中国矿业大学（北京）

CHINA UNIVERSITY OF MINING & TECHNOLOGY-BEIJING

# Training Program for International Master's and Doctoral Students

# 来华留学研究生英文培养方案

**China University of Mining &Technology,Beijing**

**中国矿业大学（北京）**

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## 一、培养目标

## I. Cultivation Objectives

1. 了解中国文化和基本国情，坚持对我国友好的政治立场，尊重中国的社会公德和风俗习惯，遵纪守法，品行端正，诚实守信，身心健康，具有良好的科研道德和敬业精神。

To understand Chinese culture and basic national conditions, adhere to a politically friendly stance towards China, respect Chinese social ethics and customs, abide by laws and regulations, exhibit good character, honesty, and trustworthiness, maintain physical and mental health, and possess excellent research ethics and professionalism.

2. 适应科技进步和社会发展需要，在本学科掌握坚实的基础理论和系统的专门知识，有较宽的知识面和较强的自学能力，具有从事科学研究或独立担负专门技术工作的能力。汉语水平要求具有使用生活用语和阅读本专业汉语资料的初步能力。

To adapt to advancements in science and technology and societal development, acquire a solid theoretical foundation and systematic specialized knowledge in the chosen discipline, possess a broad knowledge base and strong self-learning ability, and demonstrate the capacity for engaging in scientific research or independently undertaking specialized technical work. The Chinese language proficiency requirement includes the ability to use daily expressions and read Chinese materials related to the student's major.

3. 具有创新精神、创造能力和创业素质。

To cultivate an innovative spirit, creativity, and entrepreneurial qualities.

4. 通过体育锻炼提高身体素质，在学习过程中完善自我认知，确保身心健康。

To enhance physical fitness through physical exercise, refine self-awareness during the learning process, and ensure physical and mental well-being.

## 二、培养方式

II. Cultivation Mode

1. 国际硕士研究生实行学分制，采取课程学习和学位论文相结合的培养方式，实行责任导师负责制，或以导师为主的指导小组制。

International master's students follow a credit system, combining course study with thesis work, under the responsibility of a designated supervisor or a supervisory team primarily led by a supervisor.

2. 国际硕士研究生的培养语言为中文或英文。

The language of instruction for international master's students is either Chinese or English.

3. 各学科应结合自身特点确定具体的人才培养方式。

Each discipline should determine specific cultivation methods based on its own characteristics.

## 三、学制和学习年限

III. Academic System and Duration of Study

国际硕士研究生学制为 3 年，最长学习年限为 4 年。如遇特殊情况，参照《中国矿业大学（北京）招收和培养国际学生管理办法》规定执行。

The academic system for international master's students is 3 years, with a maximum study duration of 4 years. In case of special circumstances, refer to the "Regulations on the Recruitment and Cultivation of International Students at China University of Mining and Technology, Beijing".

## 四、课程设置及学分要求

IV. Curriculum and Credit Requirements

国际硕士研究生培养实行学分制，应修满的总学分数不少于 28 学分。课程设置分为公共基础课模块、专业基础课模块、专业课模块、素质提升模块和创新训练模块 5 个部分，详见表 1。

International master's students follow a credit system, requiring a minimum of 28 credits. The curriculum is divided into five modules: public basic courses, professional basic courses, specialized courses, quality enhancement, and innovative training, as detailed in Table 1.

**表 1　国际硕士研究生课程设置及学分要求**

**Table 1 Curriculum and Credit Requirements for International Master's Students**

| 课程类别<br>Course Module | 课程设置及要求<br>Curriculum and Requirements | 学分要求<br>Credit Requirements | |
|---|---|---|---|
| 公共基础课模块<br>Public basic courses | 《汉语综合》（80 学时，5 学分），必修。<br>"Comprehensive Chinese" (80 hours, 5 credits), compulsory. | 5 学分<br>5 credits | ≥26 学分<br>≥26 credits |
| | 《中国文化》（80 学时，5 学分），必修。<br>"Chinese Culture" (80 hours, 5 credits), compulsory. | 5 学分<br>5 credits | |
| | 《国情教育》（32 学时，2 学分），必修。<br>"Education on National Conditions" (32 hours, 2 credits), compulsory. | 2 学分<br>2 credits | |
| 专业基础课模块<br>Professional basic courses | 公共基础理论课：设置数学类公共基础理论课，必修 1 门。<br>专业基础理论课：设置理工类专业基础理论课，必修 1 门。<br>Public basic theory courses: One compulsory mathematics course.<br>Professional basic theory courses: One compulsory course for science and engineering majors. | ≥5 学分<br>≥5 credits | |
| 专业课模块<br>Specialized courses | 每个学科设置多门专业课，必修 6 学分。<br>Multiple specialized courses for each discipline, with 6 compulsory credits. | ≥6 学分<br>≥6 credits | |
| | 《学术规范与论文写作》（16 学时、1 学分），必修。<br>"Academic Norms and Thesis Writing" (16 hours, 1 credit), compulsory. | 1 学分<br>1 credit | |
| 素质提升模块<br>Quality enhancement | 《学术报告能力提升》（8 学时、0.5 学分），必修。<br>"Enhancing Academic Presentation Skills" (8 hours, 0.5 credits), compulsory. | ≥2 学分<br>≥2 credits | |
| | 开设英语、体育等线下选修课程<br>Offline elective courses in English, sports, etc. | | |
| 创新训练模块<br>Innovative training | 学位论文文献综述汇报（第 1，2 学期）<br>Thesis literature review presentation (Semesters 1 & 2) | 1 学分<br>1 credit | 2 学分<br>2 credits |
| | 学位论文选题报告（第 3 学期）<br>Thesis proposal presentation (Semester 3) | 1 学分<br>1 credit | |
| 总学分数≥28 学分<br>Total Credits ≥28 credits | | | |

1．学位论文文献综述汇报

Thesis Literature Review Presentation

此环节主要是督促研究生掌握本学科国内外研究现状和进展，为选题和学位论文研究奠定基础。研究生应阅读一定数量的本学科或课题研究方向相关文献，撰写一篇文献综述并进行汇报，汇报通过记 1 学分，一般在第 2 学期末之前完成。可参照学位论文文献综述汇报规定文件执行。

This component aims to urge graduate students to grasp the current research status and progress in their discipline both domestically and internationally, laying the foundation for thesis topic selection and research. Students should read a certain number of relevant literature in their discipline or research direction, write a literature review, and present it. Upon successful presentation, 1 credit is awarded, typically completed before the end of the second semester. Refer to the regulations on

thesis literature review presentation for implementation.

2．学位论文选题报告

Thesis Proposal Presentation

研究生选题一般在第 3 学期进行，需完成课程学习和学位论文文献综述汇报后方可进行。可参照选题规定文件执行。

Thesis topic selection generally occurs in the third semester, after completing course studies and the thesis literature review presentation. Refer to the regulations on topic selection for implementation.

**五、学位论文要求**

V. Thesis Requirements

1. 学位论文可用英文完成，但应撰写中文摘要。学位论文答辩语言可使用中文或英文；答辩审批材料及决议等必须用中文书写并存档，可附有英文副本。

The thesis can be written in English but must include a Chinese abstract. The thesis defense can be conducted in either Chinese or English; however, the defense approval materials and decisions must be written in Chinese and archived, with an English copy attached if necessary.

2. 具体要求按照《中国矿业大学（北京）学位授予工作细则》、《中国矿业大学（北京）研究生学位论文选题工作的规定》、《中国矿业大学（北京）研究生学位论文撰写规定》等相关规定执行。

Specific requirements follow the "Detailed Rules for Degree Awarding at China University of Mining and Technology, Beijing", "Regulations on Thesis Topic Selection for Graduate Students at China University of Mining and Technology, Beijing", "Regulations on Thesis Writing for Graduate Students at China University of Mining and Technology, Beijing", and other relevant provisions.

**六、本培养方案于 2024 年 9 月修订，自 2025 级国际硕士研究生起开始实施，解释权归研究生院及国际合作交流处。**

VI. These cultivation regulations were revised in September 2024 and will be implemented starting from the 2025 intake of international master's students. The Graduate School and the International Cooperation and Exchange Office reserve the right to interpret these regulations.

# 第二章　中国矿业大学（北京）
# 国际硕士研究生（英语授课）培养方案

# Chapter 2 Cultivation Scheme of International Master's Students (English-taught Programs) at China University of Mining and Technology, Beijing

## 一、能源学院

## I. School of Energy

## §1 矿业工程（0819）

## §1 Mining Engineering (0819)

修订负责人：　吴仁伦　　主管院长：　张俊文　　学位评定分委员会主席：　杨胜利

Revision Supervisor: Wu Renlun　Dean in Charge: Zhang Junwen　Chairperson of the Academic Degree Evaluation Subcommittee: Yang Shengli

### （一）学科简介

### I. Discipline Introduction

矿业工程是研究矿产资源开发与利用的国家级重点学科，是国家“211 工程”、“985 工程优势学科创新平台”和“世界一流学科建设”的重点建设学科，在全国学科评估中已连续五次名列第一，获批“绿色智能开采理论与技术学科”111 引智计划项目、“煤炭资源绿色智能安全开采”国家自然科学基金委员会创新研究群体项目，拥有矿业工程“长江学者”奖励计划特聘教授设岗学科，矿业工程博士后科研流动站。主要研究方向包括：矿产资源开发与利用、岩层控制与灾害防治、绿色与智能开采。各研究方向研究内容具体如下：

Mining Engineering is a national key discipline focused on the development and utilization of mineral resources. It is a prioritized discipline in the national "211 Project," "985 Project Advantage Discipline Innovation Platform," and "World-Class Discipline Construction." In national discipline evaluations, it has consistently ranked first for five consecutive times. The discipline has been approved for the "Green and Intelligent Mining Theory and Technology" 111 Project for Introducing Talents, the "Green, Intelligent, and Safe Mining of Coal Resources" Innovative Research Group

Project of the National Natural Science Foundation of China, and hosts a "Changjiang Scholars" Program Special Appointment Professor position in Mining Engineering. It also boasts a postdoctoral research station in Mining Engineering. The main research directions include:

1. 矿产资源开发与利用

Development and Utilization of Mineral Resources

主要研究矿产资源（地下及露天开采）的高产高效新理论、新技术、新工艺；研究深部开采、浅埋资源开采的理论与技术；研究流态化开采、非常规天然气开采、可燃冰开采、海洋采矿、太空采矿理论与技术；研究资源开发系统规划、能源经济、资源评价、能源与环境理论与方法。

Research on new theories, technologies, and processes for high-yield and high-efficiency mining of mineral resources (both underground and open-pit mining); Study of deep mining, shallow resource mining theories, and technologies; Exploration of fluidized mining, unconventional natural gas extraction, combustible ice mining, ocean mining, and space mining theories and technologies; Research on system planning for resource development, energy economics, resource evaluation, and theories and methods of energy and the environment.

2. 岩层控制与灾害防治

Rock Mass Control and Disaster Prevention

主要研究矿山开采引起的覆岩变形破坏机理和规律；研究采场和巷道围岩控制理论与技术、矿山岩体力学与矿山压力显现；研究矿山灾害致灾机理、预警及防治关键理论与技术；研究地下建设工程理论与技术；研究岩土工程理论与技术；研究边坡、排土场、尾矿库稳定性。

Study of the mechanisms and patterns of overburden deformation and failure caused by mining; Research on control theories and technologies for stope and roadway surrounding rock, mine rock mechanics, and mine pressure manifestations; Investigation of disaster-causing mechanisms, early warning, and key theories and technologies for disaster prevention in mines; Study of underground construction engineering theories and technologies; Research on geotechnical engineering theories and technologies; Analysis of slope, waste dump, and tailings pond stability.

3. 绿色与智能开采

Green and Intelligent Mining

主要研究提高资源采出率、减少开采损害和环境污染与破坏的绿色开采理论与技术；研究矿山及工业固体废料的综合利用新技术；研究矿山环境治理及生态环境重建技术；研究废弃矿山的综合利用技术；研究数字矿山及智慧矿山开采理论、方法和应用技术；研究智能化采掘技术；研究矿山虚拟仿真技术；研究无人化开采技术；研究矿山物联网、大数据及云计

算技术；研究矿业系统计算机优化理论、模型算法及集成技术。

Research on green mining theories and technologies to improve resource recovery rates and reduce mining damage, environmental pollution, and destruction; Study of new technologies for the comprehensive utilization of mine and industrial solid waste; Investigation of mine environmental governance and ecological environment reconstruction technologies; Research on comprehensive utilization technologies for abandoned mines; Study of digital mine and smart mine mining theories, methods, and application technologies; Exploration of intelligent mining and excavation technologies; Research on mine virtual simulation technologies; Investigation of unmanned mining technologies; Study of mine IoT, big data, and cloud computing technologies; Research on computer optimization theories, model algorithms, and integration technologies for mining systems.

**（二）课程设置及学分要求**

II. Curriculum and Credit Requirements

**学科名称：矿业工程（0819）（采矿工程（081901）、资源开发规划与设计（0819Z1））**

Discipline Name: Mining Engineering (0819) (Mining Engineering (081901), Resource Development Planning and Design (0819Z1))*

| **课程类别 Course Categories** | **课程编号 Course Codes** | **课程名称 Course Names** | **学时 Hours** | **学分 Credits** | **开课学期 Semesters Offered** | **开课学院 Offering Schools** | **备注 Remarks** |
|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic courses | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange Office | 必修，12 学分 Compulsory, 12 credits |
| | GJ24098002G | 中国文化 Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | |
| | GJ24098003G | 国情教育 Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 Internatio | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | nal Cooperation and Exchange Office | | |
| 专业基础课模块 Professional basic courses | GJS24007001G | 线性代数与矩阵论<br>Linear Algebra and Matrix Theory | 48 | 3 | 1 | 理学院 School of Science | 必修 1 门 Compulsory (1 course) | 5 学分 5 credits |
| | GJS24007002G | 应用数理统计<br>Applied Mathematical Statistics | 48 | 3 | 2 | 理学院 School of Science | | |
| | GJS24006001Z | 采矿岩石力学基础<br>Fundamentals of Mining Rock Mechanics | 48 | 3 | 2 | 力土学院 School of Civil Engineering and Architecture | 必修 1 门 Compulsory (1 course) | |
| | GJS24006002Z | 弹塑性力学<br>Elastoplastic Mechanics | 32 | 2 | 1 | 力土学院 School of Civil Engineering and Architecture | | |
| 专业课模块 Specialized courses | GJS24001001Z | 矿产资源开发理论与技术<br>Theories and Technologies of Mineral Resource Development | 48 | 3 | 2 | 能源学院 School of Energy | 6 学分 6 credits | |
| | GJS24001002Z | 岩层控制与灾害防治<br>Rock Mass Control and Disaster Prevention | 48 | 3 | 2 | 能源学院 School of Energy | | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| | GJS2400301GF | 学术规范与论文写作<br>Academic Norms and Thesis Writing | 16 | 1 | 2 | 化环学院<br>School of Chemical and Environmental Engineering | 必修，1 学分<br>Compulsory, 1 credit |
| 素质提升模块 Quality enhancement | GJS2400301BG | 学术报告能力提升<br>Academic Report Skills Enhancement | 8 | 0.5 | 2 | 化环学院<br>School of Chemical and Environmental Engineering | 《学术报告能力提升》必修，其他选修，≥2 学分<br>"Academic Report Skills Enhancement" is compulsory; others are optional, ≥2 credits |
| | TS24008001X | 英语口语交际<br>Oral English Communication | 24 | 1.5 | 2 | 文法学院<br>School of Humanities and Law | |
| | TS24008002X | 英语高级视听说<br>Advanced English Listening, Speaking, and Viewing | 24 | 1.5 | 2 | 文法学院<br>School of Humanities and Law | |
| | TS24107001X | 体育<br>Physical Education | 16 | 1 | 2 | 体育部<br>Department of Physical Education | |
| 创新训练模块 Innovative training | GJSWX24001 | 学位论文文献综述汇报<br>Thesis Literature Review Presentation | | 1 | 1-2 | 能源学院<br>School of Energy | 必修，2 学分<br>Compulsory, 2 credits |
| | GJSXT24001 | 学位论文选题报告<br>Thesis Topic Report | | 1 | 3 | 能源学院<br>School of Energy | |

备注：国际硕士研究生课程学习实行学分制，应修满的总学分数不少于 28 学分。

Note: The international master's degree program in Mining Engineering operates on a credit system, requiring a

minimum of 28 credits to be completed.

# 二、安全学院

# II. School of Safety

## §2 安全科学与工程（0837）

## §2 Safety Science and Engineering (0837)

修订负责人：郭海军　　主管院长：佟瑞鹏　　学位评定分委员会主席：吴建松
Revision Supervisor: Guo Haijun　Dean in Charge: Tong Ruipeng　Chairperson of the Academic Degree Evaluation Subcommittee: Wu Jiansong

### （一）学科简介

I. Discipline Introduction

1. 学科定义

(i) Discipline Definition

该专业注重培养能从事安全技术及工程、安全科学与研究、安全监察与管理、工作场所危险有害因素识别与检测、安全设计与生产、安全教育与培训、生产型企业职业卫生防护等方面复合型的高级工程技术人才，是一个涉及面极广的综合交叉学科。

This major focuses on cultivating advanced engineering talents with a composite background in safety technology and engineering, safety science and research, safety supervision and management, identification and detection of hazardous and harmful factors in workplaces, safety design and production, safety education and training, and occupational health protection in production-oriented enterprises. It is a comprehensive and interdisciplinary subject with a wide range of applications.

2.研究方向

(ii) Research Directions

（1）矿山安全工程

Mine Safety Engineering

以流体力学、工程热物理、爆炸力学、采矿工程、地质工程、岩石力学等自然科学与工程科学、社会科学与管理科学为基础，研究矿山领域矿井瓦斯（煤尘）爆炸、煤与瓦斯突出、矿井火灾、矿井热害、矿井突水等灾害致灾机理、预测预报以及防治理论与技术，开发矿井通风、矿山领域灾害防治、事故救援与事故调查技术、工程方法和装备。研究范围涉及矿山

领域造成生命健康损失、经济损失和环境破坏的各类事故。

Based on fluid mechanics, engineering thermodynamics, explosion mechanics, mining engineering, geological engineering, and rock mechanics, as well as social sciences and management sciences, this direction studies the disaster-causing mechanisms, prediction, and prevention theories and technologies for mine disasters such as mine gas (coal dust) explosions, coal and gas outbursts, mine fires, mine heat hazards, and mine water inrushes. It also develops technologies, engineering methods, and equipment for mine ventilation, disaster prevention in mining areas, accident rescue, and accident investigation. The research scope covers various accidents in the mining field that cause loss of life and health, economic losses, and environmental damage.

（2）应急与安全管理

Emergency and Safety Management

以社会科学、自然科学与管理科学为基础，研究各领域事故发生、发展的管理原因和规律性、事故预防的管理科学方法，开发安全管理方法、方案、管理信息系统及相关管理软件。研究范围涉及质量、安全、健康、安防等造成生命健康损失、经济损失和环境破坏的各类事故。

Based on social sciences, natural sciences, and management sciences, this direction studies the management causes and regularities of accident occurrence and development in various fields, as well as the scientific methods of accident prevention management. It develops safety management methods, plans, management information systems, and related management software. The research scope covers various accidents related to quality, safety, health, and security that cause loss of life and health, economic losses, and environmental damage.

（3）火灾与消防工程

Fire and Fire Protection Engineering

运用工程热物理、燃烧学、流体力学、火灾动力学、风险评估、大数据与人工智能等自然科学、工程科学、社会科学、管理科学基础理论，研究工业与民用建筑通风与消防、城市防火与智慧消防、防灭火材料及装备、火场物证与救援等关键技术，开发火源燃烧特性分析、风（烟）流流动状态的模拟和控制、性能化设计与火灾减灾方法等。研究范围涉及火灾安全与事故损失控制问题。

Using basic theories from engineering thermodynamics, combustion science, fluid mechanics, fire dynamics, risk assessment, big data, and artificial intelligence, as well as social sciences and management sciences, this direction studies key technologies such as ventilation and fire protection in industrial and civil buildings, urban fire prevention and smart fire protection, fire-fighting materials and equipment, and fire scene evidence and rescue. It also develops methods for analyzing

fire source combustion characteristics, simulating and controlling wind (smoke) flow states, performance-based design, and fire disaster reduction. The research scope covers fire safety and accident loss control issues.

（4）城市公共安全

Urban Public Safety

运用流体力学、传热学、灾害学、风险管理、应急管理、城市地理学、计算机模拟、物联网监测监控、数据挖掘、人工智能等交叉学科理论、方法和技术，致力于城市安全风险防控前瞻性、基础性和综合性研究，重点研究城市重大事故灾害演化机理、安全风险辨识分析方法、多灾害综合风险评估方法技术、地下空间开发与利用安全保障技术、生命线系统安全风险防控理论及技术、安全韧性城市防灾减灾、风险监测监控技术与大数据管理平台、应急救援及防护技术、智慧安全城市规划等，为建立健全城市安全风险防控和综合应急机制提供理论依据和技术支撑，服务城市安全发展。

Utilizing interdisciplinary theories, methods, and technologies such as fluid mechanics, heat transfer, disaster science, risk management, emergency management, urban geography, computer simulation, IoT monitoring and control, data mining, and artificial intelligence, this direction focuses on forward-looking, foundational, and comprehensive research on urban safety risk prevention and control. It emphasizes the study of evolution mechanisms of major urban accidents and disasters, safety risk identification and analysis methods, comprehensive risk assessment methods and technologies for multiple disasters, safety assurance technologies for underground space development and utilization, safety risk prevention and control theories and technologies for lifeline systems, disaster prevention and mitigation in resilient cities, risk monitoring and control technologies and big data management platforms, emergency rescue and protection technologies, and smart and safe urban planning. It provides theoretical basis and technical support for establishing and improving urban safety risk prevention and control mechanisms and comprehensive emergency response mechanisms, serving the safe development of cities.

（5）职业安全与健康

Occupational Safety and Health

以自然科学与工程科学为基础，研究广泛领域内事故发生、发展的原因及规律，开发解决职业安全与健康相关的事故预防工程技术和方法、工程装备等。研究范围涉及质量、安全、健康等造成生命健康损失、经济损失和环境破坏的各类事故，含职业安全、公共安全、灾害安全等。

Based on natural and engineering sciences, this direction studies the causes and regularities of accident occurrence and development in a wide range of fields. It develops engineering technologies

and methods, as well as engineering equipment, for preventing accidents related to occupational safety and health. The research scope covers various accidents related to quality, safety, and health that cause loss of life and health, economic losses, and environmental damage, including occupational safety, public safety, and disaster safety.

（6）智慧安全监测与监察

Smart Safety Monitoring and Supervision

以流体力学、弹塑性力学、爆炸力学、计算机科学、数学等自然科学为基础，利用传感器技术、数据采集及信号处理技术、多元信息融合技术、数据挖掘技术等多学科交叉技术，研究煤矿及非煤矿山、危险化学品、民爆器材等行业的主要灾害类型及其监测预警方法，并结合灾害监测的数据、生产过程管控数据、生产工艺特点等基础信息，研究安全生产分布式远程智能监察的技术特征及适用条件。

Based on natural sciences such as fluid mechanics, elastoplastic mechanics, explosion mechanics, computer science, and mathematics, this direction utilizes interdisciplinary technologies such as sensor technology, data acquisition and signal processing technology, multivariate information fusion technology, and data mining technology. It studies the main disaster types and their monitoring and early warning methods in industries such as coal and non-coal mines, hazardous chemicals, and civilian explosives. Combining disaster monitoring data, production process control data, and production process characteristics, it also studies the technical characteristics and applicable conditions of distributed remote intelligent supervision for safe production.

## （二）课程设置及学分要求

## II. Curriculum and Credit Requirements

**学科名称：安全科学与工程（0837）**

Discipline Name: Safety Science and Engineering (0837)

| **课程类别 Course Categories** | **课程编号 Course Codes** | **课程名称 Course Names** | **学时 Hours** | **学分 Credits** | **开课学期 Semesters Offered** | **开课学院 Offering Schools** | **备注 Remarks** |
|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange | 必修，12 学分 Compulsory, 12 credits |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| courses | | | | | | Office | | |
| | GJ24098002G | 中国文化<br>Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| | GJ24098003G | 国情教育<br>Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional basic courses | GJS24007001G | 线性代数与矩阵论<br>Linear Algebra and Matrix Theory | 48 | 3 | 1 | 理学院 School of Science | 必修 1 门 Compulsory (1 course) | 5 学分 5 credits |
| | GJS24007002G | 应用数理统计<br>Applied Mathematical Statistics | 48 | 3 | 2 | 理学院 School of Science | | |
| | GJS24006001Z | 采矿岩石力学基础<br>Fundamentals of Mining Rock Mechanics | 48 | 3 | 2 | 力土学院 School of Civil Engineering and Architecture | 必修 1 门 Compulsory (1 course) | |
| | GJS24006002Z | 弹塑性力学<br>Elastoplastic Mechanics | 32 | 2 | 1 | 力土学院 School of Civil Engineering and Architecture | | |
| 专业课模块 | GJS24101001Z | 高等火灾动力学<br>Advanced Fire Dynamics | 16 | 1 | 1 | 安全学院 School of Safety | 6 学分 6 credits | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| Specialized courses | GJS24101002Z | 矿井瓦斯防治<br>Mine Gas Prevention and Control | 16 | 1 | 1 | 安全学院<br>School of Safety | |
| | GJS24101003Z | 现代安全管理<br>Modern Safety Management | 16 | 1 | 1 | 安全学院<br>School of Safety | |
| | GJS24101004Z | 现代风险评估理论及方法<br>Modern Risk Assessment Theories and Methods | 16 | 2 | | 安全学院<br>School of Safety | |
| | GJS24101005Z | 建筑火灾防护<br>Building Fire Protection | 16 | 2 | | 安全学院<br>School of Safety | |
| | GJS24101006Z | 城市地下空间火灾<br>Urban Underground Space Fires | 16 | 2 | | 安全学院<br>School of Safety | |
| | GJS2400301GF | 学术规范与论文写作<br>Academic Norms and Paper Writing | 16 | 1 | 2 | 化环学院<br>School of Chemical and Environmental Engineering | 《学术规范与论文写作》必修，其他选修，≥2 学分<br>"Academic Norms and Paper Writing" is compulsory; others are optional, ≥2 credits |
| 素质提升模块 Quality enhancement | GJS2400301BG | 学术报告能力提升<br>Academic Report Skills Enhancement | 8 | 0.5 | 2 | 化环学院<br>School of Chemical and Environmental Engineering | 必修，2 学分<br>Compulsory, 2 credits |
| | TS24008001X | 英语口语交际<br>Oral English Communication | 24 | 1.5 | 2 | 文法学院<br>School of Humanities and Law | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| | TS24008002X | 英语高级视听说 Advanced English Listening, Speaking, and Viewing | 24 | 1.5 | 2 | 文法学院 School of Humanities and Law | |
| | TS24107001X | 体育 Physical Education | 16 | 1 | 2 | 体育部 Department of Physical Education | |
| 创新训练模块 Innovative training | GJSWX24102 | 学位论文文献综述汇报 Thesis Literature Review Presentation | | 1 | 1-2 | 安全学院 School of Safety | 《学位论文文献综述汇报》必修，其他选修，≥2 学分 "Thesis Literature Review Presentation" is compulsory; others are optional, ≥2 credits |
| | GJSXT24102 | 学位论文选题报告 Thesis Topic Report | | 1 | 3 | 安全学院 School of Safety | |

备注：国际硕士研究生课程学习实行学分制，应修满的总学分数不少于 28 学分。

Note: The international master's degree program in Mining Engineering operates on a credit system, requiring a minimum of 28 credits to be completed.

# 三、地测学院

# III. School of Geological Surveying

## §3 测绘科学与技术（0816）

## §3 Surveying and Mapping Science and Technology (0816)

修订负责人：许志华　　主管院长：董东林　　学位评定分委员会主席：代世峰
Revision Supervisor: Xu Zhihua　Dean in Charge: Dong Donglin　Chairperson of the Academic Degree Evaluation Subcommittee: Dai Shifeng

### （一）学科简介

I. Discipline Introduction

测绘科学与技术是研究地球和其他实体与时空分布有关信息的采集、量测、处理、分析、显示、管理和利用的科学与技术。

Surveying and Mapping Science and Technology is the science and technology that studies the collection, measurement, processing, analysis, display, management, and utilization of information related to the spatial and temporal distribution of the Earth and other entities.

从 20 世纪 80 年代到 21 世纪初，测绘科学与技术学科已实现了由传统测绘向数字化测绘的转变和跨越，现在正在沿着信息化测绘道路迈进。当今世界各国都把加速信息化进程视为新型发展战略，因而测绘信息服务的方式和内容在国家信息化建设的大环境下发生了深刻变化，由此促进了测绘信息化的发展，推动了测绘领域相关技术的优化升级，继而催生了信息化测绘的新概念。信息化测绘的基本含义是在数字化测绘的基础上，通过完全网络化的运行环境，实时有效地向社会各类用户提供地理空间信息综合服务的测绘方式和功能形态。其特征为：技术体系数字化、功能取向服务化、数据更新实时化、信息交互网络化、基础设施公用化、信息服务社会化、信息共享法制化。因此现阶段的测绘科学与技术学科的发展现状和趋势，主要是以卫星导航定位技术(GNSS)、遥感技术(RS)、地理信息系统技术(GIS)为代表的现代测绘技术做支撑，发展地理空间信息的快速获取、自动化处理、一体化管理和网络化服务，建立较为完善的全国统一、高精度、动

态更新的现代化测绘基准体系，建成现势性好、品种丰富的基础地理信息资源体系，基于航空、航天、地面、海上多平台、多传感器的实时化地理空间信息获取体系，基于空间信息网络和集群处理技术的一体化、智能化、自动化地理空间信息处理体系，基于丰富地理空间信息产品和共享服务平台的网络化地理空间信息服务体系，以此推进信息化测绘的建设进程。开展基础地理信息变化监测和综合分析工作，及时提供地表覆盖、生态环境等方面的变化信息，进行地理国情监测，成为新时期经济社会发展对测绘学科的新需求、新要求。我校测绘科学与技术学科以信息化测绘技术为主要手段，以“变形监测与开采沉陷学”和“矿区生态修复关键技术”为学科特色，持续发展定理国情监测前沿理论。

From the 1980s to the early 21st century, the discipline of Surveying and Mapping Science and Technology has achieved a transformation and leap from traditional surveying and mapping to digital surveying and mapping, and is now advancing along the path of information-based surveying and mapping. Nowadays, countries around the world regard accelerating the informationization process as a new development strategy, leading to profound changes in the methods and content of surveying and mapping information services within the broader context of national informationization. This has promoted the development of information-based surveying and mapping, driven the optimization and upgrading of related technologies in the surveying and mapping field, and subsequently given rise to the new concept of information-based surveying and mapping. The basic meaning of information-based surveying and mapping is a surveying and mapping method and functional form that, based on digital surveying and mapping, provides comprehensive geographic spatial information services to various users in society in a real-time and effective manner through a fully networked operating environment. Its characteristics include: a digitalized technical system, service-oriented functionality, real-time data updates, networked information exchange, shared infrastructure, socialized information services, and legalized information sharing. Therefore, the current development status and trends of the Surveying and Mapping Science and Technology discipline are primarily supported by modern surveying and mapping technologies represented by satellite navigation and positioning technology (GNSS), remote sensing technology (RS), and geographic information system technology (GIS). These technologies are used to develop rapid acquisition,

automated processing, integrated management, and networked services of geographic spatial information, establish a relatively complete, unified, high-precision, and dynamically updated modern surveying and mapping datum system across the country, and build a well-maintained and diverse basic geographic information resource system. This includes a real-time geographic spatial information acquisition system based on multi-platform, multi-sensor aviation, aerospace, ground, and marine platforms, an integrated, intelligent, and automated geographic spatial information processing system based on spatial information networks and cluster processing technology, and a networked geographic spatial information service system based on rich geographic spatial information products and shared service platforms. These efforts aim to advance the construction process of information-based surveying and mapping. Carrying out monitoring and comprehensive analysis of changes in basic geographic information, and timely providing information on changes in surface coverage and ecological environment, as well as conducting geographic national condition monitoring, have become new demands and requirements for the surveying and mapping discipline in the new era of economic and social development. Our university's Surveying and Mapping Science and Technology discipline utilizes information-based surveying and mapping technology as the primary means, with "Deformation Monitoring and Mining Subsidence Science" and "Key Technologies for Ecological Restoration in Mining Areas" as discipline characteristics, to continuously develop frontier theories for monitoring national conditions.

我校测绘科学与技术学科起源于 1953 年北京矿业学院的矿山测量本科专业，1998 年获测绘科学与技术博士后流动站；2000 年获测绘科学与技术一级学科学位授予权；2002 年被列入北京市重点学科；2006 年列入国家重点（培育）学科；2018 年，入选“矿业科学与工程”一流学科群，第四轮学科评估为 A-。

Our university's Surveying and Mapping Science and Technology discipline originated from the undergraduate major of Mine Surveying at the Beijing Mining Institute in 1953. In 1998, it obtained a postdoctoral mobile station for Surveying and Mapping Science and Technology; in 2000, it obtained the right to grant first-level discipline degrees in Surveying and Mapping Science and Technology; in 2002, it was listed as a key discipline in Beijing; in 2006, it was listed as a national key (cultivation) discipline; and

in 2018, it was selected as part of the "Mining Science and Engineering" first-class discipline group, with an A- rating in the fourth round of discipline evaluations.

## （二）课程设置及学分要求

## II. Curriculum and Credit Requirements

**学科名称：测绘科学与技术（0816）**

Discipline Name: Surveying and Mapping Science and Technology (0816)

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic courses | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange Office | 必修，12 学分 Compulsory, 12 credits | |
| | GJ24098002G | 中国文化 Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| | GJ24098003G | 国情教育 Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional basic courses | GJS24007001G | 线性代数与矩阵论 Linear Algebra and Matrix Theory | 48 | 3 | 1 | 理学院 School of Science | 必修 1 门 Compulsory (1 cours | 5 学分 5 credits |
| | GJS24007002G | 应用数理统计 Applied Mathematical Statistics | 48 | 3 | 2 | 理学院 School of | | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | | Science | e) |
| | GJS24006001Z | 采矿岩石力学基础<br>Fundamentals of Mining Rock Mechanics | 48 | 3 | 2 | 力土学院 School of Civil Engineering and Architecture | 必修 1 门 Compulsory (1 course) |
| | GJS24006002Z | 弹塑性力学<br>Elastoplastic Mechanics | 32 | 2 | 1 | 力土学院 School of Civil Engineering and Architecture | |
| | GJS24001003Z | 遥感原理与应用<br>Remote Sensing Principles and Applications | 32 | 2 | 1 | 地测学院 School of Geological Surveying | |
| 专业课模块 Specialized courses | GJS24002004Z | 地形测绘及形变监测原理与应用<br>Principles and Applications of Topographic Mapping and Deformation Monitoring | 48 | 3 | 1 | 地测学院 School of Geological Surveying | 6 学分<br>6 credits |
| | GJS24002005Z | 遥感数据处理与分析<br>Remote Sensing Data Processing and Analysis | 48 | 3 | 1 | 地测学院 School of Geological Surveying | |
| | GJS2400301GF | 学术规范与论文写作<br>Academic Norms and Paper Writing | 16 | 1 | 2 | 化环学院 School of Chemical and Environmental Engineering | 必修，1 学分<br>Compulsory, 1 credit |
| 素质提升 | GJS2400301BG | 学术报告能力提升<br>Academic Report Skills Enhancement | 8 | 0.5 | 2 | 化环学院 School of | 《学术报告能力提升》必 |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| 模块 Quality enhancement | | | | | | Chemical and Environmental Engineering | 修，其他选修，≥2 学分 "Academic Report Skills Enhancement" is compulsory; others are optional, ≥2 credits |
| | TS24008001X | 英语口语交际 Oral English Communication | 24 | 1.5 | 2 | 文法学院 School of Humanities and Law | |
| | TS24008002X | 英语高级视听说 Advanced English Listening, Speaking, and Viewing | 24 | 1.5 | 2 | 文法学院 School of Humanities and Law | |
| | TS24107001X | 体育 Physical Education | 16 | 1 | 2 | 体育部 Department of Physical Education | |
| 创新训练模块 Innovative training | GJSWX24002 | 学位论文文献综述汇报 Thesis Literature Review Presentation | | 1 | 1-2 | 地测学院 School of Geological Surveying | 必修，2 学分 Compulsory, 2 credits |
| | GJSXT24002 | 学位论文选题报告 Thesis Topic Report | | 1 | 3 | 地测学院 School of Geological Surveying | |

备注：国际硕士研究生课程学习实行学分制，应修满的总学分数不少于 28 学分。

Note: The international master's degree program in Mining Engineering operates on a credit system, requiring a minimum of 28 credits to be completed.

# §4 地质资源与地质工程（0818）

# §4 Geological Resources and Geological Engineering (0818)

修订负责人：李勇　　主管院长：董东林　　学位评定分委员会主席：代世峰

Revision Supervisor: Li Yong　Dean in Charge: Dong Donglin　Chairperson of the Academic Degree Evaluation Subcommittee: Dai Shifeng

## （一）学科简介

I. Discipline Introduction

地质资源与地质工程硕士学科是一门涵盖了地质资源勘探、开发与利用，以及地质环境保护、工程地质等多方面内容的学科，涉及自然科学、工程技术和环境保护等多个领域。学科主要关注地球内部资源（如矿产资源、能源资源）的形成、勘探、开发及其工程利用，同时研究与地质条件相关的工程问题和地质灾害防治。该学科融合了地质学、矿产学、地球物理学、工程力学、环境科学等多个学科知识。该学科的研究与实践对于矿产资源的可持续开发、基础设施建设、自然灾害预防以及环境保护具有重要意义。

The Master's degree in Geological Resources and Geological Engineering encompasses a wide range of topics including the exploration, development, and utilization of geological resources, as well as geological environmental protection and engineering geology. It involves multiple fields such as natural science, engineering technology, and environmental protection. The discipline primarily focuses on the formation, exploration, development, and engineering utilization of Earth's internal resources (e.g., mineral and energy resources), while also studying engineering problems related to geological conditions and the prevention of geological disasters. It integrates knowledge from various disciplines including geology, mineralogy, geophysics, engineering mechanics, and environmental science. Research and practice in this discipline are crucial for the sustainable development of mineral resources, infrastructure construction, natural disaster prevention, and environmental protection.

## （二）课程设置及学分要求

II. Curriculum and Credit Requirements

**学科名称：**081800（代码）

Discipline Name: 081800 (code)

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic courses | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange Office | 必修，12 学分 Compulsory, 12 credits | |
| | GJ24098002G | 中国文化 Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| | GJ24098003G | 国情教育 Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional basic courses | GJS24007001G | 线性代数与矩阵论 Linear Algebra and Matrix Theory | 48 | 3 | 1 | 理学院 School of Science | 必修 1 门 Compulsory (1 course) | 5 学分 5 credits |
| | GJS24007002G | 应用数理统计 Applied Mathematical Statistics | 48 | 3 | 2 | 理学院 School of Science | | |
| | GJS24006001Z | 采矿岩石力学基础 Fundamentals of Mining Rock Mechanics | 48 | 3 | 2 | 力土学院 School of Civil Engineering and Architecture | 必修 1 门 Compulsory (1 course) | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| | GJS24006002Z | 弹塑性力学<br>Elastoplastic Mechanics | 32 | 2 | 1 | 力土学院 School of Civil Engineering and Architecture | | |
| 专业课模块 Specialized courses | GJS24002001Z | 高等地球科学<br>Advanced Earth Science | 48 | 3 | 1 | 地测学院 School of Geological Surveying | 必修，6 学分 Compulsory, 6 credits | |
| | GJS24002002Z | 应用地球科学<br>Applied Earth Science | 48 | 3 | 1 | 地测学院 School of Geological Surveying | | |
| | GJS2400301GF | 学术规范与论文写作<br>Academic Norms and Paper Writing | 16 | 1 | 2 | 化环学院 School of Chemical and Environmental Engineering | 必修，1 学分 Compulsory, 1 credit | |
| 素质提升模块 Quality enhancement | GJS2400301BG | 学术报告能力提升<br>Academic Report Skills Enhancement | 8 | 0.5 | 2 | 化环学院 School of Chemical and Environmental Engineering | 《学术报告能力提升》必修，其他选修，≥2 学分 "Academic Report Skills Enhancement" is compulsory; others are optional, ≥2 credits | |
| | TS24008001X | 英语口语交际<br>Oral English Communication | 24 | 1.5 | 2 | 文法学院 School of Humanities and Law | | |
| | TS24008002X | 英语高级视听说<br>Advanced English Listening, Speaking, and Viewing | 24 | 1.5 | 2 | 文法学院 School of Humanitie | | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | | s and Law | |
| | TS24107001X | 体育<br>Physical Education | 16 | 1 | 2 | 体育部 Department of Physical Education | |
| 创新训练模块 Innovative training | GJSWX24001 | 学位论文文献综述汇报<br>Thesis Literature Review Presentation | | 1 | 1-2 | 地测学院 School of Geological Surveying | 必修，2 学分 Compulsory, 2 credits |
| | GJSXT24001 | 学位论文选题报告<br>Thesis Topic Report | | 1 | 3 | 地测学院 School of Geological Surveying | |

备注：国际硕士研究生课程学习实行学分制，应修满的总学分数不少于 28 学分。

Note: The international master's degree program in Mining Engineering operates on a credit system, requiring a minimum of 28 credits to be completed.

# 四、化环学院

# IV. School of Chemical and Environmental Engineering

## §5 矿业工程（0819）

## §5 Mining Engineering (0819)

修订负责人：徐宏祥　　主管院长：王卫东　　学位评定分委员会主席：邓久帅
Revision Supervisor: Xu Hongxiang　Dean in Charge: Wang Weidong　Chairperson of the Academic Degree Evaluation Subcommittee: Deng Jiushuai

### （一）学科简介

I. Discipline Introduction

矿业工程是研究物质分离与资源加工的国家级重点学科，是学校“211工程”、“985优势学科创新平台”和“111引智计划”重点建设学科，入选首批“国家双一流”建设学科和“一流专业”。矿业工程1998年成为首批“长江学者奖励计划”特聘教授设岗学科，2007年被教育部批准为高等学校特色专业建设点，2008年被北京市教委批准为北京市高等学校特色专业建设点，2018年通过中国工程教育认证，进入全球工程教育“第一方阵”，2022年教育部公布的第五轮学科评估中，矿业工程排名第一。主要研究方向包括矿物分选理论与工艺、洁净煤技术与工艺、矿物加工机械与智能控制、矿物加工药剂设计与应用、固废资源化与深加工、矿物材料加工与应用等，具体研究方向如下：

Mining Engineering, a national key discipline focused on material separation and resource processing, is a priority discipline under the university's "211 Project," "985 Project Advantage Discipline Innovation Platform," and "111 Project for Attracting Overseas Talents." It has been selected as one of the first disciplines for the "National Double First-Class" initiative and recognized as a "First-Class Discipline" and "First-Class Program." In 1998, Mining Engineering became one of the first disciplines to establish positions for specially-appointed professors under the "Changjiang Scholars Program." In 2007, it was approved by the Ministry of Education as a distinctive specialty construction site for higher education institutions, and in 2008, it received the same recognition from the Beijing Municipal Education Commission. In 2018, it passed the China Engineering Education Certification, entering the "first tier" of global engineering education. In the

fifth round of discipline evaluations announced by the Ministry of Education in 2022, Mining Engineering ranked first. The main research directions include: mineral separation theory and technology, clean coal technology and processes, mineral processing machinery and intelligent control, design and application of mineral processing agents, solid waste resource recovery and deep processing, and mineral material processing and application. The specific research directions are as follows:

1. 矿物分选理论与工艺

Mineral Separation Theory and Technology

研究矿物的赋存规律、破碎解离特性及表面特征；研究微细粒矿物分级、煤岩组分富集的基础理论和工艺；研究矿物重力分选、泡沫浮选、磁电分选、传感器识别分选等分选理论与工艺；研究物料的固液分离理论和工艺。

Investigating the occurrence patterns, crushing and liberation characteristics, and surface properties of minerals; studying the basic theories and processes for the classification of fine-grained minerals and the enrichment of coal and rock components; researching separation theories and technologies such as gravity separation, froth flotation, magnetic and electrical separation, and sensor-based recognition separation; and exploring solid-liquid separation theories and processes.

2. 洁净煤技术与工艺

Clean Coal Technology and Processes

研究煤基浆体燃料制备、型煤加工、配煤等煤炭提质加工的理论与新工艺；研究煤炭在分选、转化、加工和利用过程中的环境污染及防控机制；研究煤炭全生命周期过程中的碳足迹和节能减排路径。

Examining theories and new processes for improving the quality of coal through coal-based slurry fuel preparation, briquette processing, and coal blending; studying environmental pollution and prevention mechanisms during coal separation, conversion, processing, and utilization; and investigating the carbon footprint and energy-saving and emission-reduction pathways throughout the coal lifecycle.

3. 矿物加工机械与智能控制

Mineral Processing Machinery and Intelligent Control:

研究矿物加工机械设备的结构优化、系统动力学与可靠性分析；研究矿物加工过程的在线检测与控制的理论方法；研究智能感知、智能决策、智能诊断、智能管理及智能工艺；研究矿物加工过程单元及工艺过程的数值计算与模拟仿真。

Researching the structural optimization, system dynamics, and reliability analysis of mineral processing machinery and equipment; studying theoretical methods for online detection and control

in mineral processing; exploring intelligent perception, decision-making, diagnosis, management, and processes; and investigating numerical calculations and simulation models for unit and process stages in mineral processing.

4. 矿物加工药剂设计与应用

Design and Application of Mineral Processing Agents

研究矿物加工药剂的结构、性能和界面吸附的规律；研究矿物加工药剂分子的靶向设计与绿色合成；研究药剂与矿物界面的作用与调控机制；研究药剂分子与矿物界面作用的量化计算与分子模拟。

Investigating the structure, performance, and interface adsorption patterns of mineral processing agents; studying targeted design and green synthesis of mineral processing agent molecules; examining the interaction and regulation mechanisms between agents and mineral interfaces; and researching quantitative calculations and molecular simulations of agent-mineral interface interactions.

5. 固废资源化与深加工

Solid Waste Resource Recovery and Deep Processing

研究矿山固废、城市固废的综合利用技术与工艺；研究固废资源化过程中有害元素的迁移转化和控制技术；研究固废中有价组分协同提取与废渣资源化技术；研究固废源头减量、智能分类回收、清洁增值利用、高效安全转化、智能精深拆解、精准管控决策技术。

Study technologies and processes for the comprehensive utilization of mining and urban solid wastes; investigating the migration, transformation, and control technologies for harmful elements during solid waste resource recovery; examining technologies for synergistic extraction of valuable components and resource recovery from solid waste; and researching technologies for solid waste source reduction, intelligent classification and recovery, clean value-added utilization, efficient and safe conversion, intelligent deep dismantling, and precise management and control decision-making.

6. 矿物材料加工与利用

Mineral Material Processing and Utilization

研究煤及矿石的矿物组成、结构与性能，加工利用方法与工艺；研究煤及矿石的超细粉碎、精细分级、表面改性、精选提纯等深加工技术；研究功能矿物材料的制备、性能调控与应用技术。

Researching the mineral composition, structure, and properties of coal and ore, as well as processing and utilization methods and processes; studying deep processing technologies such as ultrafine pulverization, fine classification, surface modification, and purification of coal and ore; and exploring the preparation, performance regulation, and application technologies of functional mineral materials.

## （二）课程设置及学分要求

II. Curriculum and Credit Requirements

**学科名称：矿业工程（矿物加工工程、矿业材料工程）（081902、0819Z3）**

Discipline Name: Mining Engineering (Mineral Processing Engineering, Mining Materials Engineering) (081902, 0819Z3)

| **课程类别 Course Categories** | **课程编号 Course Codes** | **课程名称 Course Names** | **学时 Hours** | **学分 Credits** | **开课学期 Semesters Offered** | **开课学院 Offering Schools** | **备注 Remarks** | |
|---|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic courses | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange Office | 必修，12 学分 Compulsory, 12 credits | |
| | GJ24098002G | 中国文化 Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| | GJ24098003G | 国情教育 Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional basic cours | GJS24007001G | 线性代数与矩阵论 Linear Algebra and Matrix Theory | 48 | 3 | 1 | 理学院 School of Science | 必修 1 门 Compulsory (1 course) | 5 学分 5 credits |
| | GJS24007002G | 应用数理统计 Applied Mathematical Statistics | 48 | 3 | 2 | 理学院 School of Science | | |
| | GJS24006001Z | 采矿岩石力学基础 Fundamentals of Mining Rock | 48 | 3 | 2 | 力土学院 School of | 必修 1 门 | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| es | | Mechanics | | | | Civil Engineering and Architecture | Compulsory (1 course) | |
| | GJS24006002Z | 弹塑性力学<br>Elastoplastic Mechanics | 32 | 2 | 1 | 力土学院<br>School of Civil Engineering and Architecture | | |
| 专业课模块 Specialized courses | GJS24003001Z | 矿物加工工程学术基础与前沿<br>Academic Foundations and Frontiers of Mineral Processing Engineering | 48 | 3 | 1 | 化环学院<br>School of Chemical and Environmental Engineering | 6 学分<br>6 credits | |
| | GJS24003002Z | 矿物加工分离科学基础与前沿<br>Foundations and Frontiers of Mineral Processing and Separation Science | 48 | 3 | 1 | 化环学院<br>School of Chemical and Environmental Engineering | | |
| | GJS2400301GF | 学术规范与论文写作<br>Academic Norms and Thesis Writing | 16 | 1 | 2 | 化环学院<br>School of Chemical and Environmental Engineering | 必修，1 学分<br>Compulsory, 1 credit | |
| 素质提升模块 Quality | GJS2400301BG | 学术报告能力提升<br>Academic Report Skills Enhancement | 8 | 0.5 | 2 | 化环学院<br>School of Chemical and Environm | 《学术报告能力提升》必修，其他选修，≥2 学分<br>"Academic | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| enhancement | | | | | | ental Engineering | Report Skills Enhancement" is compulsory; others are optional, ≥2 credits |
| | TS24008001X | 英语口语交际<br>Oral English Communication | 24 | 1.5 | 2 | 文法学院 School of Humanities and Law | |
| | TS24008002X | 英语高级视听说<br>Advanced English Listening, Speaking, and Viewing | 24 | 1.5 | 2 | 文法学院 School of Humanities and Law | |
| | TS24107001X | 体育<br>Physical Education | 16 | 1 | 2 | 体育部 Department of Physical Education | |
| 创新训练模块 Innovative training | GJSWX24003 | 学位论文文献综述汇报<br>Thesis Literature Review Presentation | | 1 | 1-2 | 化环学院 | 必修，2 学分<br>Compulsory, 2 credits |
| | GJSXT24003 | 学位论文选题报告<br>Thesis Topic Report | | 1 | 3 | 化环学院 School of Chemical and Environmental Engineering | |

备注：国际硕士研究生课程学习实行学分制，应修满的总学分数不少于 28 学分。

Note: The international master's degree program in Mining Engineering operates on a credit system, requiring a minimum of 28 credits to be completed.

# 五、力土学院

# V. School of Civil Engineering and Architecture

## §6 土木工程（0814）

## §6 Civil Engineering (0814)

修订负责人：　　主管院长：吴丽丽　　学位评定分委员会主席：左建平

Revision Supervisor:　Dean in Charge: Wu Lili　Chairperson of the Academic Degree Evaluation Subcommittee: Zuo Jianping

### （一）学科简介

I. Discipline Introduction

中国矿业大学（北京）的土木工程学科起源于1909年的焦作路矿学堂的矿冶、路工等相关课程。1953年，北京矿业学院成立矿井建设专业，成为国内第一个定位于培养矿山土木工程专业技术人才的专业。1978年，中国矿业大学北京研究生部成立，矿山建设工程恢复研究生招生。1998年学校恢复本科招生，矿山建设工程更名为土木工程，土木工程专业于1999年恢复招收第一届本科生。2005年，土木工程一级学科获批博士学位整体授予权和博士后流动站。2008年土木工程获批“北京市重点学科”和特色专业。2010年土木工程专业获教育部特色专业，2019年土木工程专业入选首批国家级一流本科专业建设点。目前，土木工程一级学科下设6个研究方向，具体如下：

The discipline of civil engineering at China University of Mining and Technology (Beijing) originated from the mining, road engineering, and other related courses offered at the Jiaozuo Mining and Railway College in 1909. In 1953, Beijing Mining Institute established the Mine Construction specialty, becoming the first in China to focus on cultivating professionals in mine civil engineering. In 1978, the Graduate School of China University of Mining and Technology, Beijing was established, and graduate enrollment in mine construction engineering was resumed. In 1998, the university resumed undergraduate enrollment, renaming the mine construction engineering program as civil engineering. The first batch of undergraduate students was enrolled in the civil engineering program in 1999. In 2005, the civil engineering discipline was approved for the overall awarding of doctoral degrees and the establishment of a postdoctoral research station. In 2008, civil

engineering was approved as a "Beijing Key Discipline" and a distinctive specialty. In 2010, the civil engineering program was recognized as a distinctive specialty by the Ministry of Education, and in 2019, it was selected as one of the first national first-tier undergraduate programs for professional development. Currently, the civil engineering discipline comprises six research directions, detailed as follows:

1. 智慧新型材料与结构体系新技术

New Technologies for Smart and Innovative Materials and Structural Systems

研究智慧型新材料、绿色建筑的相关理论和技术，包括低碳环保智慧材料和绿色建材的研发，和超高性能混凝土、超高耐久性混凝土的物理力学性能；研究建筑信息模型BIM相关技术、装配式混凝土结构和钢结构体系、钢-混凝土组合结构新技术；研究采煤井巷支护结构、城市地下空间工程结构等在地震作用、冲击荷载、爆炸载荷等作用下的承载性能和破坏模式；各种结构设计、计算分析理论和相关建造技术，探索各种数值分析建模的正确方法。Research focuses on theories and technologies related to smart new materials and green buildings, including the development of low-carbon, environmentally friendly smart materials and green building materials, as well as the physical and mechanical properties of ultra-high-performance concrete and ultra-high-durability concrete. It also studies Building Information Modeling (BIM) related technologies, prefabricated concrete structures and steel structural systems, new technologies for steel-concrete composite structures, the load-bearing performance and failure modes of coal mining roadway supporting structures and urban underground space engineering structures under earthquakes, impact loads, and explosive loads, various structural designs, computational analysis theories, and related construction technologies, exploring accurate methods for various numerical analysis modeling.

2. 岩土力学与工程

Geomechanics and Engineering

研究岩土工程力学特性、特殊环境下的岩土工程稳定性、岩土体的非均质各向异性特征及岩土工程数值计算方法；探讨岩土介质的动力与静力破坏强度准则；研究岩土工程勘察与设计、岩土工程治理与监测技术理论和岩土工程的最优施工技术等。

Research focuses on the mechanical properties of geotechnical engineering, the stability of geotechnical engineering in special environments, the heterogeneous and anisotropic characteristics of rock and soil masses, and numerical calculation methods for geotechnical engineering. It also explores the dynamic and static failure strength criteria of rock and soil media, and studies geotechnical engineering survey and design, geotechnical engineering treatment and monitoring

technology theories, and optimal construction techniques for geotechnical engineering.

3. 岩石动力学与破岩工程

Rock Dynamics and Rock Breaking Engineering

研究不同材料介质中动载荷作用下的传播规律及损伤破坏机理；研究爆破模型试验及超动态测试方法；研究爆破应力波的传播、裂纹发生与扩展和介质的运动规律；研究新型炸药、爆破器材及炸药爆炸能量利用技术；研究炸药能量利用和爆破质量控制的理论与技术；研究固体介质的应力波传播理论、冲击破碎机理和凿岩机具等；研究岩土工程控制爆破理论与技术；研究现代机械破岩理论与技术。

Research focuses on the propagation laws and damage failure mechanisms under dynamic loads in different material media, blasting model tests and ultra-dynamic testing methods, the propagation of blasting stress waves, crack initiation and propagation, and the movement patterns of media, new explosives, blasting equipment, and technologies for utilizing explosive energy, theories and technologies for utilizing explosive energy and controlling blasting quality, stress wave propagation theories in solid media, impact fragmentation mechanisms and rock drilling equipment, controlled blasting theories and technologies in geotechnical engineering, and modern mechanical rock breaking theories and technologies.

4. 软岩工程理论与技术

Soft Rock Engineering Theories and Technologies

研究软岩工程地质力学与地应力测试、软岩黏土矿物与大变形特性、软岩工程岩体大变形力学特性；研究软岩力学特性测试试验设备与方法、软岩工程大变形数值模拟方法、软岩巷道及边坡工程稳定性分析与评价；开发软岩巷道支护理论与技术、软岩工程大变形灾害控制技术与工艺、软岩大变形控制材料与力学特性、软岩大变形灾害监测技术与装备等。

Research focuses on the engineering geology mechanics and in-situ stress testing of soft rocks, the clay minerals and large deformation characteristics of soft rocks, and the large deformation mechanical properties of soft rock engineering rock masses. It also studies testing equipment and methods for the mechanical properties of soft rocks, numerical simulation methods for large deformations in soft rock engineering, stability analysis and evaluation of soft rock tunnels and slope engineering, and develops theories and technologies for supporting soft rock tunnels, control technologies and processes for large deformation disasters in soft rock engineering, materials and mechanical properties for controlling large deformations in soft rocks, and monitoring technologies and equipment for disasters involving large deformations in soft rocks.

5. 深地工程灾害控制理论与技术

Theories and Technologies for Controlling Disasters in Deep Underground Engineering

研究深部矿山开采及地下工程灾害诱发岩土体非线性大变形力学特点、工程地质与水文地质原位测试、深地工程灾害致灾机理及危险性评价、深地工程灾害力学实验及数值模拟；开发深地工程灾害控制理论与设计方法、深地工程灾害控制材料、深地工程防灾减灾工艺与技术、深地工程热害机理与防治技术、深地工程热能利用技术与工艺、深地工程灾害监测预警方法与技术等。

Research focuses on the nonlinear large deformation mechanical characteristics of rock and soil masses induced by deep mining and underground engineering disasters, in-situ testing of engineering geology and hydrogeology, disaster-causing mechanisms and hazard assessments for deep underground engineering disasters, mechanical experiments and numerical simulations of deep underground engineering disasters, and the development of theories and design methods for controlling disasters in deep underground engineering, materials for controlling disasters in deep underground engineering, technologies and processes for disaster prevention and mitigation in deep underground engineering, mechanisms and prevention technologies for heat hazards in deep underground engineering, technologies and processes for utilizing thermal energy in deep underground engineering, and methods and technologies for monitoring and early warning of disasters in deep underground engineering.

6. 隧道与地下空间工程

Tunnel and Underground Space Engineering

研究隧道的开挖与支护理论与技术；研究地下工程的最佳结构形式、围岩稳定性及合理支护技术；研究开发城市地下空间资源的综合利用技术、城市地下规划设计系统网络与设施、设备、建筑环境；开发完善适用于地下工程的新设备、新技术、新工艺；开发特殊环境条件下的地下工程特殊施工与维护技术。

Research focuses on theories and technologies for tunnel excavation and support, the optimal structural forms for underground engineering, the stability of surrounding rocks, and reasonable support technologies. It also studies and develops comprehensive utilization technologies for urban underground space resources, urban underground planning and design system networks, facilities, equipment, and building environments, improves and develops new equipment, technologies, and processes suitable for underground engineering, and develops special construction and maintenance technologies for underground engineering under special environmental conditions.

## （二）课程设置及学分要求

II. Curriculum and Credit Requirements

学科名称：土木工程（0814）

Discipline Name: Civil Engineering (0814)

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic courses | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange Office | 必修，12 学分 Compulsory, 12 credits | |
| | GJ24098002G | 中国文化 Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| | GJ24098003G | 国情教育 Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional basic courses | GJS24007001G | 线性代数与矩阵论 Linear Algebra and Matrix Theory | 48 | 3 | 1 | 理学院 School of Science | 必修 1 门 Compulsory (1 course) | 5 学分 5 credits |
| | GJS24007002G | 应用数理统计 Applied Mathematical Statistics | 48 | 3 | 2 | 理学院 School of Science | | |
| | GJS24006001Z | 采矿岩石力学基础 Fundamentals of Mining Rock Mechanics | 48 | 3 | 2 | 力土学院 School of Civil Engineerin | 必修 1 门 Compulsory | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | g and Architecture | (1 course) | |
| | GJS24006002Z | 弹塑性力学<br>Elastoplastic Mechanics | 32 | 2 | 1 | 力土学院 School of Civil Engineering and Architecture | | |
| 专业课模块 Specialized courses | GJS24006003Z | 建设项目全过程咨询理论与实践<br>Theory and Practice for Engineering Consultanting of the Whole Project Life Cycle | 16 | 1 | 2 | 力土学院 School of Civil Engineering and Architecture | 6 学分<br>6 credits | |
| | GJS24006004Z | 高等土力学<br>Advanced Soil Mechanics | 16 | 1 | 2 | 力土学院 School of Civil Engineering and Architecture | | |
| | GJS24006005Z | 软岩工程地质学基础与前沿<br>Fundamentals and frontiers of soft rock engineering geology | 16 | 1 | 2 | 力土学院 School of Civil Engineering and Architecture | | |
| | GJS24006006Z | 混凝土材料<br>Concrete Materials | 16 | 1 | 2 | 力土学院 School of Civil Engineering and Architecture | | |
| | GJS24006007Z | 先进水泥基复合材料<br>Advanced cement-based composite materials | 16 | 1 | 2 | 力土学院 School of Civil | | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | | Engineering and Architecture | |
| | GJS24006008Z | 有限元结构分析<br>Finite Element Analysis of Structures | 16 | 1 | 2 | 力土学院<br>School of Civil Engineering and Architecture | |
| | GJS2400301GF | 学术规范与论文写作<br>Academic Norms and Thesis Writing | 16 | 1 | 2 | 化环学院<br>School of Chemical and Environmental Engineering | 必修，1 学分<br>Compulsory, 1 credit |
| 素质提升模块<br>Quality enhancement | GJS2400301BG | 学术报告能力提升<br>Academic Report Skills Enhancement | 8 | 0.5 | 2 | 化环学院<br>School of Chemical and Environmental Engineering | 《学术报告能力提升》必修，其他选修，≥2 学分<br>"Academic Report Skills Enhancement" is compulsory; others are optional, ≥2 credits |
| | TS24008001X | 英语口语交际<br>Oral English Communication | 24 | 1.5 | 2 | 文法学院<br>School of Humanities and Law | |
| | TS24008002X | 英语高级视听说<br>Advanced English Listening, Speaking, and Viewing | 24 | 1.5 | 2 | 文法学院<br>School of Humanities and Law | |
| | TS24107001X | 体育<br>Physical Education | 16 | 1 | 2 | 体育部<br>Department of Physical | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | | Education | |
| 创新训练模块 Innovative training | GJSWX24006 | 学位论文文献综述汇报 Thesis Literature Review Presentation | | 1 | 1-2 | 力土学院 School of Civil Engineering and Architecture | 必修，2 学分 Compulsory, 2 credits |
| | GJSXT24006 | 学位论文选题报告 Thesis Topic Report | | 1 | 3 | 力土学院 School of Civil Engineering and Architecture | |

备注：国际硕士研究生课程学习实行学分制，应修满的总学分数不少于 28 学分。

Note: The international master's degree program in Mining Engineering operates on a credit system, requiring a minimum of 28 credits to be completed.

# 第三章　中国矿业大学（北京）
# 关于国际博士研究生（英语授课）培养工作的规定

# Chapter 3 Regulations on the Cultivation of International Doctoral Students (English-taught Programs) at China University of Mining and Technology, Beijing

## 一、培养目标

## I. Cultivation Objectives

1. 了解中国文化和基本国情，坚持对我国友好的政治立场，尊重中国的社会公德和风俗习惯，遵纪守法，品行端正，诚实守信，身心健康，具有良好的科研道德和敬业精神。

To understand Chinese culture and basic national conditions, uphold a politically friendly stance towards China, respect Chinese social ethics and customs, abide by laws and regulations, exhibit good moral character, honesty, and integrity, maintain physical and mental health, and possess excellent scientific research ethics and professional dedication.

2. 适应科技进步和社会发展需要，在本学科掌握坚实的基础理论和系统的专门知识，有较宽的知识面和较强的自学能力，具有从事科学研究或独立担负专门技术工作的能力。汉语水平要求具有使用生活用语和阅读本专业汉语资料的初步能力。

To adapt to advancements in science and technology as well as societal development, acquire a solid theoretical foundation and systematic specialized knowledge in the chosen discipline, possess a broad knowledge base and strong self-learning ability, and have the capacity to engage in scientific research or independently undertake specialized technical work. The Chinese language proficiency requirement includes the ability to use daily expressions and read Chinese materials related to the student's major.

3. 具有创新精神、创造能力和创业素质。

To cultivate a spirit of innovation, creativity, and entrepreneurial qualities.

4. 通过体育锻炼提高身体素质，在学习过程中完善自我认知，确保身心健康。

To enhance physical fitness through physical exercise, refine self-awareness during the learning process, and ensure physical and mental well-being.

## 二、培养方式

II. Cultivation Mode

1. 国际博士研究生实行学分制，采取课程学习和学位论文相结合的培养方式，实行责任导师负责制，或以导师为主的指导小组制。

International doctoral students follow a credit-based system, combining coursework with dissertation research, under the guidance of a responsible supervisor or a supervisory team primarily led by the supervisor.

2. 国际博士研究生的培养语言为中文或英文。

The cultivation language for international doctoral students is either Chinese or English.

3. 各学科应结合自身特点确定具体的人才培养方式。

Each discipline should determine specific cultivation methods based on its own characteristics.

## 三、学制和学习年限

III. Academic System and Duration of Study

国际博士研究生学制为 4 年，最长学习年限为 6 年。如遇特殊情况，参照《中国矿业大学（北京）招收和培养国际学生管理办法》规定执行。

The academic system for international doctoral students is 4 years, with a maximum study duration of 6 years. In special cases, refer to the provisions of the "Regulations on the Recruitment and Cultivation of International Students at China University of Mining and Technology, Beijing."

## 四、课程设置及学分要求

IV. Academic System and Duration of Study

国际博士研究生培养实行学分制，应修满的总学分数不少于 22 学分。课程设置分为公共基础课模块、专业基础课模块、专业课模块、素质提升模块和创新训练模块 5 个部分，详见表 1。

International doctoral students follow a credit-based system, requiring a minimum of 22 credits. The curriculum is divided into five modules: public basic courses, professional basic courses, specialized courses, quality enhancement, and innovative training. See Table 1 for details.

**表 1　国际博士研究生课程设置及学分要求**

**Table 1: Curriculum and Credit Requirements for International Doctoral Students**

| 课程类别<br>Course Module | 课程设置及要求<br>Curriculum and Requirements | 学分要求<br>Credit Requirements | |
|---|---|---|---|
| 公共基础课模块<br>Public basic courses | 《汉语综合》（80 学时，5 学分），必修。<br>"Comprehensive Chinese" (80 hours, 5 credits), compulsory. | 5 学分<br>5 credits | ≥20 学分<br>≥20 credits |
| | 《中国文化》（80 学时，5 学分），必修。<br>"Chinese Culture" (80 hours, 5 credits), compulsory. | 5 学分<br>5 credits | |
| | 《国情教育》（32 学时，2 学分），必修。<br>"Education on National Conditions" (32 hours, 2 credits), compulsory. | 2 学分<br>2 credits | |
| 专业基础课模块<br>Professional basic courses | 公共基础理论课：设置数学类公共基础理论课，必修 1 门。<br>专业基础理论课：设置理工类专业基础理论课，必修 1 门。<br>Public basic theory courses: One compulsory mathematics-related course.<br><br>Professional basic theory courses: One compulsory science and engineering-related course. | ≥5 学分<br>≥5 credits | |
| 专业课模块<br>Specialized courses | 每个学科设置 1 门专业课，必修 3 学分。<br>Each discipline offers one specialized course, compulsory for 3 credits. | 3 学分<br>3 credits | |
| 创新训练模块<br>Innovative training | 学位论文选题报告（第 3 学期）<br>Dissertation topic proposal report (3rd semester) | 1 学分<br>1 credit | 2 学分<br>2 credits |
| | 中期考核（由学院制定具体的考核办法）（第 4 学期，每人 2 次机会）<br>Mid-term assessment (specific assessment methods determined by the school) (4th semester, two opportunities per person) | 1 学分<br>1 credit | |
| 总学分数≥22 学分<br>Total Credits ≥22 credits | | | |

1．学位论文选题报告

Dissertation Topic Proposal Report

研究生选题一般在第 3 学期进行，需完成课程学习和学位论文文献综述汇报后方可进行。可参照选题规定文件执行。

The dissertation topic selection is generally conducted in the 3rd semester, after completing coursework and presenting a literature review report on the dissertation. Refer to the relevant topic selection regulations.

2．中期考核

Mid-term Assessment

博士选题通过后，间隔一学期需进行中期考核，中期考核通过后间隔一学期方可申请毕业。可参照中期考核文件执行。

After the dissertation topic is approved, a mid-term assessment is conducted one semester later. Graduation can be applied for one semester after passing the mid-term assessment. Refer to the relevant mid-term assessment regulations.

## 五、学位论文要求

V. Dissertation Requirements

1. 学位论文可用英文完成，但应撰写中文摘要。学位论文答辩语言可使用中文或英文；答辩审批材料及决议等必须用中文书写并存档，可附有英文副本。

The dissertation can be completed in English but must include a Chinese abstract. The dissertation defense can be conducted in either Chinese or English; however, the defense approval materials and decisions must be written and archived in Chinese, with English copies attached if necessary.

2. 具体要求按照《中国矿业大学（北京）学位授予工作细则》、《中国矿业大学（北京）研究生学位论文选题工作的规定》、《中国矿业大学（北京）研究生学位论文撰写规定》等相关规定执行。

Specific requirements are implemented in accordance with the "Detailed Rules for Degree Awarding at China University of Mining and Technology, Beijing," "Regulations on Dissertation Topic Selection for Graduate Students at China University of Mining and Technology, Beijing," "Regulations on Dissertation Writing for Graduate Students at China University of Mining and Technology, Beijing," and other relevant provisions.

## 六、本培养方案于 2024 年 9 月修订，自 2025 级国际博士研究生起开始实施，解释权归研究生院及国际合作交流处。

VI. These cultivation regulations were revised in September 2024 and will be implemented starting from the 2025 intake of international doctoral students. The Graduate School and the International Cooperation and Exchange Office reserve the right to interpret these regulations.

# 第四章　中国矿业大学（北京）
# 国际博士研究生（英语授课）培养方案

# Chapter 4: Cultivation Scheme of International Doctor's Students (English-taught Programs) at China University of Mining and Technology, Beijing

## 一、能源学院

## I. School of Energy

## §1 矿业工程（0819）

## §1 Mining Engineering (0819)

修订负责人：　吴仁伦　　主管院长：　张俊文　　学位评定分委员会主席：　杨胜利

Revision Supervisor: Wu Renlun　Dean in Charge: Zhang Junwen　Chairperson of the Academic Degree Evaluation Subcommittee: Yang Shengli

### （一）学科简介

### I. Discipline Introduction

矿业工程是研究矿产资源开发与利用的国家级重点学科，是国家“211 工程”、“985 工程优势学科创新平台”和“世界一流学科建设”的重点建设学科，在全国学科评估中已连续五次名列第一，获批“绿色智能开采理论与技术学科”111 引智计划项目、“煤炭资源绿色智能安全开采”国家自然科学基金委员会创新研究群体项目，拥有矿业工程“长江学者”奖励计划特聘教授设岗学科，矿业工程博士后科研流动站。主要研究方向包括：矿产资源开发与利用、岩层控制与灾害防治、绿色与智能开采。各研究方向研究内容具体如下：

Mining Engineering is a national key discipline focused on the development and utilization of mineral resources. It is a prioritized discipline in the national "211 Project," "985 Project Advantage Discipline Innovation Platform," and "World-Class Discipline Construction." In national discipline evaluations, it has consistently ranked first for five consecutive times. The discipline has been approved for the "Green and Intelligent Mining Theory and Technology" 111 Project for Introducing Talents, the "Green, Intelligent, and Safe Mining of Coal Resources" Innovative Research Group

Project of the National Natural Science Foundation of China, and hosts a "Changjiang Scholars" Program Special Appointment Professor position in Mining Engineering. It also boasts a postdoctoral research station in Mining Engineering. The main research directions include:

1. 矿产资源开发与利用

Development and Utilization of Mineral Resources

主要研究矿产资源（地下及露天开采）的高产高效新理论、新技术、新工艺；研究深部开采、浅埋资源开采的理论与技术；研究流态化开采、非常规天然气开采、可燃冰开采、海洋采矿、太空采矿理论与技术；研究资源开发系统规划、能源经济、资源评价、能源与环境理论与方法。

Research on new theories, technologies, and processes for high-yield and high-efficiency mining of mineral resources (both underground and open-pit mining); Study of deep mining, shallow resource mining theories, and technologies; Exploration of fluidized mining, unconventional natural gas extraction, combustible ice mining, ocean mining, and space mining theories and technologies; Research on system planning for resource development, energy economics, resource evaluation, and theories and methods of energy and the environment.

2. 岩层控制与灾害防治

Rock Mass Control and Disaster Prevention

主要研究矿山开采引起的覆岩变形破坏机理和规律；研究采场和巷道围岩控制理论与技术、矿山岩体力学与矿山压力显现；研究矿山灾害致灾机理、预警及防治关键理论与技术；研究地下建设工程理论与技术；研究岩土工程理论与技术；研究边坡、排土场、尾矿库稳定性。

Study of the mechanisms and patterns of overburden deformation and failure caused by mining; Research on control theories and technologies for stope and roadway surrounding rock, mine rock mechanics, and mine pressure manifestations; Investigation of disaster-causing mechanisms, early warning, and key theories and technologies for disaster prevention in mines; Study of underground construction engineering theories and technologies; Research on geotechnical engineering theories and technologies; Analysis of slope, waste dump, and tailings pond stability.

3. 绿色与智能开采

Green and Intelligent Mining

主要研究提高资源采出率、减少开采损害和环境污染与破坏的绿色开采理论与技术；研究矿山及工业固体废料的综合利用新技术；研究矿山环境治理及生态环境重建技术；研究废弃矿山的综合利用技术；研究数字矿山及智慧矿山开采理论、方法和应用技术；研究智能化采掘技术；研究矿山虚拟仿真技术；研究无人化开采技术；研究矿山物联网、大数据及云计

算技术；研究矿业系统计算机优化理论、模型算法及集成技术。

Research on green mining theories and technologies to improve resource recovery rates and reduce mining damage, environmental pollution, and destruction; Study of new technologies for the comprehensive utilization of mine and industrial solid waste; Investigation of mine environmental governance and ecological environment reconstruction technologies; Research on comprehensive utilization technologies for abandoned mines; Study of digital mine and smart mine mining theories, methods, and application technologies; Exploration of intelligent mining and excavation technologies; Research on mine virtual simulation technologies; Investigation of unmanned mining technologies; Study of mine IoT, big data, and cloud computing technologies; Research on computer optimization theories, model algorithms, and integration technologies for mining systems.

**（二）课程设置及学分要求**

II. Curriculum and Credit Requirements

**学科名称：矿业工程（0819）**

| **课程类别 Course Categories** | **课程编号 Course Codes** | **课程名称 Course Names** | **学时 Hours** | **学分 Credits** | **开课学期 Semesters Offered** | **开课学院 Offering Schools** | **备注 Remarks** |
|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic courses | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange Office | 必修，12 学分 Compulsory, 2 credits |
| | GJ24098002G | 中国文化 Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| | GJ24098003G | 国情教育<br>Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional basic courses | GJB24007001G | 多元统计分析<br>Multivariate Statistical Analysis | 48 | 3 | 1 | 理学院 School of Science | 必修 Compulsory | 5 学分 5 credits |
| | GJB24101001Z | 安全科学基础<br>Fundamentals of Safety Science | 32 | 2 | 1 | 安全学院 School of Safety | 必修 1 门必修，1 学分 Compulsory, 1 credit | |
| | GJB24006001Z | 高等岩土力学<br>Advanced rock and soil mechanics | 32 | 2 | 2 | 力土学院 School of Civil Engineering and Architecture | | |
| | GJB24002002Z | 遥感原理与应用<br>Remote Sensing Principles and Applications | 32 | 2 | 1 | 地测学院 School of Geological Surveying | | |
| 专业课模块 Specialized courses | GJB24001001Z | 现代采矿国际学术前沿<br>Modern Mining International Academic Frontiers | 48 | 3 | 1 | 能源学院 School of Energy | 3 学分 3 credits | |
| 素质提升 | GJBXT24001 | 学位论文选题报告<br>Dissertation Topic Selection Report | | 1 | 3 | 能源学院 School of | 必修，2 学分 Compulsory, 2 | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| 模块 Quality enhancement | | | | | | Energy | credits |
| | GJBZQ24001 | 中期考核 Mid-Term Assessment | | 1 | 4 | 能源学院 School of Energy | |

备注：国际博士研究生课程学习实行学分制，应修满的总学分数不少于 22 学分。

Note: The international doctor's degree program in Mining Engineering operates on a credit system, requiring a minimum of 22 credits to be completed.

# 二、安全学院

# II. School of Safety

## §2 安全科学与工程（0837）

## §2 Safety Science and Engineering (0837)

修订负责人：郭海军　　主管院长：佟瑞鹏　　学位评定分委员会主席：吴建松

Revision Supervisor: Guo Haijun　Dean in Charge: Tong Ruipeng　Chairperson of the Academic Degree Evaluation Subcommittee: Wu Jiansong

### （一）学科简介

I. Discipline Introduction

（一）学科定义

(i) Discipline Definition

该专业注重培养能从事安全技术及工程、安全科学与研究、安全监察与管理、工作场所危险有害因素识别与检测、安全设计与生产、安全教育与培训、生产型企业职业卫生防护等方面复合型的高级工程技术人才，是一个涉及面极广的综合交叉学科。

This major focuses on cultivating advanced engineering talents with a composite background in safety technology and engineering, safety science and research, safety supervision and management, identification and detection of hazardous and harmful factors in workplaces, safety design and production, safety education and training, and occupational health protection in production-oriented enterprises. It is a comprehensive and interdisciplinary subject with a wide range of applications.

（二）研究方向

(ii) Research Directions

1. 矿山安全工程

Mine Safety Engineering

以流体力学、工程热物理、爆炸力学、采矿工程、地质工程、岩石力学等自然科学与工程科学、社会科学与管理科学为基础，研究矿山领域矿井瓦斯（煤尘）爆炸、煤与瓦斯突出、矿井火灾、矿井热害、矿井突水等灾害致灾机理、预测预报以及防治理论与技术，开发矿井通风、矿山领域灾害防治、事故救援与事故调查技术、工程方法和装备。研究范围涉及矿山

领域造成生命健康损失、经济损失和环境破坏的各类事故。

Based on fluid mechanics, engineering thermodynamics, explosion mechanics, mining engineering, geological engineering, and rock mechanics, as well as social sciences and management sciences, this direction studies the disaster-causing mechanisms, prediction, and prevention theories and technologies for mine disasters such as mine gas (coal dust) explosions, coal and gas outbursts, mine fires, mine heat hazards, and mine water inrushes. It also develops technologies, engineering methods, and equipment for mine ventilation, disaster prevention in mining areas, accident rescue, and accident investigation. The research scope covers various accidents in the mining field that cause loss of life and health, economic losses, and environmental damage.

2. 应急与安全管理

Emergency and Safety Management

以社会科学、自然科学与管理科学为基础，研究各领域事故发生、发展的管理原因和规律性、事故预防的管理科学方法，开发安全管理方法、方案、管理信息系统及相关管理软件。研究范围涉及质量、安全、健康、安防等造成生命健康损失、经济损失和环境破坏的各类事故。

Based on social sciences, natural sciences, and management sciences, this direction studies the management causes and regularities of accident occurrence and development in various fields, as well as the scientific methods of accident prevention management. It develops safety management methods, plans, management information systems, and related management software. The research scope covers various accidents related to quality, safety, health, and security that cause loss of life and health, economic losses, and environmental damage.

3. 火灾与消防工程

Fire and Fire Protection Engineering

运用工程热物理、燃烧学、流体力学、火灾动力学、风险评估、大数据与人工智能等自然科学、工程科学、社会科学、管理科学基础理论，研究工业与民用建筑通风与消防、城市防火与智慧消防、防灭火材料及装备、火场物证与救援等关键技术，开发火源燃烧特性分析、风（烟）流流动状态的模拟和控制、性能化设计与火灾减灾方法等。研究范围涉及火灾安全与事故损失控制问题。

Using basic theories from engineering thermodynamics, combustion science, fluid mechanics, fire dynamics, risk assessment, big data, and artificial intelligence, as well as social sciences and management sciences, this direction studies key technologies such as ventilation and fire protection in industrial and civil buildings, urban fire prevention and smart fire protection, fire-fighting materials and equipment, and fire scene evidence and rescue. It also develops methods for analyzing

fire source combustion characteristics, simulating and controlling wind (smoke) flow states, performance-based design, and fire disaster reduction. The research scope covers fire safety and accident loss control issues.

4. 城市公共安全

Urban Public Safety

运用流体力学、传热学、灾害学、风险管理、应急管理、城市地理学、计算机模拟、物联网监测监控、数据挖掘、人工智能等交叉学科理论、方法和技术，致力于城市安全风险防控前瞻性、基础性和综合性研究，重点研究城市重大事故灾害演化机理、安全风险辨识分析方法、多灾害综合风险评估方法技术、地下空间开发与利用安全保障技术、生命线系统安全风险防控理论及技术、安全韧性城市防灾减灾、风险监测监控技术与大数据管理平台、应急救援及防护技术、智慧安全城市规划等，为建立健全城市安全风险防控和综合应急机制提供理论依据和技术支撑，服务城市安全发展。

Utilizing interdisciplinary theories, methods, and technologies such as fluid mechanics, heat transfer, disaster science, risk management, emergency management, urban geography, computer simulation, IoT monitoring and control, data mining, and artificial intelligence, this direction focuses on forward-looking, foundational, and comprehensive research on urban safety risk prevention and control. It emphasizes the study of evolution mechanisms of major urban accidents and disasters, safety risk identification and analysis methods, comprehensive risk assessment methods and technologies for multiple disasters, safety assurance technologies for underground space development and utilization, safety risk prevention and control theories and technologies for lifeline systems, disaster prevention and mitigation in resilient cities, risk monitoring and control technologies and big data management platforms, emergency rescue and protection technologies, and smart and safe urban planning. It provides theoretical basis and technical support for establishing and improving urban safety risk prevention and control mechanisms and comprehensive emergency response mechanisms, serving the safe development of cities.

5. 职业安全与健康

Occupational Safety and Health

以自然科学与工程科学为基础，研究广泛领域内事故发生、发展的原因及规律，开发解决职业安全与健康相关的事故预防工程技术和方法、工程装备等。研究范围涉及质量、安全、健康等造成生命健康损失、经济损失和环境破坏的各类事故，含职业安全、公共安全、灾害安全等。

Based on natural and engineering sciences, this direction studies the causes and regularities of accident occurrence and development in a wide range of fields. It develops engineering technologies

and methods, as well as engineering equipment, for preventing accidents related to occupational safety and health. The research scope covers various accidents related to quality, safety, and health that cause loss of life and health, economic losses, and environmental damage, including occupational safety, public safety, and disaster safety.

6. 智慧安全监测与监察

Smart Safety Monitoring and Supervision

以流体力学、弹塑性力学、爆炸力学、计算机科学、数学等自然科学为基础，利用传感器技术、数据采集及信号处理技术、多元信息融合技术、数据挖掘技术等多学科交叉技术，研究煤矿及非煤矿山、危险化学品、民爆器材等行业的主要灾害类型及其监测预警方法，并结合灾害监测的数据、生产过程管控数据、生产工艺特点等基础信息，研究安全生产分布式远程智能监察的技术特征及适用条件。

Based on natural sciences such as fluid mechanics, elastoplastic mechanics, explosion mechanics, computer science, and mathematics, this direction utilizes interdisciplinary technologies such as sensor technology, data acquisition and signal processing technology, multivariate information fusion technology, and data mining technology. It studies the main disaster types and their monitoring and early warning methods in industries such as coal and non-coal mines, hazardous chemicals, and civilian explosives. Combining disaster monitoring data, production process control data, and production process characteristics, it also studies the technical characteristics and applicable conditions of distributed remote intelligent supervision for safe production.

## （二）课程设置及学分要求

## II. Curriculum and Credit Requirements

**学科名称：安全科学与工程（0837）**

Discipline Name: Safety Science and Engineering (0837)

| **课程类别 Course Categories** | **课程编号 Course Codes** | **课程名称 Course Names** | **学时 Hours** | **学分 Credits** | **开课学期 Semesters Offered** | **开课学院 Offering Schools** | **备注 Remarks** |
|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange | 必修，12 学分 Compulsory, 12 credits |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| courses | | | | | | Office | | |
| | GJ24098002G | 中国文化<br>Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| | GJ24098003G | 国情教育<br>Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional basic courses | GJB24007001G | 多元统计分析<br>Multivariate Statistical Analysis | 48 | 3 | 1 | 理学院 School of Science | 必修 Compulsory | 5 学分 5 credits |
| | GJB24101001Z | 安全科学基础<br>Safety Science Foundation | 32 | 2 | 1 | 安全学院 School of Safety | 必修 1 门 Compulsory (1 course) | |
| | GJB24006001Z | 高等岩土力学<br>Advanced Rock and Soil Mechanics | 32 | 2 | 2 | 力土学院 School of Civil Engineering and Architecture | | |
| | GJB24002002Z | 遥感原理与应用<br>Remote Sensing Principles and Applications | 32 | 2 | 1 | 地测学院 School of Geological Surveying | | |
| 专业课模块 | GJB24101002Z | 事故风险防控理论与实践<br>Risk Prevention and Control Theory and Practice for Accidents | 16 | 1 | 1 | 安全学院 School of Safety | 3 学分 3 credits | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| Specialized courses | GJB24101003Z | 瓦斯治理技术及应用<br>Gas Control Technology and Its Application | 16 | 1 | 1 | 安全学院<br>School of Safety | |
| | GJB24101004Z | 火灾防治技术及应用<br>Fire Prevention and Control Technology and Its Application | 16 | 1 | 1 | 安全学院<br>School of Safety | |
| 创新训练模块 Innovative training | GJBXT24101 | 学位论文选题报告<br>Dissertation Topic Proposal Report | | 1 | 3 | 安全学院<br>School of Safety | 必修，2 学分<br>Compulsory, 2 credits |
| | GJBZQ24101 | 中期考核<br>Mid-term Assessment | | 1 | 4 | 安全学院<br>School of Safety | |

备注：国际博士研究生课程学习实行学分制，应修满的总学分数不少于 22 学分。

Note: The international doctor's degree program in Mining Engineering operates on a credit system, requiring a minimum of 22 credits to be completed.

# 三、地测学院

# III. School of Geological Surveying

## §3 测绘科学与技术（0816）

## §3 Surveying and Mapping Science and Technology (0816)

修订负责人：许志华　　主管院长：董东林　学位评定分委员会主席：代世峰

Revision Supervisor: Xu Zhihua　Dean in Charge: Dong Donglin　Chairperson of the Academic Degree Evaluation Subcommittee: Dai Shifeng

### （一）学科简介

I. Discipline Introduction

测绘科学与技术是研究地球和其他实体与时空分布有关信息的采集、量测、处理、分析、显示、管理和利用的科学与技术。

Surveying and Mapping Science and Technology is the science and technology that studies the collection, measurement, processing, analysis, display, management, and utilization of information related to the spatial and temporal distribution of the Earth and other entities.

从 20 世纪 80 年代到 21 世纪初，测绘科学与技术学科已实现了由传统测绘向数字化测绘的转变和跨越，现在正在沿着信息化测绘道路迈进。当今世界各国都把加速信息化进程视为新型发展战略，因而测绘信息服务的方式和内容在国家信息化建设的大环境下发生了深刻变化，由此促进了测绘信息化的发展，推动了测绘领域相关技术的优化升级，继而催生了信息化测绘的新概念。信息化测绘的基本含义是在数字化测绘的基础上，通过完全网络化的运行环境，实时有效地向社会各类用户提供地理空间信息综合服务的测绘方式和功能形态。其特征为：技术体系数字化、功能取向服务化、数据更新实时化、信息交互网络化、基础设施公用化、信息服务社会化、信息共享法制化。因此现阶段的测绘科学与技术学科的发展现状和趋势，主要是以卫星导航定位技术(GNSS)、遥感技术(RS)、地理信息系统技术(GIS)为代表的现代测绘技术做支撑，发展地理空间信息的快速获取、自动化处理、一体化管理和网络化服务，建立较为完善的全国统一、高精度、动态更新的现代化测绘基准体系，建成现势性好、品种丰富的基础地理信息资源体系，基于航空、

航天、地面、海上多平台、多传感器的实时化地理空间信息获取体系，基于空间信息网络和集群处理技术的一体化、智能化、自动化地理空间信息处理体系，基于丰富地理空间信息产品和共享服务平台的网络化地理空间信息服务体系，以此推进信息化测绘的建设进程。开展基础地理信息变化监测和综合分析工作，及时提供地表覆盖、生态环境等方面的变化信息，进行地理国情监测，成为新时期经济社会发展对测绘学科的新需求、新要求。我校测绘科学与技术学科以信息化测绘技术为主要手段，以“变形监测与开采沉陷学”和“矿区生态修复关键技术”为学科特色，持续发展定理国情监测前沿理论。

From the 1980s to the early 21st century, the discipline of Surveying and Mapping Science and Technology has achieved a transformation and leap from traditional surveying and mapping to digital surveying and mapping, and is now advancing along the path of information-based surveying and mapping. Nowadays, countries around the world regard accelerating the informationization process as a new development strategy, leading to profound changes in the methods and content of surveying and mapping information services within the broader context of national informationization. This has promoted the development of information-based surveying and mapping, driven the optimization and upgrading of related technologies in the surveying and mapping field, and subsequently given rise to the new concept of information-based surveying and mapping. The basic meaning of information-based surveying and mapping is a surveying and mapping method and functional form that, based on digital surveying and mapping, provides comprehensive geographic spatial information services to various users in society in a real-time and effective manner through a fully networked operating environment. Its characteristics include: a digitalized technical system, service-oriented functionality, real-time data updates, networked information exchange, shared infrastructure, socialized information services, and legalized information sharing. Therefore, the current development status and trends of the Surveying and Mapping Science and Technology discipline are primarily supported by modern surveying and mapping technologies represented by satellite navigation and positioning technology (GNSS), remote sensing technology (RS), and geographic information system technology (GIS). These technologies are used to develop rapid acquisition, automated processing, integrated management, and networked services of geographic spatial information,

establish a relatively complete, unified, high-precision, and dynamically updated modern surveying and mapping datum system across the country, and build a well-maintained and diverse basic geographic information resource system. This includes a real-time geographic spatial information acquisition system based on multi-platform, multi-sensor aviation, aerospace, ground, and marine platforms, an integrated, intelligent, and automated geographic spatial information processing system based on spatial information networks and cluster processing technology, and a networked geographic spatial information service system based on rich geographic spatial information products and shared service platforms. These efforts aim to advance the construction process of information-based surveying and mapping. Carrying out monitoring and comprehensive analysis of changes in basic geographic information, and timely providing information on changes in surface coverage and ecological environment, as well as conducting geographic national condition monitoring, have become new demands and requirements for the surveying and mapping discipline in the new era of economic and social development. Our university's Surveying and Mapping Science and Technology discipline utilizes information-based surveying and mapping technology as the primary means, with "Deformation Monitoring and Mining Subsidence Science" and "Key Technologies for Ecological Restoration in Mining Areas" as discipline characteristics, to continuously develop frontier theories for monitoring national conditions.

我校测绘科学与技术学科起源于 1953 年北京矿业学院的矿山测量本科专业，1998 年获测绘科学与技术博士后流动站；2000 年获测绘科学与技术一级学科学位授予权；2002 年被列入北京市重点学科；2006 年列入国家重点（培育）学科；2018 年，入选“矿业科学与工程”一流学科群，第四轮学科评估为 A-。

Our university's Surveying and Mapping Science and Technology discipline originated from the undergraduate major of Mine Surveying at the Beijing Mining Institute in 1953. In 1998, it obtained a postdoctoral mobile station for Surveying and Mapping Science and Technology; in 2000, it obtained the right to grant first-level discipline degrees in Surveying and Mapping Science and Technology; in 2002, it was listed as a key discipline in Beijing; in 2006, it was listed as a national key (cultivation) discipline; and in 2018, it was selected as part of the "Mining Science and Engineering" first-class discipline group, with

an A- rating in the fourth round of discipline evaluations.

## （二）课程设置及学分要求

## II. Curriculum and Credit Requirements

**学科名称：测绘科学与技术（0816）**

Discipline Name: Surveying and Mapping Science and Technology (0816)

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic courses | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange Office | 必修，12 学分 Compulsory, 12 credits | |
| | GJ24098002G | 中国文化 Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| | GJ24098003G | 国情教育 Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional | GJB24007001G | 多元统计分析 Multivariate Statistical Analysis | 48 | 3 | 1 | 理学院 School of Science | 必修 Compulsory | 5 学分 5 credits |
| | GJB24002002Z | 遥感原理与应用 Remote Sensing Principles and Applications | 32 | 2 | 1 | 地测学院 School of Geological | 必修 1 门 Compulsory | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| basic courses | | | | | | Surveying | (1 course) |
| 专业课模块 Specialized courses | GJB24002003Z | 地形测绘及形变监测原理与应用 Principles and Applications of Topographic Mapping and Deformation Monitoring | 48 | 3 | 1 | 地测学院 School of Geological Surveying | 3 学分 3 credits |
| 创新训练模块 Innovative training | GJBXT24002 | 学位论文选题报告 Thesis Topic Report | | 1 | 3 | 地测学院 School of Geological Surveying | 必修，2 学分 Compulsory, 2 credits |
| | GJBZQ24002 | 中期考核 Mid-term Examination | | 1 | 4 | 地测学院 School of Geological Surveying | |

备注：国际博士研究生课程学习实行学分制，应修满的总学分数不少于 22 学分。

Note: The international doctor's degree program in Mining Engineering operates on a credit system, requiring a minimum of 22 credits to be completed.

# §4 地质资源与地质工程（0818）

# §4 Geological Resources and Geological Engineering (0818)

修订负责人：李勇　　主管院长：董东林　　学位评定分委员会主席：代世峰

Revision Supervisor: Li Yong　Dean in Charge: Dong Donglin　Chairperson of the Academic Degree Evaluation Subcommittee: Dai Shifeng

## （一）学科简介

I. Discipline Introduction

地质资源与地质工程博士学科是一个高水平的研究型学科，旨在培养具备全球视野、创

新能力和跨学科综合素质的高级地质科研人才。学科不仅聚焦于地质资源的勘探与开发，还注重地质工程中的复杂技术问题和地质环境保护中的前沿课题，要求博士生具备扎实的理论基础、先进的研究方法和解决复杂问题的能力。

The PhD in Geological Resources and Geological Engineering is a high-level research-oriented discipline aimed at cultivating advanced geological research talents with a global perspective, innovative capabilities, and interdisciplinary comprehensive qualities. The discipline not only focuses on the exploration and development of geological resources but also emphasizes complex technical issues in geological engineering and frontier topics in geological environmental protection. PhD candidates are required to have a solid theoretical foundation, advanced research methods, and the ability to solve complex problems.

学科主要研究地球内部的资源生成、分布及其开发与利用的相关理论与技术，涵盖了矿产资源、能源资源、水资源的勘查开发、地质灾害防治、工程地质等多个领域，要求学生具备更高的学术能力，能够开展前沿的科学研究，并在重大工程项目、资源战略决策和环境保护中作出原创性贡献。

The discipline primarily studies the theories and technologies related to the generation, distribution, development, and utilization of Earth's internal resources, covering multiple fields such as the exploration and development of mineral and energy resources, water resources, geological disaster prevention, and engineering geology. Students are expected to possess higher academic abilities, conduct cutting-edge scientific research, and make original contributions to major engineering projects, resource strategic decisions, and environmental protection.

## （二）课程设置及学分要求

II. Curriculum and Credit Requirements

**学科名称：**081800（代码）

Discipline Name: 081800 (code)

| **课程类别 Course Categories** | **课程编号 Course Codes** | **课程名称 Course Names** | **学时 Hours** | **学分 Credits** | **开课学期 Semesters Offered** | **开课学院 Offering Schools** | **备注 Remarks** |
|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic courses | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange Office | 必修，12 学分 Compulsory, 12 credits |
| | GJ24098002G | 中国文化 Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | International Cooperation and Exchange Office | | |
| | GJ24098003G | 国情教育<br>Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional basic courses | GJB24007001G | 多元统计分析<br>Multivariate Statistical Analysis | 48 | 3 | 1 | 理学院 School of Science | 必修 Compulsory | 5 学分 5 credits |
| | GJB24002002Z | 遥感原理与应用<br>Remote Sensing Principles and Applications | 32 | 2 | 1 | 地测学院 School of Geological Surveying | 必修 Compulsory | |
| 专业课模块 Specialized courses | GJB24002001Z | 高等地球科学<br>Advanced Earth Science | 48 | 3 | 1 | 地测学院 School of Geological Surveying | 3 学分 3 credits | |
| 创新训练模块 Innovative training | GJBXT24001 | 学位论文选题报告<br>Thesis Topic Report | | 1 | 3 | 地测学院 School of Geological Surveying | 必修，2 学分 Compulsory, 2 credits | |
| | GJBZQ24001 | 中期考核<br>Mid-term Examination | | 1 | 4 | 地测学院 School of Geological | | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | | Surveying | |

备注：国际博士研究生课程学习实行学分制，应修满的总学分数不少于 22 学分。

Note: The international doctor's degree program in Mining Engineering operates on a credit system, requiring a minimum of 22 credits to be completed.

# （四）化环学院

# IV. School of Chemical and Environmental Engineering

## §5 矿业工程(0819)

## §5 Mining Engineering (0819)

修订负责人：徐宏祥　　主管院长：王卫东　　学位评定分委员会主席：邓久帅
Revision Supervisor: Xu Hongxiang　Dean in Charge: Wang Weidong　Chairperson of the Academic Degree Evaluation Subcommittee: Deng Jiushuai

### （一）学科简介

I. Discipline Introduction

矿业工程是研究物质分离与资源加工的国家级重点学科，是学校“211工程”、“985优势学科创新平台”和“111引智计划”重点建设学科，入选首批“国家双一流”建设学科和“一流专业”。矿业工程1998年成为首批“长江学者奖励计划”特聘教授设岗学科，2007年被教育部批准为高等学校特色专业建设点，2008年被北京市教委批准为北京市高等学校特色专业建设点，2018年通过中国工程教育认证，进入全球工程教育“第一方阵”，2022年教育部公布的第五轮学科评估中，矿业工程排名第一。主要研究方向包括矿物分选理论与工艺、洁净煤技术与工艺、矿物加工机械与智能控制、矿物加工药剂设计与应用、固废资源化与深加工、矿物材料加工与应用等，具体研究方向如下：

Mining Engineering, a national key discipline focused on material separation and resource processing, is a priority discipline under the university's "211 Project," "985 Project Advantage Discipline Innovation Platform," and "111 Project for Attracting Overseas Talents." It has been selected as one of the first disciplines for the "National Double First-Class" initiative and recognized as a "First-Class Discipline" and "First-Class Program." In 1998, Mining Engineering became one of the first disciplines to establish positions for specially-appointed professors under the "Cheung Kong Scholars Program." In 2007, it was approved by the Ministry of Education as a distinctive specialty construction site for higher education institutions, and in 2008, it received the same recognition from the Beijing Municipal Education Commission. In 2018, it passed the China Engineering Education Certification, entering the "first tier" of global engineering education. In the fifth round of discipline evaluations announced by the Ministry of Education in 2022, Mining

Engineering ranked first. The main research directions include: mineral separation theory and technology, clean coal technology and processes, mineral processing machinery and intelligent control, design and application of mineral processing agents, solid waste resource recovery and deep processing, and mineral material processing and application. The specific research directions are as follows:

1. 矿物分选理论与工艺

Mineral Separation Theory and Technology

研究矿物的赋存规律、破碎解离特性及表面特征；研究微细粒矿物分级、煤岩组分富集的基础理论和工艺；研究矿物重力分选、泡沫浮选、磁电分选、传感器识别分选等分选理论与工艺；研究物料的固液分离理论和工艺。

Investigating the occurrence patterns, crushing and liberation characteristics, and surface properties of minerals; studying the basic theories and processes for the classification of fine-grained minerals and the enrichment of coal and rock components; researching separation theories and technologies such as gravity separation, froth flotation, magnetic and electrical separation, and sensor-based recognition separation; and exploring solid-liquid separation theories and processes.

2. 洁净煤技术与工艺

Clean Coal Technology and Processes

研究煤基浆体燃料制备、型煤加工、配煤等煤炭提质加工的理论与新工艺；研究煤炭在分选、转化、加工和利用过程中的环境污染及防控机制；研究煤炭全生命周期过程中的碳足迹和节能减排路径。

Examining theories and new processes for improving the quality of coal through coal-based slurry fuel preparation, briquette processing, and coal blending; studying environmental pollution and prevention mechanisms during coal separation, conversion, processing, and utilization; and investigating the carbon footprint and energy-saving and emission-reduction pathways throughout the coal lifecycle.

3. 矿物加工机械与智能控制

Mineral Processing Machinery and Intelligent Control

研究矿物加工机械设备的结构优化、系统动力学与可靠性分析；研究矿物加工过程的在线检测与控制的理论方法；研究智能感知、智能决策、智能诊断、智能管理及智能工艺；研究矿物加工过程单元及工艺过程的数值计算与模拟仿真。

Researching the structural optimization, system dynamics, and reliability analysis of mineral processing machinery and equipment; studying theoretical methods for online detection and control in mineral processing; exploring intelligent perception, decision-making, diagnosis, management,

and processes; and investigating numerical calculations and simulation models for unit and process stages in mineral processing.

4. 矿物加工药剂设计与应用

Design and Application of Mineral Processing Agents

研究矿物加工药剂的结构、性能和界面吸附的规律；研究矿物加工药剂分子的靶向设计与绿色合成；研究药剂与矿物界面的作用与调控机制；研究药剂分子与矿物界面作用的量化计算与分子模拟。

Investigating the structure, performance, and interface adsorption patterns of mineral processing agents; studying targeted design and green synthesis of mineral processing agent molecules; examining the interaction and regulation mechanisms between agents and mineral interfaces; and researching quantitative calculations and molecular simulations of agent-mineral interface interactions.

5. 固废资源化与深加工

Solid Waste Resource Recovery and Deep Processing

研究矿山固废、城市固废的综合利用技术与工艺；研究固废资源化过程中有害元素的迁移转化和控制技术；研究固废中有价组分协同提取与废渣资源化技术；研究固废源头减量、智能分类回收、清洁增值利用、高效安全转化、智能精深拆解、精准管控决策技术。

Study technologies and processes for the comprehensive utilization of mining and urban solid wastes; investigating the migration, transformation, and control technologies for harmful elements during solid waste resource recovery; examining technologies for synergistic extraction of valuable components and resource recovery from solid waste; and researching technologies for solid waste source reduction, intelligent classification and recovery, clean value-added utilization, efficient and safe conversion, intelligent deep dismantling, and precise management and control decision-making.

6. 矿物材料加工与利用

Mineral Material Processing and Utilization

研究煤及矿石的矿物组成、结构与性能，加工利用方法与工艺；研究煤及矿石的超细粉碎、精细分级、表面改性、精选提纯等深加工技术；研究功能矿物材料的制备、性能调控与应用技术。

Researching the mineral composition, structure, and properties of coal and ore, as well as processing and utilization methods and processes; studying deep processing technologies such as ultrafine pulverization, fine classification, surface modification, and purification of coal and ore; and exploring the preparation, performance regulation, and application technologies of functional mineral materials.

## （二）课程设置及学分要求

II. Curriculum and Credit Requirements

**学科名称：矿业工程（矿物加工工程、矿业材料工程）（081902、0819Z3）**

Discipline Name: Mining Engineering (Mineral Processing Engineering, Mining Materials Engineering) (081902, 0819Z3)

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic courses | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange Office | 必修，12 学分 Compulsory, 12 credits | |
| | GJ24098002G | 中国文化 Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| | GJ24098003G | 国情教育 Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional | GJB24007001G | 多元统计分析 Multivariate Statistical Analysis | 48 | 3 | 1 | 理学院 School of Science | 必修 Compulsory | 5 学分 5 credits |
| | GJB24101001Z | 安全科学基础 Safety Science Foundation | 32 | 2 | 1 | 安全学院 School of Safety | 必修 1 门 Comp | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| basic courses | GJB24006001Z | 高等岩土力学<br>Advanced Rock and Soil Mechanics | 32 | 2 | 2 | 力土学院 School of Civil Engineering and Architecture | ulsory, 1 credit |
| | GJB24002002Z | 遥感原理与应用<br>Remote Sensing Principles and Applications | 32 | 2 | 1 | 地测学院 School of Geological Surveying | |
| 专业课模块 Specialized courses | GJB24003001Z | 矿物加工国际学术前沿<br>International Academic Frontier of Mineral Processing | 48 | 3 | 1 | 化环学院 School of Chemical and Environmental Engineering | 3 学分<br>3 credits |
| 创新训练模块 Quality enhancement | GJBXT24003 | 学位论文选题报告<br>Thesis Topic Report | | 1 | 3 | 化环学院 School of Chemical and Environmental Engineering | 必修，2 学分<br>Compulsory, 2 credits |
| | GJBZQ24003 | 中期考核<br>Min-term Examination | | 1 | 4 | 化环学院 School of Chemical and Environmental Engineering | |

备注：国际博士研究生课程学习实行学分制，应修满的总学分数不少于 22 学分。

Note: The international doctor's degree program in Mining Engineering operates on a credit system, requiring a minimum of 22 credits to be completed.

# 五、力土学院

# V. School of Civil Engineering and Architecture

## §6 土木工程（0814）

## §6 Civil Engineering (0814)

修订负责人：　　主管院长：吴丽丽　　学位评定分委员会主席：左建平

Revision Supervisor:　Dean in Charge: Wu Lili　Chairperson of the Academic Degree Evaluation Subcommittee: Zuo Jianping

### （一）学科简介

I. Discipline Introduction

中国矿业大学（北京）的土木工程学科起源于1909年的焦作路矿学堂的矿冶、路工等相关课程。1953年，北京矿业学院成立矿井建设专业，成为国内第一个定位于培养矿山土木工程专业技术人才的专业。1978年，中国矿业大学北京研究生部成立，矿山建设工程恢复研究生招生。1998年学校恢复本科招生，矿山建设工程更名为土木工程，土木工程专业于1999年恢复招收第一届本科生。2005年，土木工程一级学科获批博士学位整体授予权和博士后流动站。2008年土木工程获批“北京市重点学科”和特色专业。2010年土木工程专业获教育部特色专业，2019年土木工程专业入选首批国家级一流本科专业建设点。目前，土木工程一级学科下设6个研究方向，具体如下：

The discipline of civil engineering at China University of Mining and Technology (Beijing) originated from the mining, road engineering, and other related courses offered at the Jiaozuo Mining and Railway College in 1909. In 1953, Beijing Mining Institute established the Mine Construction specialty, becoming the first in China to focus on cultivating professionals in mine civil engineering. In 1978, the Graduate School of China University of Mining and Technology, Beijing was established, and graduate enrollment in mine construction engineering was resumed. In 1998, the university resumed undergraduate enrollment, renaming the mine construction engineering program as civil engineering. The first batch of undergraduate students was enrolled in the civil engineering program in 1999. In 2005, the civil engineering discipline was approved for the overall awarding of doctoral degrees and the establishment of a postdoctoral research station. In 2008, civil engineering was approved as a "Beijing Key Discipline" and a distinctive specialty. In 2010, the

civil engineering program was recognized as a distinctive specialty by the Ministry of Education, and in 2019, it was selected as one of the first national first-tier undergraduate programs for professional development. Currently, the civil engineering discipline comprises six research directions, detailed as follows:

1. 工程结构数字化与全寿命智能感知维护

New Technologies for Smart and Innovative Materials and Structural Systems

研究智慧时代的建筑信息模型“BIM+”工程结构数字化，特别是新型工业化建筑结构、地下工程结构的数字化相关技术；研究采煤井巷支护结构、城市地下空间工程结构在地震作用、冲击荷载、爆炸载荷等动力荷载下的智能感知新技术；研究工程结构全寿命服役期间的长期性能智能化监测与分析技术；研究工程结构的健康诊断方法和服役寿命、安全性评估理论，以及相应的维护措施及补强加固技术。

Research on the digitization of Building Information Modeling (BIM+) for engineering structures in the era of wisdom, particularly focusing on technologies related to the digitization of new industrialized building structures and underground engineering structures; investigation of new intelligent sensing technologies for coal mining roadway support structures and urban underground space engineering structures under dynamic loads such as earthquakes, impact loads, and explosive loads; research on intelligent monitoring and analysis technologies for the long-term performance of engineering structures throughout their entire service life; and exploration of health diagnosis methods, service life and safety assessment theories, as well as corresponding maintenance measures and reinforcement technologies for engineering structures.

2. 岩土力学与工程

Geomechanics and Engineering

研究岩土工程力学特性、特殊环境下的岩土工程稳定性、岩土体的非均质各向异性特征及岩土工程数值计算方法；探讨岩土介质的动力与静力破坏强度准则；研究岩土工程勘察与设计、岩土工程治理与监测技术理论和岩土工程的最优施工技术等。

Research focuses on the mechanical properties of geotechnical engineering, the stability of geotechnical engineering in special environments, the heterogeneous and anisotropic characteristics of rock and soil masses, and numerical calculation methods for geotechnical engineering. It also explores the dynamic and static failure strength criteria of rock and soil media, and studies geotechnical engineering survey and design, geotechnical engineering treatment and monitoring technology theories, and optimal construction techniques for geotechnical engineering.

3. 岩石动力学与破岩工程

Rock Dynamics and Rock Breaking Engineering

研究不同材料介质中动载荷作用下的传播规律及损伤破坏机理；研究爆破模型试验及超动态测试方法；研究爆破应力波的传播、裂纹发生与扩展和介质的运动规律；研究新型炸药、爆破器材及炸药爆炸能量利用技术；研究炸药能量利用和爆破质量控制的理论与技术；研究固体介质的应力波传播理论、冲击破碎机理和凿岩机具等；研究岩土工程控制爆破理论与技术；研究现代机械破岩理论与技术。

Research focuses on the propagation laws and damage failure mechanisms under dynamic loads in different material media, blasting model tests and ultra-dynamic testing methods, the propagation of blasting stress waves, crack initiation and propagation, and the movement patterns of media, new explosives, blasting equipment, and technologies for utilizing explosive energy, theories and technologies for utilizing explosive energy and controlling blasting quality, stress wave propagation theories in solid media, impact fragmentation mechanisms and rock drilling equipment, controlled blasting theories and technologies in geotechnical engineering, and modern mechanical rock breaking theories and technologies.

4. 深部工程岩体力学

Mechanics of Deep Engineering Rock Mass

研究深部工程岩体多相多场耦合力学特性、深部工程岩体的连续性理论、深部工程岩体本构关系、深部工程岩体稳定性分析与评价；开发深部工程岩体力学特性试验方法与数值模拟技术、深部工程稳定性评价与控制设计方法、深部工程岩体非线性大变形数值模拟技术、深部工程岩体大变形控制材料与配套技术等。

Research focuses on the coupled mechanical properties of multi-phase and multi-field in deep engineering rock mass, continuity theory of deep engineering rock mass, constitutive relationships of deep engineering rock mass, and stability analysis and evaluation of deep engineering rock mass. Develop experimental methods and numerical simulation techniques for mechanical properties of deep engineering rock mass, stability evaluation and control design methods for deep engineering, numerical simulation techniques for nonlinear large deformation of deep engineering rock mass, and control materials and supporting technologies for large deformation of deep engineering rock mass.

4. 深地工程灾害控制理论与技术

Theory and Technology for Disaster Control in Deep Underground Engineering

研究深部矿山开采及地下工程软岩大变形灾害机理、高应力岩爆/冲击地压致灾机理、高陡边坡滑坡灾害机理、深地工程灾害危险性分析与评价、高预应力支护结构体系与围岩耦合分析；开发深地工程灾害力学实验及数值模拟技术、深地工程灾害控制对策与设计方法、深地工程防灾减灾技术与工艺、深地工程灾害控制材料、深地工程灾害监测预警方法与技术、深地工程热害机理与防治技术、深地工程热能利用技术与工艺、深部开采沉陷区域城乡规划

理论与方法、深部开采沉陷区域建筑设计理论与方法等。

Research is conducted on the mechanisms of large deformation disasters in soft rocks during deep mining and underground engineering, disaster mechanisms of high-stress rockbursts/impact ground pressure, mechanisms of high and steep slope landslides, hazard analysis and evaluation of deep underground engineering disasters, and coupling analysis of high-prestressed support structures and surrounding rocks. Develop mechanical experiments and numerical simulation techniques for deep underground engineering disasters, control strategies and design methods for deep underground engineering disasters, technologies and processes for disaster prevention and mitigation in deep underground engineering, control materials for deep underground engineering disasters, monitoring and early warning methods and technologies for deep underground engineering disasters, mechanisms and prevention technologies for thermal hazards in deep underground engineering, technologies and processes for thermal energy utilization in deep underground engineering, theories and methods for urban and rural planning in areas affected by deep mining subsidence, and theories and methods for architectural design in areas affected by deep mining subsidence.

5. 隧道与地下空间工程

Tunnel and Underground Space Engineering

研究隧道的开挖与支护理论与技术；研究地下工程的最佳结构形式、围岩稳定性及合理支护技术；研究开发城市地下空间资源的综合利用技术、城市地下规划设计及其系统网络与设施、设备、建筑环境；开发完善适用于地下工程的新设备、新技术、新工艺；开发特殊环境条件下的地下工程特殊施工与维护技术。

Research focuses on theories and technologies for tunnel excavation and support, the optimal structural forms for underground engineering, the stability of surrounding rocks, and reasonable support technologies. It also studies and develops comprehensive utilization technologies for urban underground space resources, urban underground planning and design system networks, facilities, equipment, and building environments, improves and develops new equipment, technologies, and processes suitable for underground engineering, and develops special construction and maintenance technologies for underground engineering under special environmental conditions.

**（二）课程设置及学分要求**

II. Curriculum and Credit Requirements

**学科名称：土木工程（0814）**

Discipline Name: Civil Engineering (0814)

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks | |
|---|---|---|---|---|---|---|---|---|
| 公共基础课模块 Public basic courses | GJ24098001G | 汉语综合 Comprehensive Chinese | 80 | 5 | 1 | 国际合作与交流处 International Cooperation and Exchange Office | 必修，12 学分 Compulsory, 12 credits | |
| | GJ24098002G | 中国文化 Chinese Culture | 80 | 5 | 2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| | GJ24098003G | 国情教育 Education on National Conditions | 32 | 2 | 1，2 | 国际合作与交流处 International Cooperation and Exchange Office | | |
| 专业基础课模块 Professional basic courses | GJB24007001G | 多元统计分析 Multivariate Statistical Analysis | 48 | 3 | 1 | 理学院 School of Science | 必修 Compulsory (1 course) | 5 学分 5 credits |
| | GJB24101001Z | 安全科学基础 Safety Science Foundation | 32 | 2 | 1 | 安全学院 School of Safety | 必修 1 门 Compulsory (1 course) | |
| | GJB24006001Z | 高等岩土力学 Advanced Rock and Soil Mechanics | 32 | 2 | 2 | 力土学院 School of Civil Engineering and Architecture | | |
| | GJB24002002Z | 遥感原理与应用 | 32 | 2 | 1 | 地测学院 | | |

| 课程类别 Course Categories | 课程编号 Course Codes | 课程名称 Course Names | 学时 Hours | 学分 Credits | 开课学期 Semesters Offered | 开课学院 Offering Schools | 备注 Remarks |
|---|---|---|---|---|---|---|---|
| | | Remote Sensing Principles and Applications | | | | School of Geological Surveying | |
| 专业课模块 Specialized courses | GJB24006002Z | 土木工程国际学术前沿 International academic frontier of civil engineering | 48 | 3 | 1 | 力土学院 School of Civil Engineering and Architecture | 3 学分 3 credits |
| 创新训练模块 Innovative training | GJBXT24006 | 学位论文选题报告 Thesis Topic Report | | 1 | 3 | 力土学院 School of Civil Engineering and Architecture | 必修，2 学分 Compulsory, 2 credits |
| | GJBZQ24006 | 中期考核 Min-term Examination | | 1 | 4 | 力土学院 School of Civil Engineering and Architecture | |

备注：国际博士研究生课程学习实行学分制，应修满的总学分数不少于 22 学分。

Note: The international doctor's degree program in Mining Engineering operates on a credit system, requiring a minimum of 22 credits to be completed.