ◆ Enable to use commercial software and open source tools to produce maps.

Course Introduction



课程详情

课程评价(111)

现代信息技术的应用极大地丰富了地图学的概念和功能, 需要我们以全新的视角去了解和学习《地图学》这门科学。结合相关的课程教材和实验教材, 通过较系统的课程学习, 可以培养地理现象抽象、空间认知与思维、地图表达的能力。

—— 课程团队

课程概述

《地图学》课程是地理信息系统专业本科生的专业基础课程, 也是测绘、地理教育、土地资源规划与管理、旅游资源规划与管理等相关专业的必修课程。由于《地图学》课程具有多学科集成、渗透性强、应用范围广、理论与技术并重等特点, 自然形成了地图学课程在整个课程体系不可替代与不可忽视的地位。地图学课程作为地理信息系统专业课程体系的“中坚力量”, 以自然地理、测量学课程为基础, 通过地图学课程, 培养学生地理现象抽象、空间认知与思维、地图表达的能力, 为专业后续课程的学习打下坚实的基础。地图学精品课程的建设, 对整个学科课程体系的发展, 具有十分重要的意义。

授课目标

本课程总学时为54学时, 主要内容包括: 地图及地图学的基本概念、地图投影、地图数据源、地图符号与地图设计、地图综合、普通地图、专题地图、电子地图的理论与方法, 并掌握常用地图制图软件以及电子地图软件平台的操作, 为后续其它地理信息系统专业课程的学习打下基础。



5 位授课老师



Prof.
Yi Long



Prof.
Jie Shen



Prof.
Mingguang Wu



Prof.
Changqing Zhu



Lecturer
Xiaoyan Liu

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PART THREE

Course Structure



Course Structure

Overview



Lesson Content

The course consists of 17 lessons, with required or optional reading assignments, practice exercises, and self-assessment quizzes. The combination of these teaching and learning systems is approximately 120-150 hours of student learning effort, and the course is intended to provide 4 credits (equivalent to 6 ECTS). The course materials are designed to be used either for online self-study or in a traditional classroom.



Course Structure

Overview | Lesson Content

Component Modules	Topics	Data			
Concept and basis of Map and cartography	Concept, content, characteristic, subdivision and sheet designation of map	Week 1	Theory and methods of map generalization	Concept, method and influencing factors of map generalization	Week 8
	Definition, history and evolution of cartography	Week 2		Generalization of features on general map and thematic map Lab: method of generalizing operation	Week 9
	Lab: subdivision and sheet designation of map		Representation of content and compilation of general maps	Content and task of general map, representation of physical geography features	Week 10
Theory and application of map projection	Concept, distortion formula and classification of map projection	Week 3		Representation of social economic factors and auxiliary elements	Week 11
	Common map projections, projection transformation and its application	Week 4		Lab: compilation of general map	
	Lab: Observation and application of map projection distortion based on GIS software			Representation of content and compilation of thematic maps	Characteristic, content, and representation of thematic map
Map data source and its collection and modeling	Map data source and its types, processing and transformation	Week 5	compilation of physical map		Week 13
	Lab: map data collection and database building		compilation of human map		Week 14
Methodologies and representation of map symbols, map design methods	Theory and design method of map symbol	Week 6	Lab: compilation of thematic map		
	Lab: design and making of map symbols		Theory and methods of digital map	Overview of digital map, Data model and database	Week 15
	Map graphics, color design and lettering representation	Week 7		Visualization of digital map	Week 16
	Lab: map design			Multimedia digital map	Week 17
				Lab: design and making of digital map	

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PART FOUR

Teaching and Learning System



Teaching and Learning System

Material Update | Feedback and Interaction

Tracking new theories and frontier technologies such as digital map, electronic map and geographical spatio-temporal big data. Three ways of content supplement and update are initially established, including course resources updating, lecture resources releasing and discussion board releasing.

地图学
南京师范大学 龙毅等

公告 课程 考核 讨论

第一章地图的基本知识

- 第1讲 地图特征、定义与基本内容
- 第1章- 第1讲地图特征、定义与基本内容
- 第1讲 地图特征、定义与基本内容
- 讨论1.1: 你认为地图是什么?
- 第2讲 地图分类与成图过程
- 第2讲 地图分类与成图过程
- 第3讲 地图分幅编号
- 第3讲 地图分幅编号 (1)
- 第3讲 地图分幅编号 (2)

Curriculum
resources update

第二章地图学基础
第3讲地图学的发展趋势

- 第3讲地图学的发展趋势 (1)
- 第3讲地图学的发展趋势 (2)
- 第3讲地图学的发展趋势 (3)
- 第3讲地图学的发展趋势 (1)
- 第3讲地图学的发展趋势 (2)
- 第3讲地图学的发展趋势 (3)

专题讲座资源: 时空大数据的社会化应用及智能处理

Lecture resources
release

微信 4G 13:29 44%

主题详情 老师

老师参与 课外学习参考

补充“第二章第三讲: 地图学的发展趋势”课外辅助材料: 李德仁院士的报告资料, 点击下方链接获取。
链接: <https://share.weiyun.com/5T1ekek> (密码: 8FzO)

龙毅 老师 3分钟前 顶1 回复1

最新回复
冠莹 37秒前

谢谢老师! 希望能多分享一些参考材料。

Discussion board
release



Teaching and Learning System

Material Update

| **Feedback and Interaction**

- To Set up social networking such as 'QQ Learning Group' and 'WeChat Group' for frequent contact among students and with the teachers.
- To help students solve problems with remote control and live video
- To establish an **answer group system** to provide assistances from the course team.

The image displays a composite of digital communication interfaces. On the left, a screenshot of a MOOC discussion forum shows a thread titled '想知道横轴和斜...' with a reply from '龙毅 老师'. The forum interface includes navigation tabs like '综合讨论区', '老师答疑区', and '课堂交流区'. On the right, a WeChat group chat titled '《地图学》课程教学联盟(240)' is shown. The chat contains messages from members like '柳林山东科技大学' and '周阔-南通大学', discussing map standards and the role of maps in education. A prominent green message bubble reads: '是的，地图越来越受到技术的推动，功能性和工具性特点突出，这是信息化时代发展的大趋势。当然另一方面，地图也是表达我们对地理世界的认识，心像地图和地图认知、地图感受、地图艺术也需要地图学领域关注。' At the bottom, a '地图学MOOC答疑群' (Map Science MOOC Q&A Group) information card is visible, detailing the group's purpose and providing a link to the course materials.

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PART FIVE

Course Activities and Achievements



Course Activities and Achievements

Activities at NNU

| Off campus

| Achievements

Since 2017, 7 semesters courses have been opened with approximately 200 students attending online and offline courses each semester in the school of geography of the Nanjing Normal University.

The teaching team blend regular class and online learning during the course phase.

(1) Knowledge Preparation and Content Review

Students are required to preview relevant knowledge online in advance for difficult problems such as map generalization. After class, content review and assignments can be carried out to consolidate the knowledge;



Course Activities and Achievements

Activities at NNU

| Off campus

| Achievements

(2) Exploration and Practice of New Teaching Mode

The course combines theory with experiment, with many contents but insufficient class time. Combining online and offline course, the teaching in classroom mainly focuses on important concepts and problems, adopts new teaching methods such as flipped classroom, theme discussion and work competition to facilitate students ' interest;

(3) Lab Practice Teaching Activities

Online learning provide sufficient time for lab exercises. Through the self-study of online basic content, with lab exercises, to improve students ' map producing ability.

(4) Online and Offline Multi-level Evaluation System

Adding new assessment contents such as online quizzes, and the research work of students are taken into account as well as exam results to encourage students ' innovation work.



Course Activities and Achievements

Activities at NNU

Off campus

Achievements

Statistics from the iCourse website show that the total number of students has amount to **19,530** since 2017.

The students are from **112 universities**, among which **81** are provincially-administrated colleges and university.

Semesters	Number of students
Fall 2017	1,876
Fall 2018	2,753
Spring 2019	1,604
Fall 2019	1,564
Spring 2020	8,669
Fall 2020	3,064
Total	19,530

The course continues opening in fall 2021...

Course Activities and Achievements

Activities at NNU

Off campus

Achievements

《地图学》在线课程学术性评价意见

本校委托地图学与地理信息系统（GIS）领域的学术专家（名单附后）对我校龙毅教授主持的《地图学》在线课程进行了学术审查。经审查，该课程不存在科学性、规范性、学术不端等问题，不存在侵犯知识产权问题。在线课程的内容、文档和相关材料不具有保密性，可以公开。

《地图学》是地理学、测绘学等多学科专业的基础性课程。课程立足地图学基础理论，结合现代地图制图与地理信息系统技术，面向多学科专业教学需求，统一设计，组件化实施，强化了概念与理论、技术与方法、自然与人文专题地图应用的板块设计与扩展，内容编排丰富，课程结构清晰，概念-理论-方法明确，学习资料齐全，提供了有效的在线资源和交流反馈，可以满足国家相关学科对现代地图学专业学习与创新人才培养的需要。



学术评议专家

姓名	职务与学术兼职	签名
李满春	南京大学地理信息系统与遥感研究所所长，国家教学名师，教育部长江学者特聘教授，《走进地理学》国家精品在线开放课程、《GIS设计》国家精品课程主持人	
汤国安	教育部地理科学类专业教学指导委员会副主任，国家教学名师，《地理信息系统》国家精品课程、国家精品资源共享课程，《地理信息与人类生活》国家精品视频公开课主持人	
张新长	国际欧亚科学院院士，广东省“特支计划”教学名师，《数字城市》国家精品视频公开课和《地理信息系统概论》国家精品在线开放课程主持人	
杜清运	武汉大学资源与环境科学学院院长，国际地图制图协会（ICA）理论地图学委员会主席，中国地理信息产业协会理事及地图工作委员会主任	
朱阿兴	国家“千人计划”人才，海外地理信息科学协会理事，国际地理信息科学华人协会主席	



Course Activities and Achievements

Activities at NNU

Off campus

Achievements

First-class online open course at national level





Course Activities and Achievements

Activities at NNU



Off campus



Achievements

Keep Open and free access for all learners.

- ◆ Make more flexible teaching schedules.
- ◆ Keep updating learning materials.
- ◆ Organize learning/training activities nationally for the students and teachers

The background features a blurred view of a building with a sign that reads '苏州大学' (Suzhou University) in gold characters. In the foreground, there are green maple leaves with clusters of small red berries.

Thanks for your attention

<https://www.icourse163.org/course/NJNU-1001753075?from=searchPage>