地理信息科学专业培养方案

专业名称与代码：地理信息科学（070504）

专业培养目标：

培养具有坚定的政治立场、崇高的道德修养、严谨的科学作风、全面的文化素质，掌握地理信息科学专业基本知识、基础理论、工作方法、基本技能，具有扎实的计算机科学、测绘科学、地理学和地球空间信息科学等复合知识结构，能够在国土、资源、环境、城建、交通、公安及人口等领域从事与地理信息科学有关的科学研究、项目设计、技术开发、工程管理和信息服务等工作的地理信息科学高级专门人才。注重培养学生的科学研究能力、实际动手能力、软件开发能力和综合应用的能力。

专业毕业要求：

本专业学生在牢固掌握数理基础和外语基础上，系统学习计算机科学、测绘科学、地图学、地理学、空间信息科学和遥感技术的基础理论和知识，系统学习空间数据采集、处理、管理、分析及可视化表达的方法，学会地理信息系统软件和专业应用软件设计方法，接受系统开发技能和应用方法的实际训练，具备较强的系统开发、维护和管理能力以及用地理信息系统从事各种科学研究、工程开发和项目应用的能力。毕业生应获得以下几方面的知识和能力：

1．具有较高的思想觉悟、崇高的道德修养、全面的文化素质。社会责任感强，能够自觉遵守职业道德；

2．掌握数学、物理学、计算机科学的基础理论和基础知识。具有从事地理信息建模、分析及应用的能力；

3．掌握地图学、测量学、数字测图、遥感原理、遥感图像处理和导航定位等空间信息获取和提取技术，能够利用这些技术开展地理信息工程建设工作；

4．掌握地理信息科学的基本理论、基本知识和基本技能，以及地理信息系统技术开发的基本原理和方法，了解地理信息科学发展前沿关键技术。具有从事计算机、地理信息系统及应用软件的分析、设计、研发及维护的能力；

5．掌握空间数据处理、集成、建模、分析、统计及可视化的原理与方法。具有熟练运用 GIS、RS、GPS 对国土、资源、环境等进行评价、监测和决策的能力；

6．掌握资料查询和文献检索的基本方法，受到一定的科学研究训练，具有撰写论文，参与学术交流的能力；

7．熟练掌握一门外语，能够查阅外文文献，具有一定的撰写外文论文能力，可与国外同行进行较顺利的交流。

毕业要求实现及途径：

序号	毕 业 要 求	实现途径（教学过程）
1	具有较高的思想觉悟、崇高的道德修养、全面的文化素质。社会责任感强，能够自觉遵守职业道德。	①**课程教学**：毛泽东思想和中国特色社会主义理论体系概论、马克思主义基本原理、思想道德修养与法律基础、军事理论、中国近现代史纲要、体育Ⅰ－Ⅳ、大学生就业指导、社会科学类、自然科学类、人文艺术类、经济管理类等。 ②**课外学习**：开展"校园文化艺术节"、"社团活动"、"网络文化"等主题教育活动；开展运动会、一二九长跑等活动；开展新生入学教育和毕业生系列教育主题活动；开展大学生"暑假社会实践"活动；加强学务指导老师、辅导员队伍建设；加强学生党支部建设；加强学生干部队伍建设，提高对学生的教育引导。
2	掌握数学、物理学、计算机科学的基础理论和基础知识；具有从事地理信息建模、分析及应用的能力。	①**课程学习**：高等数学A、**离散**数学、线性代数A、概率论与数理统计A、大学物理C、数据库概论A、计算机高级语言程序设计（C++）、面向对象程序设计B、数据结构、计算机图形学等课程。 ②**课外学习**：参与挑战杯、机器人足球、软件设计大赛、数学竞赛、数学建模等活动，鼓励学生参加计算机等级考试和软件工程师考试。
3	掌握地图学、测量学、数字测图、遥感原理、遥感图像处理和导航定位等空间信息获取和提取技术，能够利用这些技术开展地理信息工程建设工作。	①**课程教学**：数字测量学、地图学、遥感原理与应用、遥感图像处理、GNSS原理及其应用B、数字测量学实习、地图学实习、地理信息系统实习A、3S综合应用实习、地理信息系统开发实习、地理信息系统生产工程实践等课程。 ②**课外学习**：3S论坛、邀请校内外专家来校做学术讲座，产学研、测绘技能大赛、科技活动等。
4	掌握地理信息科学的基本理论、基本知识和基本技能，以及地理信息系统技术开发的基本原理和方法，了解地理信息科学发展前沿关键技术。具有从事计算机、地理信息系统及应用软	①**课堂教学**：信息导论、人文与经济地理学、自然地理与地质学、地图学、数字测量学、空间数据库、遥感原理与应用、遥感图像处理、地理信息系统原理、地理信息系统设计与开发、地理建模方法、空间统计与分析、地理信息系统实习A、3S综合应用实习、地理信息系统开发实习等课程。 ②**课外学习**：3S论坛、邀请校内外专家来校做学术

序号	毕 业 要 求	实现途径（教学过程）
	件的分析、设计、研发及维护的能力。	讲座，产学研、测绘技能大赛、科技活动、大学生创新创业训练计划等。
5	掌握空间数据处理、集成、建模、分析、统计及可视化的原理与方法。具有熟练运用 GIS、RS、GPS 对国土、资源、环境等进行评价、监测和决策的能力。	①课堂教学：信息导论、地图学、数字测量学、空间数据库、遥感原理与应用、遥感图像处理、地理信息系统原理、地理信息系统设计与开发、地理建模方法、空间统计与分析、数字国土概论、数字测量学实习、地图学实习、地理信息系统实习 A、3S 综合应用实习、地理信息系统开发实习、地理信息系统生产工程实践等课程。 ②课外学习：3S 论坛、邀请校内外专家来校做学术讲座，产学研、测绘技能大赛、科技活动、大学生创新创业训练计划等。
6	掌握计算机等现代信息资料查询和文献检索的基本方法，受到一定的科学研究训练，具有撰写论文，参与学术交流的能力。	①课程教学：开设科技写作、文献信息检索等、计算机高级语言程序设计(C++)、面向对象程序设计 B、数据库概论 A、数据结构、毕业设计等课程。 ②课外学习：鼓励学生参加计算机等级考试和软件工程师考试，鼓励学生参加老师科技报告的撰写。
7	熟练掌握一门外语，能够查阅外文文献，具有一定的撰写外文论文能力，可与国外同行进行较顺利的交流。	①课程教学：开设大学英语 I-IV，第二外语选修、专业英语阅读、通识选修课、专业选修课、自主学习、毕业设计等。 ②课外学习：大学生英语竞赛、演讲比赛、中西文化月、英语等级考试，选派学生和教师到国外参加国际会议，邀请国外专家来校讲座。

主干学科：地理学；测绘科学与技术；计算机科学与技术。

核心课程：信息导论、离散数学 B、计算机高级语言程序设计（C++）、面向对象程序设计 B、数据结构、数据库概论 A、人文与经济地理学、自然地理与地质学、数字测量学、地图学、计算机图形学 A、空间数据库、遥感原理与应用、遥感图像处理、地理信息系统原理、地理信息系统设计与开发、GNSS 原理及其应用 B、空间统计与分析、地理建模方法、数字高程模型。

主要实践性教学环节：

1．计算机高级语言课程设计 C   1.5 周   1.5 学分   第一学期；
2．面向对象编程课程设计   1.5 周   1.5 学分   第二学期；
3．自然地理与地质学实习   2 周   2 学分   第二学期；
4．数据结构课程设计   2 周   2 学分   第三学期；

5．数字测量学实习　　　　　　　　1 周　　1 学分　　　第三学期；
6．数据库课程设计 A　　　　　　　 2 周　　 2 学分　　　第四学期；
7．地图学实习　　　　　　　　　　 2 周　　2 学分　　　第四学期；
8．地理信息系统实习 A　　　　　　 2 周　　2 学分　　　第五学期；
9．3S 综合应用实习　　　　　　　　 1.5 周　1.5 学分　　第六学期；
10．地理信息系统开发实习　　　　　1.5 周　1.5 学分　　第六学期；
11．毕业设计　　　　　　　　　　　16 周　 16 学分　　第八学期。

修业年限： 四年。

授予学位： 理学学士。

相近专业： 地理科学、地理空间信息工程、遥感科学与技术、计算机科学与技术。

Educational Program of Geographic Information Science

Specialty and Code:

Geographic Information Science (070504)

Education Objective:

The Geographic Information Science (GIScience) graduates are required to have firm political stance, noble morality, rigorous scientific standards and comprehensive cultural quality. They should master the basic knowledge, theories, methods and skills of GIS. They should be equipped with an interdisciplinary knowledge structure that combines computer science, surveying, geography and geospatial information science, and conduct GIS-related scientific research, project design, technical development, engineering management and information services in a variety of domains such as lands, resources, environment, planning, transportation, public security and demographics. To achieve such a goal, our educational program focuses on the training of students' capabilities in research, practice, software development and comprehensive application.

Graduation Requirements:

Besides the fundamental knowledge and skills of mathematics and foreign languages, the students majoring in GIScience should systematically study the principles and theories of computer science, surveying, mapping, geography, geospatial information and remote sensing, including spatial data collection, processing, management, analysis and visualization. They should have strong abilities of system development, maintenance, and management, and applying GIS in a variety of of academic research, engineering development and project applications. Graduates should acquire the following knowledge and abilities:

1．To have high political consciousness, lofty morality, comprehensive cultural quality, strong sense of social responsibility and good professional ethics;

2．To grasp the basic principles, theories, knowledge and skills of mathematics, physics, computer science, and have the ability to conduct GIS modeling, analysis and applications;

3．To master the geospatial information obtaining and extraction techniques including cartography, surveying, remote sensing, positioning, and navigation, and be able to utilize these techniques for GIS engineering development;

4．To grasp the basic theories, knowledge and skills of GIS, and the basic principles and methods of GIS engineering development; to understand the key and frontier technologies of GIS, and have abilities of analyzing, designing, developing and

maintaining computer systems and GIS;

5．To grasp the principles and methods of geospatial data processing, integration, modeling, analysis, statistics and visualization, and have the proficient abilities of applying the GIS , RS, and GPS in lands, resources and environments for evaluation, monitoring and decision making;

6．To master the basic methods of retrieving GIS-related data and literature, conducting scientific research, writing scientific papers and participating in academic events;

7．To proficiently master a foreign language to comprehend foreign literature and communicate with foreign counterparts.

Graduation requirements and ways to achieve：

ID	Graduation requirements	ways to achieve（Teaching Process）
1	To have high political consciousness, lofty morality, comprehensive cultural quality, strong sense of social responsibility and good professional ethics	① **Classroom teaching:** Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics, Principles of Marxism, Cultivation of Ethics and Fundamentals of Law, Military Theory, The Essentials of Modern Chinese History, Physical Education Ⅰ-Ⅳ, College Students Career Guidance, Social sciences, Natural Sciences, Arts and Humanities, Economics and Management, etc. ② **Extracurricular learning：** To develop the educational activities, such as Campus Culture and Art Festival, Association Activities, Internet Culture, etc.; to carry out the physical activities, such as sport game, December 9th running, etc.; to conduct the specialized education for the freshmen and graduate; to promote the college students' summer social practice; to strengthen the instructors, counselors student party branches, student cadres' professional construction; to improve the guidance to students.
2	To grasp the basic principle, theory, knowledge and skill of	① **Classroom teaching:** Advanced Mathematics A, Discrete Mathematics B,

ID	Graduation requirements	ways to achieve（Teaching Process）
	mathematics, physics, computer science, and have the ability to engage the GIS modeling, analysis and application	Linear Algebra A, Probability and Statics A, College Physics C, Introduction to Database A, High-level programming language(C++), Object-Oriented Programming B, Data Structure, Computer Graphics A, etc. ② **Extracurricular learning：** To participate the "Challenge Cup", "Soccer", "Software Design Contest", "Math Competition", "Mathematical Modeling" and other activities. To encourage students to complete the examinations such as "Computer Grade", "Software engineer".
3…..	To master the geospatial information obtaining and extraction techniques through the cartography, surveying, remote sensing and navigation knowledge, and be able to use these techniques for GIS engineering development	① **Classroom teaching：** Digital Surveying, Cartography, Principles and Applications of Remote Sensing, Remote Sensing Image Processing, GNSS Principles and Applications B, Practice of Digital Surveying, Practice of Cartography, Practice of Geographic Information Systems A, Practice of 3S Integration, Practice of Geographic information Systems Development, Practice of Geographic Information Systems Production Engineering, etc. ② **Extracurricular learning：** To organize the 3S forum, especially invite the famous experts to the school for the academic lectures. In addition, to set up the Production-Study-Research integrated activity, surveying and mapping skill competition and some other technological activities, etc.
4	To grasp the basic theory, knowledge and skill of GIS, and the basic principle and method of GIS engineering development, understand the	① **Classroom teaching：** Introduction to Information, Human and Economy Geography, Physical Geography and Geology, Cartography, Digital Surveying, Spatial Database, Principles and Applications of Remote Sensing,

ID	Graduation requirements	ways to achieve（Teaching Process）
	key and frontier technology of GIS, and have abilities of analyzing, designing, developing and maintaining the computer and GIS	Remote Sensing Image Processing, Principles of Geographic Information Systems, Design and Development of Geographic Information Systems, Geographic modeling methods, Spatial Statistics and analysis, Practice of Geographic Information Systems A, Practice of 3S Integration, Practice of Geographic information Systems Development, etc. ② **Extracurricular learning**： To organize the 3S forum, especially invite the famous experts to the school for the academic lectures. In addition, to set up the Production-Study-Research integrated activity, surveying and mapping skill competition, technological activities and college students innovation and entrepreneurship Training Program, etc.
5	To grasp the principle and method of geospatial data processing, integration, modeling, analysis, statistic and visualization, and have the proficient abilities of applying the GIS, RS, and GPS to land, resources and environment domains for evaluation, monitoring and decision making functions	① **Classroom teaching**： Introduction to Information, Cartography, Digital Surveying, Spatial Database, Principles and Applications of Remote Sensing, Remote Sensing Image Processing, Principles of Geographic Information Systems, Design and Development of Geographic Information Systems, Spatial Statistics and analysis, Geographic modeling methods, Introduction to digital land, Practice of Digital Surveying, Practice of Cartography, Practice of Geographic Information Systems, Practice of 3S Integration, Practice of Geographic information Systems Development, Practice of Geographic Information Systems Production Engineering, etc. ② **Extracurricular learning**： To organize the 3S forum, especially invite the famous experts to the school for the academic

ID	Graduation requirements	ways to achieve（Teaching Process）
		lectures. In addition, to set up the Production-Study-Research integrated activity, surveying and mapping skill competition, technological activities and college students innovation and entrepreneurship Training Program, etc.
6	To master the basic method of retrieving GIS-related data and literature, and the ability to participate the academic exchange	① **Classroom teaching：** Technical Writing, Documentation and Information Retrieving, High-level programming language（C++）, Object-Oriented Programming B, Introduction to Database, Data Structure, Graduation Design, etc. ② **Extracurricular learning：** To encourage the student to participate the computer grade and software engineer examinations, and to participate the science and technology report writing.
7	To proficiently master a foreign language, and be able to access the foreign literature and communicate with foreign counterparts	① **Classroom teaching：** College English Ⅰ-Ⅳ, Second Foreign Language, Professional English Reading, General Knowledge Electives Courses, Specialized Elective Courses, Independent Study and Graduation Design, etc. ② **Extracurricular learning：** To set up the college English contest, speech contest, Chinese-Western culture month, CET activities. To select the satisfied students and teachers go abroad for the international conferences, and invite the foreign experts for the professional lectures.

Major Disciplines:

Major Subjects: Geography, Science and Technology of Surveying and Mapping, Computer Science and Technology.

Main Courses:

Main Courses: Introduction to Information, Discrete Mathematics B, High-level programming language（C++）, Object-Oriented Programming B, Data Structure, Introduction to Database A, Human and Economy Geography, Physical Geography and Geology, Digital Surveying, Cartography, Computer Graphics A, Spatial Database, Principles and Applications of Remote Sensing, Remote Sensing Image Processing, Principles of Geographic Information Systems, Design and Development of Geographic Information Systems, GNSS Principles and Applications B, Spatial Statistics and analysis，Geographic modeling methods， Digital Terrain Model.

Practical Work:

ID	Name	Weeks	Credits	Semester
1	Projects of High-level programming language（C++）	1.5	1.5	1
2	Projects of Object-Oriented Programming	1.5	1.5	2
3	Practice of Physical Geography and Geology	2	2	2
4	Projects of Data structure A	2	2	3
5	Practice of Digital Surveying	1	1	3
6	Projects of Database	2	2	4
7	Practice of Cartography	2	2	4
8	Practice of Geographic Information Systems A	2	2	5
9	Practice of 3S Integration	1.5	1.5	6
10	Practice of Geographic information Systems Development	1.5	1.5	6
11	Graduation Design	16	16	8

Duration: Four years.

Degree Granted: Bachelor of Science

Related Specialties: Geography, Cartography, Computer Application Technology.

地理信息科学专业课程教学计划表
Course Descriptions of Geographic Information Science

课程类别 Classi-fication		课程编号 Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite courses	学期学分分配 Semester Credits							
						讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
通识教育课 Liberal Education Courses	必修 Compulsory	11706200	马克思主义基本原理 Principles of Marxism	3	48	48				3						
		11706500	毛泽东思想与中国特色社会主义理论体系概论 Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics	4	64	64						4				
		11711800	中国近现代史纲要 The Essentials of Modern Chinese History	2	32	32					2					
		120002*0	思想道德修养与法律基础 Cultivation of Ethics and Fundamentals of Law	3	48	48			1.5	1.5						
		113076*0	体育 Physical Education	4	144	144			1	1	1	1				
		109116*0	大学英语（ABC） College English（ABC）	12	192	192			3	3	3	3				
		21919400	计算机高级语言程序设计(C++) High-level programming language (C++)	3.5	56	36	20		3.5							
		21114500	信息导论 Introduction to Information	1	16	16			1							
		14300100	军事理论 Military Theory	2	32	32			2							
	选修 Elective		总计 12 学分，含创新创业选修课学分，跨学科选修课不低于 6 学分	12	192											
	小计 Sum			**46.5**	**824**	**612**	**20**		**12**	**8.5**	**6**	**8**				
Disciplinary Fundamental Courses	学科基础课	212127*1	高等数学 A Advanced Mathematics A	11.5	184	184			5	6.5						
		21212801	线性代数 A Linear Algebra A	3.5	56	56			3.5							
		21121000	人文与经济地理学 Human and Economy Geography	2.5	40	40			2.5							
		212130*3	大学物理 C College Physics C	6	96	96				3.5	2.5					
		21213202	物理实验 B Physics Experiments B	2	32		32			2						

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	学时 Hrs	讲课 Lec.	实验 Lab.	先修课程 Prerequisite courses	一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
	21906800	面向对象程序设计 B Object-Oriented Programming B	3	48	28	20			3						
	20107300	自然地理与地质学 Physical Geography and Geology	2.5	40	40				2.5						
	21216502	离散数学 B Discrete Mathematics B	3.5	56	56					3.5					
	21908701	数据库概论 A Introduction to Database A	3.5	56	44	12				3.5					
	21915900	数据结构 A Data Structure A	4	64	48	16				4					
	21213501	概率论与数理统计 A Probability and Statics A	3.5	56	56						3.5				
小计 Sum			45.5	728	648	80		11	17.5	13.5	3.5				
Main Specialty Courses 专业主干课	21123100	数字测量学 Digital Surveying	3.5	56	36	20				3.5					
	21921301	计算机图形学 A Computer Graphics A	3.5	56	40	16					3.5				
	21117800	地图学（排在学期初） Cartography	3.5	56	36	20					3.5				
	21114800	地理信息系统原理（排在学期末） Principles of Geographic Information Systems	3	48	28	20					3				
	21106200	空间数据库 Spatial Database	2	32	20	12						2			
	21117700	遥感原理与应用 Principles and Applications of Remote Sensing	2.5	40	40							2.5			
	21126100	地理信息系统设计与开发 Design and Development of Geographic Information Systems	3	48	28	20						3			
	21123602	GNSS 原理及其应用 B GNSS Principles and Applications B	2.5	40	32	8						2.5			
	21122700	空间统计与分析 Spatial Statistics and analysis	2.5	40	24	16						2.5			
	21108100	数字地面模型 Digital Terrain Model	2	32	24	8							2		
	21123000	地理建模方法 Geographic modeling methods	2.5	40	24	16							2.5		
	21110600	遥感图像处理 Remote Sensing Image Processing	2.5	40	28	12							2.5		
小计 Sum			33	528	360	168				3.5	10	12.5	7		

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
专业选修课 Specialty Elective Courses		具体见专业选修课列表 See Details in Professional Elective List	20	320											
合计 Sub-total			145	2400	1620	268		23	26	23	21.5	12.5	7		
	44300200	军事训练 Military Training	2	2 周				2							
	41919500	计算机高级语言课程设计（C++） Projects of High-level programming language (C++)	1.5	1.5 周				1.5							
	40115300	自然地理与地质学实习 Practice of Physical Geography and Geology	2	2 周					2						
	41920200	面向对象程序设计课程设计 Projects of Object-Oriented Programming	1.5	1.5 周					1.5						
	41123900	数字测量学实习 Practice of Digital Surveying	1	1 周						1					
	41920901	数据结构课程设计 A Projects of Data structure A	2	2 周						2					
	41921200	数据库课程设计 Projects of Database	2	2 周							2				
	41125400	地图学实习 Practice of Cartography	2	2 周							2				
	41123801	地理信息系统实习 A（排在学期初） Practice of Geographic Information Systems A	2	2 周								2			
	41125500	3S 综合实习 Practice of 3S Integration	2.5	2.5 周									2.5		
	41125600	地理信息系统开发实习 Practice of Geographic information Systems Development	1.5	1.5 周									1.5		
	41122300	毕业设计（论文） Graduation Design (Thesis)	16	16 周											16
小计 Sum			36	36 周				3.5	3.5	3	4	2	4		16
创新创业学习学分 Freedom study	ZZ35S	社会调查 Social Investigation	2												
		其他(学科竞赛、发明创造、科研报告) Others (Contest, Invention, Innovation and Research Presentation)	3												
小计 Sum			5												

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
总计 Total			186	2400+36周	1620	268		26.5	29.5	26	25.5	14.5	11		16
Specialty Elective Courses 可开出专业选修课列表		地理信息科学理论与方法 Theories and Methods of Geographic Information Science													
	21121600	Java 和.net 软件开发 Java & .net Software Development	3.5	56	40	16						3.5			
	21128600	网络地理信息系统 Web GIS	2.5	40	28	12						2.5			
	21128400	三维地理信息系统 3D GIS	2	32	24	8							2		
	21122800	移动地理信息系统 Mobile GIS	2.5	40	28	12							2.5		
	21101800	城市网络模型与算法 Urban Network Modeling and Algorithms	2	32	20	12							2		
	21120700	交通地理信息系统 Transportation Geographic Information Systems	2	32	16	16							2		
	21125100	地理空间信息服务 Geospatial Information Service	2	32	20	12							2		
	21126200	城市规划原理 Principles of City Planning	2.5	40	40							2.5			
		空间信息与数字技术 Spatial Information and Digital Technology													
	20206800	数字国土概论 Introduction to digital land	2	32	20	12						2			
	21122900	空间信息可视化 Spatial Information Visualization	2	32	20	12							2		
	21128700	数字地球与智慧城市 Digital Earth and Smart City	2	32	20	12							2		
	21124500	测绘管理与法律法规 Surveying Management and Laws	1.5	24	24									1.5	
	21107200	软件项目管理 Software Project Management	2.5	40	40									2.5	
	41125700	地理信息系统生产工程实践 Practice of Geographic Information Systems Production Engineering	6	6周										6	
		专业应用拓展平台 Professional Application Extension Platform													
	21119900	高性能计算 High Performance Computation	2.5	40	24	16						2.5			
	21125800	社交媒体与大数据 Social Media and Big Data	2	32	24	8							2		
	21917500	物联网技术与应用 Technologies and Applications of Internet of Things	2.5	40	32	8						2.5			

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		先修课程 Prerequisite courses	学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
	21125900	地学建模原理与方法 Principles and Methods of Geological Modeling	2	32	20	12								2	
	21112800	智能终端软件开发 Intelligent Terminal Software Development	3	48	40	8								3	
	21126000	专业英语阅读 Specialized English Reading	1.5	24	24									1.5	

注： 通识教育选修课学分和创新创业自主学习学分未列入具体学期。

地理信息科学专业课程分类统计

	通识教育课程 Liberal Education Courses		学科基础课 Disciplinary Fundamental Courses	专业主干课 Main Specialty Courses	专业选修课 Specialty Elective Courses	实践环节 Practical Work	创新创业自主学习 Freedom Study	学时总计 Total Hour	学分总计 Total Credits
	必修	选修							
学时/学分	632/34.5	192/12	728/45.5	528/33	320/20	36 周/36	5	2400+36 周	186
学分所占比例	25.00%		24.46%	17.74%	10.75%	19.35%	2.69%		100%