地球物理与空间信息学院

- 地质与地球物理(实验班)专业培养方案
- 勘查技术与工程(应用地球物理方向)专业培养方案
- 地球信息科学与技术专业培养方案

地质与地球物理(实验班)专业培养方案

专业名称与代码:地球物理学 070801

专业培养目标:具有扎实的数学、物理和地球科学基础;掌握地球物理的基础理论与方法技术;初步具备在多时空尺度上理解、模拟和解释地球圈层的结构、物质与能量交换及其动力学特征的能力,为人类开发利用资源、认识自然灾害及地质环境评价等服务;培养能从事相关领域的科学研究、教学、应用与管理等方面的复合型高素质专门人才。

专业毕业要求

1.掌握较扎实的数学、物理学、地质学、信息科学、地球物理学等方面的基本理论、基本知识和基本技能,具有较强的外语读写能力。

2.系统地掌握地震学、重力学、地磁学、地电学等地球物理学基本理论及地球物理数据的处理与解释方法,具备从事地质与地球物理学研究和应用的能力。

3.了解地球物理学的发展动态及应用前景。

4.掌握运用文献检索等技术获取专业知识的基本方法。

5.具有撰写专业论文、参与学术交流的能力。

毕业要求及实现途径

序号	毕业要求	实现途径(教学过程)
1	掌握数学、物理学、地质学、信息科学、地球物理学等方面的基本理论、基本知识和基本技能	①课堂教学:马克思主义基本原理、毛泽东思想与中国特色社会主义体系概论、中国近现代史纲要、思想道德修养与法律基础、体育、大学英语、计算机高级语言、军事理论、地球物理学导论、高等数学 A、地质学基础、测量学 A、矿物岩石学、线性代数与矢量分析、大学物理 B、物理实验 A、概率论与数理统计 B、构造地质学 B、复变函数与积分变换、数学物理方程、场论 ②课外学习:测量教学实习 A、地质教学实习(三峡)、课外科技实践、军事训练、高级语言课程设计教学
2	系统地掌握地震学、重力学、地磁学、地电学等地球物理学基本理论及地球物理数据的处理与解释方法,具备从事地质与地球物理学研究和应用的能力	①课堂教学:数字信号处理、连续介质力学、地震波理论、重力学、地磁学、地电学、地震学、区域大地构造学、地球内部物理学概论、空间探测导论、地震资料处理与解释、地球动力学、地球物理观测与实验 ②课外学习:地球物理学专业教学实习(北戴河)、课外科技实践
3	了解地球物理学的发展动态及应用前景	①课堂教学:岩石物理学、地震地体构造、地震波正演模拟、空间大地测量学、重磁资料处理与解释、地球物理学专业英语、地磁场与地球空间、空间物理概论、空间探测资料处理与解释、石油地质学、地震观测与数据库、电磁正演模拟、卫星重磁数据库及应用 ②课外学习:课外科技实践、实践教学课程

序号	毕业要求	实现途径(教学过程)
4	掌握运用文献检索等技术获取专业知识的基本方法	课外科技实践、专业选修课程、自主学习
5	具有撰写专业论文、参与学术交流的能力	课外科技实践、专业选修课程、自主学习、毕业实习和毕业设计

主干学科:地球物理学、数学、物理学、地质学、信息科学。

核心课程:大地构造学、地震波理论、地球内部物理学、连续介质力学、地震学、重力学、地磁学、地电学、地球物理观测与实验、地球动力学、地震资料处理与解释、地球物理资料综合解释等。

主要专业实验:地球物理观测技术、实验地球物理。

主要实践性教学环节:测量实习、地质认识实习、课外科技实践、地球物理学专业教学实习(北戴河)、生产实习和毕业设计等。

修业年限:四年。

授予学位:理学学士。

相近专业:勘查技术与工程、地质学、大地测量学、空间物理学。

地质与地球物理(实验班)专业培养目标及定位
基本素质
专业理论能力
专业实践能力
学术交流能力
学术创新能力
理论教学
实践教学
创新创业
理论课教学
系列讲座
基础实践
专业实践
科技活动
第二课堂
通识教育课
学科基础课
专业主干课
专业选修课
“杰青地空行”
地空论坛
名家论坛
计算机上机
测量教学实习
地质教学实习
地球物理教学实习
地球物理专业课实验与实习
毕业实习、设计
学科竞赛
发明创造
科研报告
社会调查
跨学科选修课

Program for Geology and Geophysics(Experimental Class)

Specialty and Code: Geophysics 070801

Education Objective: The students will be equipped with a solid foundation of mathematics, physics and the general knowledge about Earth. They are expected to master the fundamental theory and technology of Geophysics, as well as understand, simulate and interpret the structure of the earth sphere, the exchange of material and energy in the interior of the solid earth, and the characteristics of geodynamics in multi-spatial and temporal scale. These capabilities can be applied to resources development and exploitation, the understanding of natural disasters, and the evaluation of geological environment. Graduates will be able to engage in scientific research, education, application, consultancy and management of sustainable development in related fields.

Graduation Requirements

1. To master the basic theory, knowledge and technology of mathematics, physics, geology, information science, and geophysics.

2. A solid basis in mastering of fundamental theories of geophysics, such as Gravity, Geomagnetism, Geoelectronics, and Seismology, as well as the processing and interpretation of geophysical data, the capability to engage in both theoretical research and application in the area of geology and geophysics.

3. To grasp the developing trend as well as the application prospects of geophysics.

4. To know the basic method and acquire professional knowledge such as literature searching.

5. To be capable of writing professional papers and engaging in academic communications.

Graduation Requirements and Ways to Achieve

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
1	To master the basic theory, knowledge and technology of mathematics, physics, geology, information science, and geophysics	①Classroom Teaching: Principles of Marxism, Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics, The Essentials of Modern Chinese History, Morality Education and Fundamentals of Law, Physical Education, College English, Computer Advanced Language, Military Theory, Introduction to Geophysics, Advanced Mathematics A, Physical Geology, Surveying A, Mineralogy and Lithology, Linear Algebra, College Physics B, Physics Experiments A, Probability and Statistics B, Structural Geology B, Complex Function and Integral Transform, Mathematical Physics, Field Theory ②Out-of-class Learning: Surveying Practice A, Geological Field Training (the Three Gorges), Extracurricular Science and Technology Practice, Military Training, Computer Advanced Language

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
2	A solid basis in mastering of fundamental theories of geophysics, such as Gravity, Geomagnetism, Geoelectronics, and Seismology, as well as the processing and interpretation of geophysical data, the capability to engage in both theoretical research and application in the area of geology and geophysics	①Classroom Teaching: Digital Signal Processing, Continuum Mechanics, Seismic Wave Theory, Gravity, Geomagnetism, Geoelectronics, Seismology, Regional Tectonics, Introduction to physics of the Earth's Interior, Introduction to Space Exploration, Seismic Data Processing and Interpretation, Geodynamics, Geophysical Measurement and Experiments ② Out-of-class Learning: Geophysical Major Teaching Practice(Beidaihe), Extracurricular Science and Technology Practice
3	To grasp the developing trend as well as the application prospects of geophysics	① Classroom Teaching: Rock Physics, Seismotectonic, Seismic Forward Modeling, Space Geodesy, Processing and Interpretation of Gravity and Magnetic Data, Specialized English of Geophysics, Geomagnetic Field and Geospace, Introduction to Space Physics, Space Exploration Data Processing and Interpretation, Oil and Gas Geology, Seismic Observation and Database, Electromagnetic Forward Modeling, Satellite Gravity and Magnetic Database and Applications ②Out-of-class Learning: Contest, Invention, Extracurricular Science and Technology Practice, Practice Teaching Courses
4	To know the basic method of acquire professional knowledge such as literature searching	Extracurricular Science and Technology Practice, Specialty Elective Courses, Autonomous Learning
5	To be capable of writing professional papers and engaging in academic communications	Extracurricular Science and Technology Practice, Specialty Elective Courses, Autonomous Learning, Practice for Graduation, Bachelor Thesis

Major Disciplines: Geophysics, Mathematics, Physics, Geology, and Information Science.

Main Courses: Tectonics, Seismic Wave Theory, The Physics of the Earth's Interior, Continuum Mechanics, Seismology, Gravity, Geomagnetism, Geoelectronics, Geophysical Measurement and Experiments, Geodynamics, Seismic Data Processing and Interpretation, Integrated Interpretation of Geophysical Data.

Lab Experiments: Observational Techniques in Geophysics, Experimental Geophysics.

Practical Work: Survey Practice, Geological Field Training, Extracurricular Scientific and Technological Practice Activities, Geophysical Major Teaching Practice (Beidaihe), Graduation Internship and Graduation Thesis.

Duration: four years.

Degree Granted: Bachelor of Science.

Related Specialties: Exploration Technology and Engineering, Geology, Geodesy, Space Physics.

地质与地球物理(实验班)专业课程教学计划表

Course Descriptions of Geology and Geophysics(Experimental Class)

课程类别 Course Classification		课程编号 Course 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 Morality Education 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 College English	12	192	192			3	3	3	3				
		11918902	C 语言程序设计 B C Language Programming B	2.5	40	28	12				2.5					
		20612000	地球物理学导论 Introduction to Geophysics	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。“形势与政策”课程作为限选课,由马克思主义学院实施		12	192											
		小计 **Sum**		**45.5**	**808**	**604**	**12**		**8.5**	**8.5**	**8.5**	**8**	**0**	**0**	**0**	**0**
学科基础课 Disciplinary Fundamental Courses		212127 * 1	高等数学 A Advanced Mathematics A	11.5	184	184			5	6.5						
		20115000	地质学基础 Physical Geology	4.5	72	58	14		4.5							
		21120801	测量学 A Surveying A	2.5	40	30	10		2.5							
		20113100	矿物岩石学 A Mineralogy and Lithology A	3	48	48				3						
		21208000	线性代数与矢量分析 Linear Algebra	3	48	48				3						

课程类别 Course Classification	课程编号 Course 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
学科基础课 Disciplinary Fundamental Courses	212130*2	大学物理 B University Physics B	7	112	112				3.5	3.5					
	212132*1	物理实验 A Physics Experiments A	3.5	56		56			2	1.5					
	21213502	概率论与数理统计 B Probability and Mathematics Statistics B	2.5	40	40					2.5					
	20104002	构造地质学 B Structural geology B	3	48	34	14	地质学基础			3					
	21201901	复变函数与积分变换 A Complex Function and Integral Transform A	3.5	56	56		高等数学 A			3.5					
	21206400	数学物理方程 Mathematical Physics	3	48	48		复变函数				3				
	21200700	场论 Field Theory	3.5	56	56		大学物理 B 数理方程					3.5			
	小计 **Sum**		**50.5**	**808**	**714**	**94**		**12**	**18**	**14**	**3**	**3.5**	**0**	**0**	**0**
专业主干课 Main Specialty Courses	20711002	数字信号处理 B Digital Signal Processing B	3	48	40	8	复变函数与积分变换				3				
	20608200	连续介质力学 Continuum Mechanics	3	48	48		大学物理 B				3				
	20608300	地震波理论 Seismic Wave Theory	2.5	40	40		高等数学 A					2.5			
	20614200	重力学 Gravity	3	48	46	2	大学物理 B					3			
	20608500	地磁学 Geomagnetism	2.5	40	40		场论					2.5			
	20600900	地电学 Geoelectronics	2.5	40	38	2	数学物理					2.5			
	20602800	地震学 Seismology	4	64	56	8	方程						4		
	20608600	地球物理观测与实验 Geophysical Measurement and Experiments	2.5	40	16	24	重力学 地磁学 地电学 地震学						2.5		
	20105400	区域大地构造学 Regional Tectonics	2	32	32		构造地质学						2		
	20608700	地球内部物理学概论 Introduction to Physics of the Earth's Interior	2.5	40	40		地球物理学导论				2.5				

课程类别 Course Classification	课程编号 Course 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
专业主干课 Main Specialty Courses	20604600	空间探测导论 Introduction to Space Exploration	2	32	32							2			
	20608800	地震资料处理与解释 Seismic Data Processing and Interpretation	2.5	40	32	8	地震波理论 地震学							2.5	
	20608900	地球动力学 Geodynamics	3	48	48		连续介质力学						3		
	小计 **Sum**		**35**	**560**	**508**	**52**		**0**	**0**	**0**	**8.5**	**12.5**	**11.5**	**2.5**	**0**
专业选修课 Specialty Elective Courses		具体见专业选修课列表(至少修 13 学分)	13	208											
合计 **Sub-total**			**144**	**2384**	**1838**	**146**		**20.5**	**26.5**	**22.5**	**19.5**	**16**	**11.5**	**2.5**	**0**
实践环节 Practical Work	44300200	军事训练 Military Training	2	2 周				2							
	41919002	C 语言课程设计 B Course Design for C Language B	1.5	1.5 周			计算机高级语言			1.5					
	40614300	地震波理论模拟实习 Seismic Modeling Practice on Computer	1	1 周			地震波理论					1			
	40614400	地震观测实习 Seismic Observation	2	2 周			地震学						2		
	40614500	重磁观测实习 Gravity and Magnetic Observation	2	2 周			重力学 磁学						2		
	41120901	测量教学实习 A Surveying Practice A	1	1 周			测量学 A	1							
	40614600	电磁观测实习 Electromagnetic Observation	2	2 周			地电学					2			
	40614700	空间探测教学实习 Space Exploration Observation and Practice	1	1 周			空间探测导论						1		
	40115701	地质教学实习(秭归) Geological Field Training (the Three Gorges)	4	4 周			构造地质学 矿物岩石学					4			
	40614800	地球物理学专业教学实习(北戴河) Geophysical Major Teaching Practice (Beidaihe)	5	5 周			重、磁、电、震专业主干课						5		

课程类别 Course Classification	课程编号 Course 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
实践环节 Practical Work	40613800	毕业实习 Practice for Graduation	8	8周											8
	40613900	毕业设计 Bachelor Thesis	8	8周											8
	小计 **Sum**		**37.5**	**37.5** 周				**3**	**0**	**1.5**	**0**	**7**	**10**	**0**	**16**
创新创业自主学习 Autonomous Learning	ZZ35000S	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**												
总计 **Total**			**186.5**	**2384 + 37.5** 周	**1838**	**146**		**23.5**	**26.5**	**24**	**19.5**	**23**	**21.5**	**2.5**	**16**
可开出专业选修课列表 Specialty Elective Courses	20606100	岩石物理学 Rock Physics	2	32	24	8				2					
	20616200	地震地体构造 Seismotectonic	1.5	24	16	8								1.5	
	20616300	地震波正演模拟 Seismic Forward Modeling	2	32	32									2	
	20616400	空间大地测量学 Space Geodesy	2	32	24	8					2				
	20609000	重磁资料处理与解释 Processing and Interpretation of Gravity and Magnetic Data	2	32	24	8							2		
	20609300	地球物理专业英语 Specialized English of Geophysics	2	32	32									2	
	20616500	地磁场与地球空间 Geomagnetic Field and Geospace	1.5	24	24					1.5					
	20616600	空间物理概论 Introduction to Space Physics	2	32	32						1.5				
	20616700	空间探测资料处理与解释 Space Exploration Data Processing and Interpretation	1.5	24	24								2		
	20214804	石油及天然气地质学 Oil and Gas Geology	2.5	40	40								2.5		

课程类别 Course Classification	课程编号 Course 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
可开出专业选修课列表 Specialty Elective Courses	20616800	地震观测与数据库 Seismic Observation and Database	2	32	24	8							2		
	20616900	电磁正演模拟 Electromagnetic Forward Modeling	1.5	24	24								1.5		
	20617000	卫星重磁数据库及应用 Satellite Gravity and Magnetic Database and Applications	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。

地质与地球物理(实验班)专业课程分类统计

Course Category Statistics of Geology and Geophysics(Experimental Class)

课程学分 / 统计	通识教育课 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 Autonomous Learning	学时总计 Total Hours	学分总计 Total Credits
	必修 Compulsory	选修 Selective							
学时/学分 Hrs/Crs	616/33.5	192/12	808/50.5	560/35	208/13	37.5 周/37.5	5	2384＋37.5 周	186.5
学分所占比例 Proportion of Credits	24.40%		27.08%	18.77%	6.97%	20.10%	2.68%		100%

勘查技术与工程(勘查地球物理方向)专业培养方案

专业名称与代码:勘查技术与工程(勘查地球物理方向) 081402

专业培养目标:本专业培养具有扎实的数学、物理基础和较系统的地球科学基础;掌握勘探地球物理的基础理论与方法技术;能运用物理学、数学与地球科学的理论、方法和现代高科技手段从事与地球内部结构探索、资源勘查与开发利用、地质灾害预测和防治,及从事水利、电力、交通等重大工程基础勘察、环境污染监测及环境保护等方面的工作;能从事相关专业领域的教学、科学研究、应用与管理等方面的复合型高素质专门人才。

专业毕业要求

1.掌握数学、物理学、地质学、计算机与信息科学等方面的基本理论、基本知识和基本技能,具有扎实而宽广的专业基础知识,具有较强的外语读写能力。

2.系统掌握勘查地球物理学的基本理论与方法原理,了解各种地球物理探测技术的特点,掌握多种常用勘查地球物理方法野外观测与数据采集及数据处理和解释方法的基本技能,具备从事能源及矿产资源勘察、工程基础勘察、地质灾害的预测与防治、环境监测与保护等领域工作的能力,具备从事相关领域科学研究的能力。

3.了解各种地球物理勘查技术的最新发展动态与应用前景。

4.掌握运用文献检索等技术获取专业知识的基本方法。

5.具有撰写专业论文、参与学术交流的能力。

毕业要求及实现途径

序号	毕业要求	实现途径(教学过程)
1	系统掌握数学、物理学、地质学、计算机与信息科学及勘查地球物理学等方面的基本理论、基本知识和基本技能	①课堂教学:马克思主义原理、毛泽东思想与中国特色社会主义理论体系概论、中国近现代史纲要、大学生思想道德修养与法律基础、体育、大学英语、计算机高级语言、军事理论、勘查地球物理学导论、高等数学 A、地质学基础、测量学 A、矿物岩石学、线性代数与矢量分析、大学物理 B、物理实验 A、概率论与数理统计 B、构造地质学 B、复变函数与积分变换、数学物理方程、场论、数值分析 ②课外学习:测量教学实习 A、地质教学实习(三峡)、课外科技实践、军事训练、计算机高级语言课程设计
2	系统地掌握地震勘探、重力勘探、磁法勘探、电磁法勘探及地球物理测井等勘查地球物理的基本理论及野外数据采集、数据处理与资料解释的基本方法,具备从事地球物理学勘查技术的应用与研究的能力	①课堂教学:数字信号处理、弹性波理论基础、重力勘探、磁法勘探、电(磁)法勘探、地震勘探、电(磁)法资料处理与解释、地震资料采集与处理、地震勘探资料解释、地球物理测井、重磁资料处理与解释 ②课外学习:地球物理勘探原理实验、地球物理教学实习(北戴河)A、课外科技实践

序号	毕业要求	实现途径(教学过程)
3	了解勘查地球物理学的发展动态及应用前景	①课堂教学:Matlab 语言及应用、岩石物理学、工程地震勘探、地震沉积相解释、海洋地球物理概论、能源地震勘探新方法技术、重磁勘探新方法技术、地球物理反演概论、大地电磁测深、瞬变电磁法、探地雷达方法原理及应用、管线探测与高密度电法原理、地面核磁共振方法与应用、计算地球物理、现代地球物理仪器及应用、矿床学 B、石油及天然气地质学 D、工程地质学基础、海洋地质学 ②课外学习:课外科技实践、实践教学课程
4	掌握运用文献检索等技术获取专业知识的基本方法	①课堂教学:地球物理科技论文写作、专业选修课程 ②课外学习:课外科技实践、自主学习
5	具有撰写专业论文、参与学术交流的能力	课外科技实践、专业选修课程、自主学习、生产实习和毕业设计

主干学科:勘查地球物理学、数学、物理学、地质学、信息科学。

专业核心课程:数字信号处理、弹性波理论基础、重力勘探、磁法勘探、电(磁)法勘探、地震勘探、电(磁)法资料处理与解释、地震资料采集与处理、地震勘探资料解释、地球物理测井、重磁资料处理与解释。

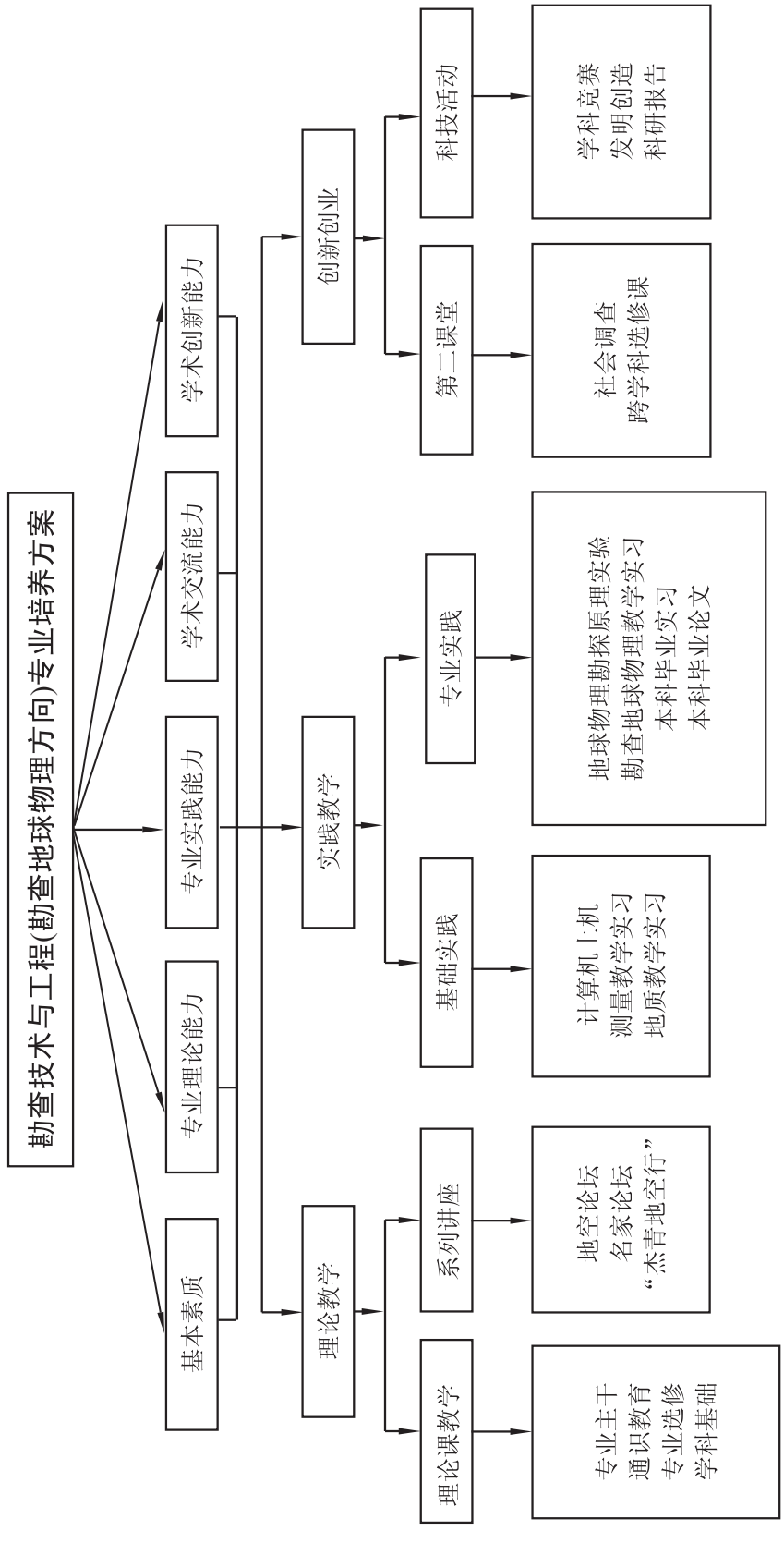
主要专业实验:地球物理勘探实验。

主要实践性教学环节:测量实习、地质认识实习、课外科技实践、勘查地球物理教学实习(北戴河)A、生产实习和毕业设计等。

修业年限:四年。

授予学位:工学学士。

相近专业:地球物理学、地质学。


勘查技术与工程(勘查地球物理方向)专业培养方案
基本素质
专业理论能力
专业实践能力
学术交流能力
学术创新能力
理论教学
实践教学
创新创业
理论课教学
系列讲座
基础实践
专业实践
第二课堂
科技活动
专业主干
通识教育
专业选修
学科基础
地空论坛
名家论坛
“杰青地空行”
计算机上机
测量教学实习
地质教学实习
地球物理勘探原理实验
勘查地球物理教学实习
本科毕业实习
本科毕业论文
社会调查
跨学科选修课
学科竞赛
发明创造
科研报告

Program for Exploration Technology & Engineering (Exploration Geophysics)

Specialty and Code: Exploration Technology & Engineering(Exploration Geophysics) 081402

Educational Objective: The students enrolled in the program will be equipped with solid foundations of mathematics, physics and geosciences, and they are expected to master the basic theories and techniques of exploration geophysics. They are expected to be capable of applying the theories and methods of mathematics, physics and geosciences, combining with modern advanced science and technology to study the earth's interior structure, to prospect and exploit the resources, to forecast and prevent the geological disasters, to survey and explore the key engineering projects including the water conservancy, electric power and transportation, and to supervise and prevent the environmental contaminations. Graduates should possess sustainable development potentials and be fitted for being engaged in scientific research, education, application, consultancy and management fields.

Graduation Requirements

1. To master the basic theories, knowledge and techniques of mathematics, physics, geology, computer and information sciences, to have a solid and wide major foundations, and to be capable of reading, writing and communicating using one foreign language.

2. To have a systematic command of fundamental theories and techniques of exploration geophysics, to know well about the characteristics of different geophysical detecting techniques, to master the basic skills of field observation and data collection, processing and interpretation of geophysical exploration techniques, to possess the capability of being engaged in those fields such as mineral and resources exploration, engineering projects prospecting, geological disasters forecasting and precaution, and environmental supervision and protection, and to have the capability of scientific research in related fields.

3. To know well about the developing trends as well as the application prospects of different geophysical exploration techniques.

4. Required to master the methods of retrieving literature to acquire professional knowledge.

5. To be capable of writing scientific papers and participating in academic communications.

Graduation Requirements and Ways to Achieve

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
1	Have a good command of the basic theory, knowledge and techniques of mathematics, physics, geology, computer and information sciences, and exploration geophysics	①Classroom Teaching: Basic Principles of Marxism, Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics, The Essentials of Modern Chinese History, Morality Education and Fundamentals of Law, Physical Education, College English, Computer Advanced Language, Military Theory, Introduction of Exploration Geophysics, Advanced Mathematics A, Foundation of Geology, Surveying A, Mineralogy and Lithology, Linear Algebra and Vector Analysis, College Physics B, Physics Experiments B, Probability and Statistics B, Structural Geology B, Complex Function and Integral Transform, Equations of Mathematical Physics, Potential Field Theory, Numerical Analysis ②Out-of-class Learning: Surveying Practice A, Geology Teaching Practice (the Three Gorges), Extracurricular Science & Technology Practice, Militarily Train, Programming for Advanced Computer Language

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
2	Have a systematic command of fundamental theories and techniques of exploration geophysics, to know well about the characteristics of various geophysical detecting techniques, to master the basic skills of field observation and data collection, processing and interpretation for those common used geophysical exploration techniques including the seismic exploration, gravity exploration, magnetic exploration, electromagnetic exploration; possess the capability of being engaged in the application and research of exploration geophysics	①Classroom Teaching: Digital Signal Processing, Foundation of Elastic Wave Theory, Gravity Exploration, Magnetic Exploration, Electromagnetic Exploration, Seismic Exploration, Electromagnetic Data Processing and Interpretation, Seismic Data Acquisition and Processing, Seismic Data Interpretation, Geophysical Logging, Gravity and Magnetic Data Processing and Interpretation ②Out-of-class Learning: Experiments for Exploration Geophysics Principles, Exploration Geophysics Teaching Practice (Beidaihe) A, Extracurricular Science & Technology Practice
3	Know well about the developing trends as well as the application prospects of various geophysical exploration techniques	①Classroom Teaching: MATLAB Programming and Application, Rock Physics, Engineering Seismic Prospecting, Seismic Sedimentary Facies Interpretation, Introduction to Marine Geophysics, New Method and Technology of Energy Resources Seismic Exploration, New Method and Technology of Gravity & Magnetic Exploration, Introduction to Geophysical Inversion, Magnetotelluric Sounding, Transient Electromagnetic Method, Ground Penetrating Radar Principles & Applications, Pipeline Detection & High Density Resistivity Method Principles, Surface NMR Method and Application, Computational Geophysics, Modern Geophysical Instruments and Applications, Mineral Deposit Geology B, Geology of Oil and Gas D, Foundation of Engineering Geology, Marine Geology ②Out-of-class Learning: Extracurricular Science & Technology Practice, Practice Teaching Course
4	Master the way of literature retrieving to acquire professional knowledge	①Classroom Teaching: Technical Writing of Geophysical, Major Elective Courses ②Out-of-class Learning: Extracurricular Science & Technology Practice, Independent Learning
5	Be capable of writing scientific papers and participating in academic communications	Extracurricular Science & Technology Practice, Major Elective Courses, Independent Learning, Major Practice for Graduation, Bachelor Thesis

Major Disciplines: Exploration Geophysics, Mathematics, Physics, Geology, and Information Science.

Main Courses: Digital Signal Processing, Foundation of Elastic Wave Theory, Gravity Exploration, Magnetic Exploration, Electric and Magnetic Exploration, Seismic Exploration, Electromagnetic Data Processing and Interpretation, Seismic Data Acquisition and Processing, Seismic Data Interpretation, Geophysical Logging, Gravity and Magnetic Data Processing and Interpretation.

Lab Experiments: Experiments for Exploration Geophysics.

Practical Work: Surveying Practice, Geology Practice, Extracurricular Science & Technology Practice, Exploration Geophysics Teaching Practice (Beidaihe) A, Major Practice for Graduation, Bachelor Thesis.

Duration: four years.

Degree Granted: Bachelor of Engineering.

Related Specialties: Geophysics, Geology.

勘查技术与工程(勘查地球物理方向)专业课程教学计划表

Course Descriptions of Exploration Technology & Engineering(Exploration Geophysics)

课程类别 Course Classification		课程编号 Course 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 Morality Education 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 College English	12	192	192			3	3	3	3				
		11918902	C 语言程序设计 B C Language Programming B	2.5	40	40					2.5					
		20612300	勘查地球物理导论 Introduction to Exploration Geophysics	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“社会调查”2 学分,跨学科选修课不低于 6 学分。“形势与政策”课程作为限选课,由马克思主义学院实施		12	192											
		小计 **Sum**		**45.5**	**808**	**604**	**12**		**8.5**	**8.5**	**8.5**	**8**	**0**	**0**	**0**	**0**
学科基础课 Disciplinary Fundamental Courses		212127 * 1	高等数学 A Advanced Mathematics A	11.5	184	184			5	6.5						
		20115000	地质学基础 Foundation of Geology	4.5	72	56	16		4.5							
		21120801	测量学 A Surveying A	2.5	40	30	10		2.5							
		20113100	矿物岩石学 A Mineralogy and Lithology A	3	48	48				3						

课程类别 Course Classification	课程编号 Course 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
学科基础课 Disciplinary Fundamental Courses	21208000	线性代数与矢量分析 Linear Algebra and Vector Analysis	3	48	48				3						
	212130＊2	大学物理 B College Physics B	7	112	112				3.5	3.5					
	212132＊1	物理实验 A Physics Experiments A	3.5	56		56			2	1.5					
	21213502	概率论与数理统计 B Probability and Mathematics Statistics B	2.5	40	40		高等数学 A			2.5					
	20104002	构造地质学 B Structural Geology B	3	48	34	14				3					
	21201901	复变函数与积分变换 A Complex Function and Integral Transform A	3.5	56	56		高等数学 A			3.5					
	21206400	数学物理方程 Equations of Mathematical Physics	3	48	48		复变函数				3				
	21206600	数值分析 Numerical Analysis	3	48	48		高等数学 A				3				
	21200700	场论 Potential Field Theory	3.5	56	56		大学物理 B 数理方程					3.5			
	小计 **Sum**		**53.5**	**856**	**760**	**96**		**12**	**18**	**14**	**6**	**3.5**	**0**	**0**	**0**
专业主干课 Main Specialty Courses	20711002	数字信号处理 B Digital Signal Processing B	3	48	40	8	复变函数与积分变换				3				
	20609600	弹性波理论基础 Foundation of Elastic Wave Theory	3	48	48		高等数学 A				3				
	20609700	重力勘探 Gravity Exploration	2	32	32		大学物理 B					2			
	20609800	磁法勘探 Magnetic Exploration	2	32	32		场论					2			
	20609900	电法勘探原理 Principles of Electrical Exploration	2.5	40	40		数学物理方程					2.5			
	20611000	地震勘探原理 Principles of Seismic Exploration	2.5	40	40							2.5			
	20615600	电(磁)法资料处理与解释 Electromagnetic Data Processing & Interpretation	2.5	40	28	12	电法勘探原理						2.5		

课程类别 Course Classification	课程编号 Course 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
专业主干课 Main Specialty Courses	20610300	地震资料采集与处理 Seismic Data Acquisition & Processing	3.5	56	40	16	地震勘探原理						3.5		
	20602600	地震勘探资料解释 Seismic Data Interpretation	2	32	20	12	地震勘探原理						2		
	20610400	地球物理测井 Geophysical Logging	3.5	56	52	4	大学物理 B						3.5		
	20609000	重磁资料处理与解释 Gravity and Magnetic Data Processing and Interpretation	2	32	20	12	重力勘探 磁法勘探						2		
	小计 **Sum**		**28.5**	**456**	**392**	**64**		**0**	**0**	**0**	**6**	**9**	**13.5**	**0**	**0**
专业选修课 Specialty Elective Courses		具体见专业选修课列表	17	272											
合计 **Sub-total**			**144.5**	**2392**	**1768**	**160**		**20.5**	**26.5**	**22.5**	**20**	**12.5**	**13.5**	**0**	**0**
实践环节 Practical Work	44300200	军事训练 Military Training	2	2周				2							
	41919002	C语言课程设计B Course Design for C Language B	1.5	1.5周			计算机机高级语言			1.5					
	40614910	地球物理勘探实验(1) Geophysical Exploration Experiment 1	1.5	1.5周			重、磁、电、震、测井原理及数据采集					1.5			
	40614920	地球物理勘探实验(2) Geophysical Exploration Experiment 2	1.5	1.5周			重、磁、电、震、测井原理及数据采集						1.5		
	40615000	地震资料处理与解释实习 Seismic Data Processing & Interpretation Practice	2	2周			地震资料处理与解释							2	
	40615100	电磁法新方法技术实习(高密度电法、瞬变电磁、管线探测) New Methods and Technology Practice	2	2周			电(磁)法资料处理与解释						2		
	40615200	重磁资料处理和解释实习 Gravity and Magnetic Data Processing and Interpretation Practice	1	1周			重磁资料处理与解释						1		
	40615300	地质雷达数据采集与处理实习 GPR Data Acquisition and Processing Practice	1	1周			大学物理 场论						1		

课程类别 Course Classification	课程编号 Course 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
实践环节 Practical Work	40615400	工程地震勘探实习 Engineering Seismic Exploration Practice	1	1周			地震勘探						1		
	40615500	测井资料处理与解释实习 Geophysical Logging Data Processing & Interpretation Practice	1	1周			地球物理测井						1		
	41120901	测量教学实习A Surveying Practice A	1	1周			高等数学A	1							
	40115701	地质教学实习(秭归) Geological Teaching Practice (the Three Gorges)	4	4周			地质学基础 矿物岩石学A				4				
	40614800	地球物理学专业教学实习(北戴河)A Geophysics Teaching Practice (Beidaihe) A	5	5周			测量学A 重、磁、电、震专业主干课						5		
	40613800	毕业实习 Major Practice for Graduation	8	8周											8
	40613900	毕业设计 Bachelor Thesis	8	8周											8
	小计 **Total**		**40.5**	**40.5**周				**3**	**0**	**1.5**	**4**	**1.5**	**12.5**	**2**	**16**
创新创业自主学习 Autonomous Learning	ZZ35000S	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**												
总计 **Total**			**190**	**2392+40.5**周	**1768**	**160**		**23.5**	**26.5**	**24**	**24**	**14**	**26**	**2**	**16**
可开出专业选修课列表 Specialty Elective Courses	20615700	Matlab语言及应用 MATLAB Programming and Application	2	32	20	12						2			
	20606100	岩石物理学 Rock Physics	2	32	32									2	
	20615900	工程地震勘探 Engineering Seismic Prospecting	1.5	24	24									1.5	
	20607600	地震沉积相解释 Seismic Sedimentary Facies Interpretation	1.5	24	24									1.5	

课程类别 Course Classification	课程编号 Course 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
可开出专业选修课列表 Specialty Elective Courses	20604000	海洋地球物理概论 Introduction to Marine Geophysics	1	16	16									1	
	20604800	能源地震勘探新方法技术 New Methods and Technology of Energy Resources Seismic Exploration	2	32	32									2	
	20606300	重磁勘探新方法技术 New Methods and Technology of Gravity & Magnetic Exploration	1.5	24	24									1.5	
	20611700	地球物理反演 Introduction to Geophysical Inversion	2	32	24	8								2	
	20616000	管线探测与高密度电法原理 Pipeline Detection & High Density Resistivity Method Principles	1.5	24	24									1.5	
	20610600	大地电磁测深 Magnetotelluric Sounding	1	16	16									1	
	20610700	瞬变电磁法 Transient Electromagnetic Method	1	16	8	8								1	
	20605400	探地雷达方法原理及应用 GPR Principles & Applications	1	16	16									1	
	20601000	地面核磁共振方法与应用 Surface NMR Method and Application	1	16	16									1	
	20604300	计算地球物理 Computational Geophysics	2	32	32									2	
	20605900	现代地球物理仪器及应用 Modern Geophysical Instruments and Applications	1	16	12	4								1	
	20216000	矿床学 B Mineral Deposit Geology B	4	64	50	14								4	
	20214804	石油及天然气地质学 D Geology of Oil and Gas D	2.5	40	40									2.5	
	20508400	工程地质学基础 B Foundation of Engineering Geology B	2	32	32									2	
	20217200	海洋地质学 Marine Geology	3	48	48									2	
	20616100	地球物理科技论文写作 Geophysical Scientific Writing	1	16	16										1

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。

勘查技术与工程(勘查地球物理方向)专业课程分类统计

Course Category Statistics of Exploration Technology & Engineering(Exploration Geophysics)

课程学分 / 统计	通识教育课 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 Autonomous Learning	学时总计 Total Hours	学分总计 Total Credits
	必修 Compulsory	选修 Selective							
学时/学分 Hrs/Crs	616/33.5	192/12	856/53.5	456/28.5	272/17	40.5 周/40.5	5	2392＋40.5 周	190
学分所占比例 Proportion of Credits	23.95%		28.16%	15%	8.95%	21.32%	2.63%		100%

地球信息科学与技术专业培养方案

专业名称与代码:地球信息科学与技术　070903T

专业培养目标:具有扎实的地球科学和信息科学基础;掌握地球信息科学的基础理论与技术方法;具备利用地球探测技术进行地球空间信息的采集、分析、处理、管理和综合应用的能力;培养能从事相关领域的科研、教学、应用、规划与管理等方面的复合型高素质人才。

专业毕业要求

1.掌握扎实的数学、物理学、地质学、信息科学、计算机科学等方面基本理论、基本知识和基本技能,具有较强的外语读写能力。

2.系统掌握地球信息科学的基本理论、基本知识和基本实验技能,了解相近领域的基本概念和方法,具备从事地球信息科学研究和应用的能力。

3.了解地球信息科学与技术的理论前沿、应用前景和最新发展动态。

4.掌握资料查询、文献检索及运用现代信息技术获取相关信息的基本方法。

5.具有一定的实验设计、实验条件创造、整理分析实验结果、撰写论文和进行学术交流的能力,具备较强的创新意识和创新精神。

毕业要求及实现途径

序号	毕业要求	实现途径(教学过程)
1	掌握数学、物理学、地学、信息科学、计算机科学等方面基本理论、基本知识和基本技能,具有坚实而宽广的专业基础知识	①课堂教学:马克思主义原理、毛泽东思想与中国特色社会主义理论体系、中国近现代史纲要、思想道德修养与法律基础、体育、大学英语、C 语言程序设计、军事理论、地球信息科学导论、高等数学、普通地质学、测量学、矿物岩石学、线性代数与矢量分析、大学物理 B、物理实验 B、概率论与数理统计 B、构造地质学 B、遥感导论、数字图像处理、数据结构与算法基础、面向对象程序设计、地理信息系统原理 ②课外学习:测量实习、地质认识实习、课外科技实践、军事训练、高级语言程序设计 C 教学
2	掌握地球信息科学的基本理论、基本知识和基本实验技能,了解相近领域的基本概念和方法	①课堂教学:地史学、数字地形模型及应用、地学信息三维可视化、遥感地质学、地质制图、地学空间分析、数学地质基础、环境地质学、水文地质学、微波遥感原理与应用、光学遥感技术、空间数据库、地质环境监测、Java 软件开发 ②课外学习:地球信息教学实习、课外科技实践
3	了解地球信息科学与技术的理论前沿、应用前景和最新发展动态	①课堂教学:数学模型与实验、软件工程、计算机网络、人工智能、空间信息技术与地质灾害、数据挖掘、地球信息科学与技术专业英语 ②课外学习:课外科技实践、实践教学课程
4	掌握资料查询、文献检索及运用现代信息技术获取相关信息的基本方法	课外科技实践、专业选修课程、自主学习

序号	毕业要求	实现途径(教学过程)
5	具有一定的实验设计、实验条件创造、整理分析实验结果、撰写论文和进行学术交流的能力,具备较强的创新意识和创新精神	生产实习、毕业设计

主干学科:地质学、遥感科学与技术、地理学、信息科学。

核心课程:地质制图、矿物岩石学、构造地质学、环境地质学、遥感地质、数字图像处理、光学遥感技术、地理信息系统原理等。

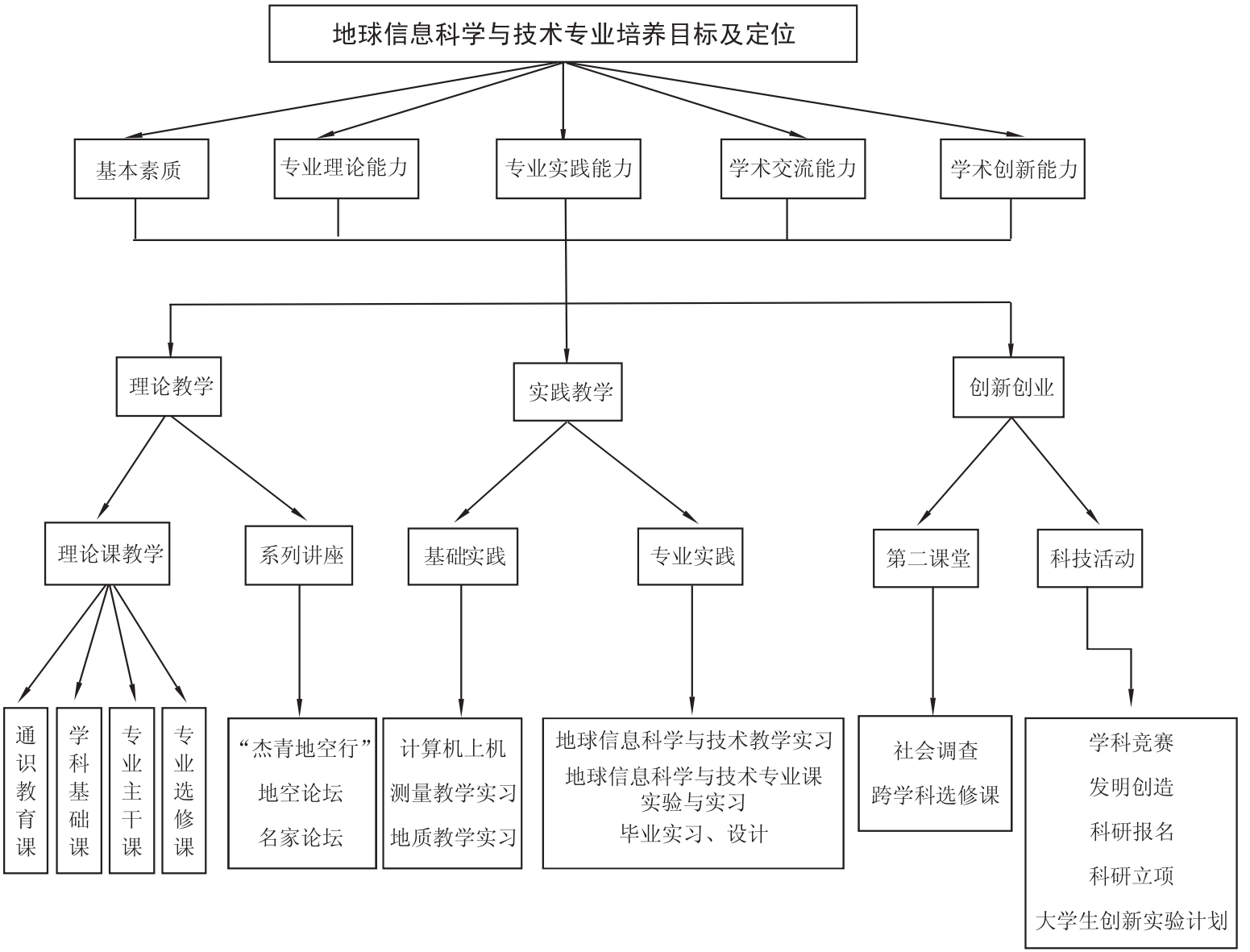
主要专业实验:遥感图像处理实践、遥感信息获取与应用、GIS 开发与实践、高级语言程序设计 C、科学计算实践等。

主要实践性教学环节:专业课程的实验和实习、地球信息专业基础实习、地球信息专业教学实习、生产实习和毕业论文等。

修业年限:四年。

授予学位:工学学士。

相近专业:空间科学与技术、遥感科学与技术、空间信息与数字技术、地理信息系统、地学信息工程等。


地球信息科学与技术专业培养目标及定位
基本素质
专业理论能力
专业实践能力
学术交流能力
学术创新能力
理论教学
实践教学
创新创业
理论课教学
系列讲座
基础实践
专业实践
第二课堂
科技活动
通识教育课
学科基础课
专业主干课
专业选修课
“杰青地空行”
地空论坛
名家论坛
计算机上机
测量教学实习
地质教学实习
地球信息科学与技术教学实习
地球信息科学与技术专业课实验与实习
毕业实习、设计
社会调查
跨学科选修课
学科竞赛
发明创造
科研报名
科研立项
大学生创新实验计划

Program for Geoinformatics

Specialty and Code: Geoinformatics 070903T

Education Objective: The program aims to cultivate high-tech talents. These talents should develop and use information science infrastructure to address the problems of geography, cartography, geosciences and related branches of science and engineering. Also, they will have the capability of using the space, aviation, land integration of earth exploration technology to acquire, manage, analyze and synthesize geo-spatial information.

Graduation Requirements

1. To master basic theories, knowledge and technology of geology, remote sensing science, geographical information system and their interdisciplinary subjects.

2. To master main skills of earth exploration and information technology and grasp practicing trainings of geospatial information analysis and application.

3. To grasp developments and trends as well as application prospects of geoinformatics.

4. To know basic methods of acquiring professional knowledge, such as literature searching.

5. To be capable of writing professional papers and engaging in academic communications.

Graduation Requirements and Ways to Achieve

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
1	To master basic theories, knowledge and technology of geology, remote sensing science, geographical information system and their interdisciplinary subjects	①Classroom Teaching: Principles of Marxism, Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics, the Essentials of Modern Chinese History, Morality Education and Fundamentals of Law, Physical Education, College English, C Language Programming, Military Theory, Introduction to Geo-information Sciences, Advanced Mathematics A, Physical Geology B, Surveying A, Mineralogy and Lithology, Linear Algebra, College Physics B, Physics Experiments B, Probability and Statistics B, Structural Geology B, Introduction to Remote Sensing, Digital Image Processing, Data Structure and Algorithm Foundation, Object-Oriented Programming, Principle of Geographic Information System, Introduction of Geophysics ②Out-of-class Learning: The C Language Programming Design Practice, etc

No.	Graduation Requirements	Ways to Achieve(Teaching Process)
2	To master main skills of earth exploration and information technology and grasp practicing trainings of geospatial information analysis and application	①Classroom Teaching: Historical Geology, Digital Terrain Model and Application, 3D Geo-visualization, Remote Sensing Geology, Geological Cartography, Geo-spatial Analysis, Element of Mathematical Geology, Environmental Geology, Hydrological Geology, Microwave Remote Sensing Principles and Application, Optical Remote Sensing Technology, Spatial Database, Geological Environment Monitoring, Java Software Development ② Out-of-class Learning: Surveying Practice A, Major Teaching Basic Practice (the Three Gorges), Major Teaching Practice (Periphery of Wuhan), Remote Sensing Geoscience Analysis and Computing, Experiment for Remote Sensing Image Processing, Scientific Computing Practice
3	To grasp developing trends as well as application prospects of geoinformatics	① Classroom Teaching: Mathematical Modeling and Mathematical Experiments, Soft Engineering, Computer Networks, Artificial Intelligence, Spatial Information Technology and Geological Hazards, Data Mining, Academic English ② Out-of-class Learning: Contest, Invention, Innovation and Research Presentation
4	To know basic methods of acquiring professional knowledge such as literature searching	Contest, Invention, Innovation and Research Presentation
5	To be capable of writing professional papers and engaging in academic communications	Practice for Graduation, Bachelor Thesis

Major Disciplines: Geology, Remote Sensing Science, Geography, Information Science.

Main Courses: Geological Cartography, Mineralogy and Lithology, Structural Geology, Environmental Geology, Remote Sensing Geology Digital Image Processing, Optical Remote Sensing Technology, Principle of Geographic Information System, etc.

Lab Experiments: Experiments for Remote Sensing Image Processing, Remote Sensing Information Acquisition and Application, GIS Development and Application, the C Language Programming Design, Scientific Computing Practice, etc.

Practical Work: Survey Practice, Geological Field Training, Extracurricular Scientific and Technology Practice Activities, Experiments for Remote Sensing Image Processing, Graduation Internship and Graduation Thesis.

Duration: four years.

Degree Granted: Bachelor of Engineering.

Related Specialties: Space Science and Technology, Remote Sensing Science and Technology, Spatial Information and Digital Technology, Geographic Information System, Geo Information Engineering.

地球信息科学与技术专业课程教学计划表

Course Descriptions of Geoinformatics

课程类别 Course Classification		课程编号 Course 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 Morality Education 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 College English	12	192	192			3	3	3	3				
		11918902	C 语言程序设计 B C Language Programming B	2.5	40	28	12				2.5					
		20612200	地球信息科学导论 Introduction to Geoinformatics	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。“形势与政策”课程作为限选课，由马克思主义学院实施		12	192											
		小计 **Sum**		**45.5**	**808**	**604**	**12**		**8.5**	**8.5**	**8.5**	**8**	**0**	**0**	**0**	**0**
学科基础课 Disciplinary Fundamental Courses		212127 * 1	高等数学 A Advanced Mathematics A	11.5	184	184			5.5	6						
		20114900	普通地质学 Physical Geology	3	48	40	8		3							
		21120801	测量学 A Surveying A	2.5	40	30	10		2.5							
		20113100	矿物岩石学 A Mineralogy and Lithology A	3	48	48				3						
		21208000	线性代数与矢量分析 Linear Algebra	3	48	48				3						

课程类别 Course Classification	课程编号 Course 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
学科基础课 Disciplinary Fundamental Courses	212130*2	大学物理 B University Physics B	7	112	112				3.5	3.5					
	212132*1	物理实验 A Physics Experiments A	3.5	56		56			2	1.5					
	21213502	概率论与数理统计 B Probability and Mathematics Statistics B	2.5	40	40					2.5					
	20104002	构造地质学 B Structural Geology B	3	48	34	14				3					
	20607800	遥感导论 Introduction to Remote Sensing	2.5	40	28	12	数字图像处理				2.5				
	21909601	数字图像处理 A Digital Image Processing A	3	48	32	16	概率论与数理统计 B			3					
	20612400	数据结构与算法基础 Data Structure and Algorithm Foundation	2.5	40	40						2.5				
	20612500	面向对象程序设计 Object-oriented Programming	2.5	40	28	12					2.5				
	20612600	地理信息系统原理 Principle of Geographic Information System	2.5	40	28	12	空间数据库				2.5				
	20608100	地球物理学概论 Introduction of Geophysics	2.5	40	40						2.5				
	小计 **Sum**		**54.5**	**872**	**732**	**140**		**11**	**17.5**	**13.5**	**12.5**	**0**	**0**	**0**	**0**
专业主干课 Main Specialty Courses	20118300	地层及古生物学 Stratigraphy and Paleontology	3	48	36	12					3				
	20610800	数字地形模型及应用 Digital Terrain Model and Application	3	48	28	20						3			
	20602200	地学信息三维可视化 3D Geo-visualization	2.5	40	20	20						2.5			
	20106800	遥感地质学 Remote Sensing Geology	2	32	24	8							2		
	20612700	地质制图 Geological Cartography	2	32	24	8							2		
	20611000	地学空间分析 Geo-spatial Analysis	2.5	40	24	16							2.5		
	20206700	数学地质 Element of Mathematical Geology	2.5	40	28	12	概率论与数理统计 B			2.5					

课程类别 Course Classification	课程编号 Course 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
专业主干课 Main Specialty Courses	20612800	环境地质学 Environmental Geology	3	48	32	16							3		
	20612900	水文地质学 Hydrological Geology	2	32	32								2		
	20607100	微波遥感原理与应用 Microwave Remote Sensing Principles and Application	2.5	40	28	12						2.5			
	20613000	光学遥感技术 Optical Remote Sensing Technology	2.5	40	32	8						2.5			
	21106200	空间数据库 Spatial Database	2	32	24	8					2				
	20419700	地质环境监测 Geological Environment Monitoring	2	32	24	8							2		
	20613100	Java 软件开发 Java Software Development	2.5	40	28	12							2.5		
	小计 **Sum**		**34**	**544**	**384**	**160**		**0**	**0**	**2.5**	**5**	**10.5**	**16**	**0**	**0**
专业选修课 Specialty Elective Courses		具体见专业选修课列表	10	160											
合计 **Sub-total**			**144**	**2384**	**1732**	**300**		**19.5**	**26**	**24.5**	**25.5**	**10.5**	**16**	**10**	**0**
实践环节 Practical Work	44300200	军事训练 Military Training	2	2 周				2							
	41919002	C 语言课程设计 B Course Design for C Language B	1.5	1.5 周						1.5					
	41120901	测量教学实习 A Surveying Practice A	1	1 周				1							
	40115701	地球信息科学与技术教学基础实习(秭归) Major Teaching Basic Practice (the Three Gorges)	4	4 周								4			
	40613700	地球信息科学与技术教学实习(武汉周边) Major Teaching Practice (Periphery of Wuhan)	6	6 周									6		
	40613600	遥感图像处理实践 Practice for Remote Sensing Image Processing	2	2 周								2			

课程类别 Course Classification	课程编号 Course 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
实践环节 Practical Work	40614000	科学计算实践 Scientific Computing Practice	2.5	2.5周							2.5				
	40614100	遥感地学分析与计算 Remote Sensing Geoscience Analysis and Computing	2.5	2.5周									2.5		
	40613800	毕业实习 Practice for Graduation	8	8周											8
	40613900	毕业设计 Bachelor Thesis	8	8周											8
	小计 **Sum**		**37.5**	**37.5周**				**3**	**0**	**1.5**	**2.5**	**6**	**8.5**	**0**	**16**
创新创业自主学习 Autonomous Learning	ZZ35000S	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**												
总计 **Total**		(注:学时分类总计未含通识选修、专业选修课)	**186.5**	**2384+37.5周**	**1732**	**300**		**22.5**	**26**	**26**	**28**	**16.5**	**24.5**	**0**	**16**
可开出专业选修课列表 Specialty Elective Courses	20611100	数学模型与实验 Mathematical Modeling and Mathematical Experiments	2	32	16	16							2		
	20613200	软件工程 Soft Engineering	2	32	24	8							2		
	20613300	计算机网络 Computer Networks	2	32	32								2		
	21915100	人工智能导论 Artificial Intelligence	2	32	32									2	
	20613500	空间信息技术与地质灾害 Spatial Information Technology and Geological Hazards	2	32	24	8								2	
	20613400	数据挖掘 Data Mining	2	32	20	12								2	
	20611200	专业英语 Professional English	2	32	32									2	

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。

地球信息科学与技术专业课程分类统计

Course Category Statistics of Geoinformatics

课程学分 / 统计	通识教育课 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 Autonomous Learning	学时总计 Total Hours	学分总计 Total Credits
	必修 Compulsory	选修 Selective							
学时/学分 Hrs/Crs	616/33.5	192/12	872/54.5	544/34	160/10	37.5周/37.5	5	2384＋37.5周	186.5
学分所占比例 Proportion of Credits	24.40%		29.22%	18.23%	5.36%	20.11%	2.68%		100%