

采矿工程 学科（专业）硕士研究生培养方案

专业代码：081901 学科门类：工学

Code of Specialty: 081901 Department of Discipline: Engineering

一级学科：矿业工程 学分要求：40

First-grade Discipline: Mineral Engineering Credit Setting: 40 credits

一、学科（专业）概况 (Disciplines Instruction)

中 (宋体五号)

采矿工程专业成立于1949年，是国内一流，国际知名的优势品牌专业。1984年获得硕士学位授予权，1993年获得博士学位授予权，1999年被批准设立博士后科研流动站，2004年被辽宁省确定为省级重点学科，先后被批准为国家第二类特色专业、国家综合改革试点专业、辽宁省矿业工程专业紧缺人才培养基地和辽宁省示范性专业。本学科依托两个省部级重点实验室，具备先进的实验设施和研究条件，已成为国家地矿类高水平学术研究和人才培养的重要基地之一。具有年龄结构合理、学历层次较高、富有开拓创新意识，学术成果丰硕的师资队伍。采矿工程专业形成了矿井开采理论与技术、露天开采理论与技术、矿山压力与矿井动力灾害防治、矿井通风与安全、矿业经济与数字矿山等5个稳定的学术研究方向。先后主持完成了国家科技攻关项目、国家自然科学基金、“863计划”、“973计划”等国家级项目30余项，其中获得国家科技进步二等奖3项、国家教学成果二等奖1项、省部级科技进步奖30余项、辽宁省教学成果奖2项。培养的毕业生分布在高校、科研院所、设计单位、煤炭企业和相关行业，并已成为管理和技术的中坚，为我国煤炭工业的发展和科技进步做出了突出贡献。

As the leading and traditional superior discipline in our university, mining engineering was set up in 1949, authorized to offer master's degree in 1984 and doctoral degree in 1993, approved to establish the mobile scientific research station for post-doctoral studies in 1999, granted to be the key discipline on the provincial level in 2004 and approved to be the second type of national characteristic specialties, the mineral engineering training base of professionals whose skills are in short supply and exemplary speciality in Liaoning successively. This discipline has two key lab at the provincial and ministerial level, academic echelons with reasonable age structure, higher education and creative consciousness. Such stable research orientation as "underground mining theory and technology", "surface mining theory and technology", "rock pressure and rock stratum control", "prevention technology of mining dynamic disaster", "mine ventilation and safety", "mining economics and digital mine" have been formed. 25 national significant scientific research projects have been presided and brought to success, including national programs for science and technology development, national natural science fund, "863 program" and "973 program". This discipline has won 3 national scientific and technological progress second prize, two second prize of national teaching achievement, 30 provincial and ministerial level scientific and technological progress awards and two prize of Liaoning teaching achievement. She has made outstanding contributions for the development of national mining industry.

二、培养目标 (Training Objectives)

1. 掌握马克思主义的基本理论，拥护中华人民共和国宪法，遵守法律、法规，热爱祖国和人民，树立正确的世界观、人生观、价值观，有强烈的事业心和积极进取精神，具有与时俱进的创新意识。
2. 具备解决采矿工程问题的先进技术方法，掌握本学科坚实的基础理论和全面系统的专门知识，了解学科前沿的最新知识和动态，了解相邻学科的有关知识，具备学术研究的基本能力和独立从事本领域专门技术工作或经营管理与教学等工作的创新型人才。
3. 掌握一门外国语，具备熟练阅读本领域的外文资料，并具有一定的外文学术论文写作和国际学术交流的能力。
4. 了解体育运动的基本知识，掌握必要的体育锻炼技能，具有自我锻炼的意识，不畏艰难的气魄，强健的体魄和健康的心理素质。

三、学制与学习年限 (Academic structure and Years of learning)

学制：3年；学习年限：2-5年。

Academic structure: 3 years; Years of study (including leave of absence, retain Maintenance of Status): 2-5 years.

四、研究方向 (Research Orientation)

序号 名称

Name

研究方向的范围及特点概述

The Scope of Research Orientation and
Brief account of the Characteristic

- 1 **矿井开采理论与技术**
Underground mining theory and technology
露天开采理论与技术
Surface Mining Theory and Technology
 - 2 **Surface Mining Theory and Technology**
 - 3 **Rock Pressure and Control Technology of Mine Dynamic Disasters**
矿山压力与矿井动力灾害防治
矿井通风与安全
 - 4 **Mine Ventilation and Safety**
 - 5 **数字矿山与矿山企业管理**
Mining Economics and Digital Mine
- 矿井开采方法与工艺技术、矿井优化设计、放顶煤开采技术、充填开采技术、“三下”开采技术、深矿井开采技术、特殊开采技术、浆体管道输送理论与技术等。
- fundamental principle and methods of mine development and mining, green mining technology, top coal caving mining technology, stowing technology, mining technology under buildings, water bodies and railways, mining technology in deep mine and untraditional mining technology; survey and synthetical evaluation of coal bed gas resources, drainage and complex utilization of coal bed gas; slurry pipeline parameter, flow state and hydraulic gradient of slurry in pipeline, concentration distribution, velocity distribution and migration velocity of non-homogeneous flow.
- 露天矿开采优化设计、露天开采工艺技术、露天矿边坡稳定与监测预报技术、露天矿边坡治理技术、露天矿生产过程优化控制、露天矿项目管理、露天矿土地复垦及生态修复。
- surface mining technology, slope engineering, technology and application of computer aided design and system simulation, blasting technology in surface mine, systems reliability analysis.
- 煤矿采场上覆岩层运动规律、矿压显现规律、采场与巷道支护技术、围岩稳定性与控制机理；煤与瓦斯突出、冲击地压等矿井动力灾害预测、监测及防治。
- law of deformation, destruction and destabilization and control technology of rock strata, strata behaviors law and supporting technique of stope, roadway and surrounding rock, stress analysis of geotechnical Engineering; geo-dynamic division and its application in the mining, preventing theory and technology of such dynamic disaster as coal and gas outburst, pressure bump and shock bump caused by underground mining activities.
- 危险源识别与判断，矿井通风系统设计、评价、改造与优化，矿井瓦斯、火灾、粉尘和水灾等监测监控及防治技术，安全防护、紧急避险、应急救援理论、技术与方法。
- basic theory of air flow, ventilation power and resistance, air flow distribution and regulation, ventilation system and its design, control technology of gas, fire, dust and water disaster.
- 数字矿山建模技术、数字化煤矿设计、煤矿虚拟仿真；矿业技术经济、矿山项目管理、现代化矿山企业管理。
- mining investment and cost, coal project and assets evaluation and enterprise management information system; theory and method of establishing 3D geological model and mining model of coal mine,

technology of production system
simulation and monitoring, monitoring
technology of mine safety, computer aided
design technique, virtual mining
technology, information management
system and OA developing technology.

五、课程设置 (Curriculum)

课程类别		课程编号	课程名称	学分	学时 Hour	开课学期	开课单位	备注	
Course	Type	Course No	Course Name	Credit	课内/试验 Class/test	semester classes	Class Department	Remarks	
Academic Degree Comse	Common Course		中国特色科学社会主义理论与实践研究	2	40	1	思政部		
			自然辩证法概论/马克思主义社会科学方法论	1	20	1	思政部		
			基础综合英语	3	60	1	外语系	过六级	
			学术综合英语	3	60	2	外语系	过六级	
	学位课		硕士生基础英语1	3	60	1	外语系		
			硕士生基础英语2	3	60	2	外语系		
			矩阵论	3	60	1	理学院		
			数值分析	3	60	2	理学院		
	基础课		采矿工程数值计算方法	3	60	2	矿业学院		
			工程地质分析原理与技术	3	60	1	矿业学院		
Selective Course	专业课		非线性岩石力学	2	40	1	力学院	基础课和专业课之和：16学分	
			现代采矿理论与方法	3	60	1	矿业学院		
			矿山灾害防治技术	3	60	2	矿业学院		
			矿业系统工程	2	40	2	矿业学院		
	公共选修课		学术英语写作	1			矿业学院	必选	32
			科学计算与数学建模	2			理学院		
			高等工程应用数学	2	40	2	理学院		
			随机过程	2			理学院	至少选修一门	
	Optional Courses		数理方程	2			理学院		
			应用泛函分析	2			理学院		
			最优化理论	2			理学院		
			应用统计	2			理学院		
	任选课		学科专题讲座	2	40	2	矿业学院	必选	34选6学分
			特殊开采技术	2	40	3	矿业学院	选修	
			矿井支护新技术	2	40	3	矿业学院	选修	
			边坡稳定性控制技术	2	40	3	矿业学院	选修	
			现代矿压理论	2	40	3	矿业学院	选修	
			矿井地质动力区划	2	40	3	矿业学院	选修	
			煤矿监测与控制技术	2	40	3	矿业学院	选修	

合计	数字矿山构建技术及应用	2	40	3	矿业学院	选修
	矿山企业管理	2	40	3	矿业学院	选修
		40	800			40
Total						