

资源勘查工程专业培养方案

Undergraduate Program of Resources Prospecting

Engineering Major

I. 专业介绍 Introduction

西南交通大学资源勘查工程专业以轨道交通沿线新能源和非常规矿产勘查开发为特色，紧密结合国家和区域经济社会发展需求，建设非常规资源及战略矿产领域国内一流、国际知名的应用与创新复合型专业。资源勘查工程专业在我校具有悠久的发展历史和深厚的学术积淀。在我校成立之初，就于 1905 年设立矿科，开设地质方面课程。1931 年设立矿冶系，1938 年开设采矿系。直到解放初，我校的“资源勘查工程”专业一直是我校的优势学科之一，百余年来，有多位地质学界的学术泰斗出自于本学科，如何杰院士，王鸿祯院士，袁见齐院士等。在上世纪 50 年代初高校院系大调整中，以唐山铁道学院（现西南交通大学）矿冶系等为主体新成立北京钢铁学院(北京科技大学的前身)，采矿系调整到新成立的北京地质学院(中国地质大学的前身)和北京矿业学院(中国矿业大学的前身)。1958 年，为了适应宝成铁路和成昆铁路的修建，根据铁道部要求学校创办了水文地质与工程地质专业。经过 50 多年的发展，我校的地质专业已拥有“地质资源与地质工程”一级学科博士学位和硕士学位授权点，拥有“地质资源与地质工程”一级学科博士后流动站，并成为国家级特色专业、国家级卓越工程师教育计划专业，在全国高校地球科学与环境工程学院类专业中具有鲜明特色和重要影响力。2017 年，为适应未来新能源、非常规矿产发展的趋势，成立了资源勘查工程本科专业。西南交通大学资源勘查工程专业牢牢抓住“新能源”这一主题，强调“地质过程-成因机理-工程技术”三位一体的学术理念，旨在培养具有深厚地质学基础、数理力学的资源勘查工程专业人才。毕业生主要到国土资源、工矿企业和工程设计院从事与资源勘查工程相关的规划、勘查、开发、工艺改进、科技开发和经营管理等方面的工作。

Characterized by the exploration and development of new energy and unconventional minerals along the rail transit, the resources prospecting engineering major of Southwest Jiaotong University (“SWJTU”) keeps abreast with needs of national and regional economic and social development to build a domestic first-class and internationally well-known integrated application and innovation major in the field of unconventional resources and strategic minerals. Resources Prospecting Engineering boasts a long development history and profound academic accumulation. At its inception, SWJTU set up the mining department to offer courses in geology in 1905. It set up the mining and metallurgy department in 1931 and the mining engineering department in 1938. Until the beginning of liberation, the major of “Resources Prospecting Engineering” in SWJTU has always been the dominant discipline. For over a century, multiple academic leaders in the field of geology graduated from this discipline, such as Academician He Jie, Academician Wang Hongzhen, Academician Yuan Jianqi, etc. In the great adjustment of departments in colleges and universities in the early 1950s, Beijing Institute of Iron and Steel (predecessor of Beijing University of Science and Technology) was established with Tangshan Railway Institute (now Southwest Jiaotong

University) as the main body, and the mining department was included in the newly established Beijing Institute of Geology (predecessor of China University of Geosciences) and Beijing Institute of Mining (predecessor of China University of Mining and Technology). In 1958, in order to adapt to the construction of Baoji-Chengdu Railway and Chengdu-Kunming Railway, SWJTU, according to the requirements of the Ministry of Railways, set up the major of hydrogeology and engineering geology. After over five decades of development, SWJTU now provides first-category “geological resources and geological engineering” discipline for Ph.D. degrees and master's degrees and first-category “geological resources and geological engineering” discipline for postdoctoral research stations. It has also become a national characteristic specialty and a national outstanding engineer education program specialty. Also, its geology major is of distinctive characteristics and important influence in the geology major of colleges and universities nationwide. In 2017, SWJTU set up the undergraduate major of Resources Prospecting Engineering to adapt to the development trend of new energy and unconventional minerals in the future. Centering on the main topic of “new energy”, the Resources Prospecting Engineering major emphasized the trinity academic concept of “geological process-genetic mechanism-engineering technology” and trained Resources Prospecting Engineering professionals with profound geological foundation and mathematical mechanics foundation. Graduates are mainly engaged in planning, exploration, development, process improvement, scientific and technological development and management of resources prospecting projects in Land and Resources System, Industrial and Mining Enterprise and Engineering Design Institute.

专业代码：081403

Program Code: 081403

专业名称：资源勘查工程

Program Name: Resources Prospecting Engineering

II.培养目标 Objectives

培养适应新时代中国特色社会主义现代化建设需要，德、智、体、美、劳全面发展，具有良好人文社会科学素养、高度社会责任感与高尚工程职业道德；具有扎实专业理论基础与专业技能、较强创新意识、较宽国际视野和跨文化交流、竞争与合作能力，能从事地质矿产基础研究、非常规资源调查-勘查-开发及管理等方面工作的复合型工程技术人才。毕业生主要到资源勘查专业相关的教学、科研和生产部门（如能源、矿业、冶金、建材等领域）从事技术开发与技术管理工作，以及在行政部门从事管理工作。经过五年左右的工作锻炼，毕业生具备资源勘查工程师的实际工作能力，能够胜任生产、科研与工程设计岗位的技术骨干和经营管理岗位。

具体目标为：

目标 1：掌握资源勘查工程专业一般性和专门性的技术知识并具备相关技能。

目标 2：具有资源勘查工程专业分析问题与解决问题的能力，并掌握与本专业相关的科研能力和专业能力。

目标 3: 掌握资源勘查领域的项目管理基本知识并具备参与工程管理能力。

目标 4: 具备持续学习、有效沟通与交流的能力。

目标 5: 具备良好的职业道德，体现对职业、社会的责任。

SWJTU intends to train inter-disciplinary engineering and technical talents who meet the needs of the socialist modernization construction with Chinese characteristics in the new era, gain all-around development of moral, intellectual, physical, aesthetics and labor education; have good humanities and social science literacy, high social responsibility and noble engineering professional ethics; have solid professional theoretical foundation and professional skills, strong sense of innovation, broad international perspective and cross-cultural communication, competition and cooperation capabilities to conduct basic research of geology and mineral resources, unconventional resources investigation-exploration-development and management. Graduates are mainly engaged in technology development and technology management in resources prospecting teaching, scientific research and production departments (such as energy, mining, metallurgy, building materials and other fields), as well as management in administrative departments. After about five years of work, graduates will have the actual working competence of resources prospecting engineers, and can serve in technical backbone and management positions of production, scientific research and engineering design.

Specific goals are as follows:

Goal 1: master the general and technical expertise of the resource exploration engineering major and acquire related skills.

Goal 2: obtain issue analyzing and resolving abilities related to the resource exploration engineering major and foster scientific research and professional capabilities related to the major.

Goal 3: gain basic knowledge on project management in the sector of resource exploration engineering and develop the abilities to participate in engineering management.

Goal 4: be able to study continuously and communicate effectively.

Goal 5: cultivate sound professional ethics with the sense of responsibility for the profession and the society.

III. 专业毕业要求 Graduation Requirements

毕业要求 1: 具有扎实的数学、物理科学、力学、化学基础知识，掌握资源勘查的基本理论、方法及基本技能，能用于解决资源勘查及开发过程中的复杂地质及工程问题；

毕业要求 2: 能够应用数学、自然科学和非常规资源勘查的基本原理，识别、表达、并通过文献研究分析非常规资源勘查中复杂的工程问题，分析矿床成因和矿山开发过程中的复杂地质及工程问题，并获得可靠结论；

毕业要求 3: 能够设计针对非常规资源勘查中复杂工程问题的解决方案，设计满足特定需求的系统、单元（部件）或开采工艺流程，并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化以及环境等因素；

毕业要求 4: 能够基于科学原理并采用科学方法对非常规资源勘查中复杂工程问题进行研究，包括设计实验、分析与解释数据、并通过信息科学与技术学院综合得到合理有效的结论；

毕业要求 5: 能够针对非常规资源勘查中的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息科学与技术学院技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性；

毕业要求 6: 能够基于非常规资源勘查工程相关背景知识进行合理分析, 评价非常规资源勘查工程实践和复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响, 并理解应承担的责任;

毕业要求 7: 能够理解和评价针对非常规资源勘查中复杂工程问题的专业工程实践对环境、社会可持续发展的影响;

毕业要求 8: 具有人文社会科学素养、社会责任感, 能够在非常规资源勘查工程实践中理解并遵守工程职业道德和规范, 履行责任;

毕业要求 9: 具有较强的团队意识和协作精神, 能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。

毕业要求 10: 能够就非常规资源勘查中复杂工程问题与业界同行及社会公众进行有效沟通和交流, 包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。并具备一定的国际视野, 能够在跨文化背景下进行沟通和交流;

毕业要求 11: 理解并掌握工程管理原理与经济决策方法, 并能在多学科环境中应用;

毕业要求 12: 具有健康的体魄和良好的心理素质; 具备终身获取新知识的意识, 有不断学习和适应发展的能力。

Requirement 1: Have solid basic knowledge of mathematics, physics, mechanics and chemistry, master the basic theories, methods and basic skills of resources prospecting, and can be used to solve complex geological and engineering problems in the process of resources prospecting and development;

Requirement 2: Ability to apply the basic principles of mathematics, natural science and unconventional resources prospecting, identify, express, and analyze the complex engineering problems in unconventional resources prospecting through literature research, analyze the genesis of deposits and the complex geology of mine development and Engineering problems and get reliable conclusions;

Requirement 3: be able to design innovative solutions to complicated issues in non-conventional resource exploration projects and to design systems, units (components) or mining process that meet specific requirements, with social, healthy, safety, legal, cultural and environmental factors taken into consideration;

Requirement 4: be able to study complicated engineering issues in non-conventional resource exploration projects based on scientific principles with proper methods, including experiment design, data analysis and interpretation as well as conclusion drawing based on acquired information;

Requirement 5: be able to develop, choose and employ proper techniques, resources, modern engineering tools as well as information and technology tools to anticipate and simulate complicated engineering issues in non-conventional resource exploration projects and understand the limitations of such techniques, resources and tools;

Requirement 6: be able to make proper analysis based on the knowledge about non-conventional resource exploration engineering projects, assess the social, healthy, safety, legal and cultural implications of non-conventional resource exploration practices and solutions to complicated engineering issues, and understand related responsibilities to be assumed;

Requirement 7: be able to understand and assess the impact of professional engineering practices to solve complicated engineering issues in non-conventional resource exploration engineering projects on the environment and sustainable social development;

Requirement 8: be with humanistic and social science literacy and sense of social responsibility and able to understand and comply with engineering professional ethics and norms as

well as fulfill duties in non-conventional resource exploration engineering practices;

Requirement 9: be with excellent teamwork and collaborative spirits and able to work independently, in team or as the project lead in the team with multi-disciplinary background;

Requirement 10: be able to communicate with industrial peers and the public over complicated issues in non-conventional resource exploration engineering projects by writing reports, preparing design drafts, making speeches, expressing or responding clearly;

Requirement 11: understand and master project management principles and economic decision methods and apply them in multi-disciplinary scenarios;

Requirement 12: be healthy physically and psychologically with the pursuit to acquire new knowledge throughout life supported by continuous learning and development abilities.

IV. 学制与学位 Duration and Degree

学制：4

Duration:4

学位：工学学士

Degree: Bachelor of Engineering

V. 主干学科与专业核心课程 Main Subject and Specialized Core Course

主干学科：资源勘查工程

Main Subject: Resources Prospecting Engineering

专业核心课程：普通地质学、结晶学与矿物学、岩石学、构造地质学、矿床学、矿相学、矿产勘查学、非传统资源学、地球物理勘探、地球化学

Specialized Core Course: Physical Geology, Crystallography and Mineralogy, Petrology, Structural Geology, Deposits, Ore mineralogy, Exploration geochemistry, Non traditional resource science, Geophysical Exploration, geochemistry.

VI. 毕业学分基本要求 Basic Requirements of Credits for Graduation

| 课程体系 Curriculum System | | 学分要求 Credits Requirements | | | | | | 小计 Subtotal |
|--|--|------------------------------|----------------|--------------------------------|----------------|----------------------|----------------|----------------|
| | | 必修 Compulsory | | 限修 Distributional Electives | | 选修 Free Electives | | |
| | | 理论 Theory | 实践 Practice | 理论 Theory | 实践 Practice | 理论 Theory | 实践 Practice | |
| 公共基础 课程 Public Basic Courses | 思政类 Ideological Politics Courses | 15 | 2 | | | | | 17 |
| | 军事类 Military Courses | 2 | 2 | | | | | 4 |
| | 外语类 Foreign Language Courses | 6 | | 2 | | | | 8 |
| | 体育类 Physical Education Courses | | 4 | | | | | 4 |

| | | | | | | | | |
|--|---|----|----|-----|-----|---|--|----|
| 通识与多元化课程 General Education and Diversified Courses | “交通天下”通识教育课程（含跨学科课程） Core General Education Courses（Interdisciplinary Courses） | | | | | | | |
| | 多元化课程 Diversified Courses | | | | | | | |
| | 国际课程 International Courses | | | | | 4 | | 4 |
| | 大学生心理健康教育课程 University Student Psychological Health Courses | | | | | | | |
| | 学生成长与发展规划课程 Student Growth and Development Planning Courses | | | | | | | |
| | 新生研讨课 Freshman Seminar | 2 | | | | | | 2 |
| | 劳动教育课程 Labor Education Courses | 2 | | | | | | 2 |
| | 公共艺术课程 Public Art Courses | 2 | | | | | | 2 |
| 学科与专业基础课程 Discipline and Specialty Foundational Courses | 数学类 Mathematics Courses | 17 | | | | | | 17 |
| | 物理类 Physics Courses | 8 | 2 | | | | | 10 |
| | 计算机基础类 Basic Computer Courses | 2 | 1 | | | | | 3 |
| | 化学类 Chemistry Courses | 2 | 1 | | | | | 3 |
| | 专业基础课 Professional Foundational Courses | 33 | 15 | | | | | 48 |
| 专业教育课程 Specialized Courses | 专业核心课 Specialized Core Course | 14 | 6 | | | | | 20 |
| | 专业限选课 Specialized Restricted Courses | | | 1.5 | 0.5 | | | 2 |
| 实践教学环节 Practice Courses | 集中性实践教学环节：基本技能训练、工程实践、综合课程设计、社会与文化素质和实践、毕业实习与毕业设计 Centralized Practical Teaching Process: Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality | | 13 | | | | | 13 |

| | | | | | | | | |
|------------------------------|---|--|---|--|--|--|--|-----|
| | Practice, Graduation Internship and Graduation Design | | | | | | | |
| | 创新创业实践：创新创业训练计划项目、个性化实验、学科竞赛、创新讲座等 Innovation and Entrepreneurship Practice: Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc | | 2 | | | | | 2 |
| 必修环节 A Compulsory Part | “第二课堂”项目：思想政治与道德素养类项目、学术科技与创新创业类项目、艺术体验与审美修养类项目、文化沟通与交往能力类项目、心理素质与身体素质类项目、社会工作与领导能力类项目、社会实践与志愿服务类项目 "The Second Lesson" Project: Ideological and Political Education and Moral Literacy Projects, Academic and Technological Innovation and Entrepreneurship Projects, Art Experience and Aesthetic Education Projects, Cultural Communication and Interpersonal Skills Projects, Psychological and Physical Health Projects, Social Work and Leadership Development Projects, Social Practice and Volunteering Projects | | | | | | | 0 |
| | 大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students, Assessment of Students' Physical Fitness | | | | | | | 0 |
| | 总 计 Total | | | | | | | 161 |

VII.课程设置细化表 Course Programs Table

| 公共基础课程 Public Basic Courses | | | | | | | | |
|---|---|--------------------------|----------------|-------------------------------------|----------------------|------------------------------|---|-------------|
| 共 33 学分，其中必修 31 学分，限修 2 学分，选修 0 学分 A total credits of 33, including 31 for compulsory courses, 2 for distributional electives and 0 for free electives | | | | | | | | |
| 课程类型 Course Type | 课程名称 Course Name | 课程性质 Nature of Course | 总学分 Credits | 课内实践学分 In-class Practice Credits | 开课学期 Semester | 开课学院 School | 支撑毕业要求指标点 Indicators which Support Graduation Requirements | 备注 Notes |
| 思政类 Ideological Politics Courses | 思想道德与法治 Ideological and Moral Education and the Rule of Law | 必修 Compulsory | 3 | 0.4 | 第 1 学期 Semester 1 | 马克思主义学院 School of Marxism | 6.2,7.1,8.2,12.2 | |
| | 中国近现代史纲要 Conspectus of Chinese Modern History | 必修 Compulsory | 3 | 0.4 | 第 2 学期 Semester 2 | 马克思主义学院 School of Marxism | 8.1 | |
| | 马克思主义基本原理 The Basic Principles of Marxism | 必修 Compulsory | 3 | 0.4 | 第 3 学期 Semester 3 | 马克思主义学院 School of Marxism | 8.1 | |
| | 毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics | 必修 Compulsory | 3 | 0.4 | 第 4 学期 Semester 4 | 马克思主义学院 School of Marxism | 8.1 | |
| | 习近平新时代中国特色社会主义思想概论 Outline of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era | 必修 Compulsory | 3 | 0.4 | 第 6 学期 Semester 6 | 马克思主义学院 School of Marxism | 8.1 | |
| | 形势与政策 I Situation and Policy I | 必修 Compulsory | 0 | 0 | 第 1 学期 Semester 1 | 马克思主义学院 School of Marxism | 6.2 | |
| | 形势与政策 II Situation and Policy II | 必修 Compulsory | 0 | 0 | 第 2 学期 Semester 2 | 马克思主义学院 School of Marxism | 6.2 | |
| | 形势与政策 III Situation and Policy III | 必修 Compulsory | 0 | 0 | 第 3 学期 Semester 3 | 马克思主义学院 School of Marxism | 6.2 | |
| | 形势与政策 IV Situation and Policy IV | 必修 Compulsory | 0 | 0 | 第 4 学期 Semester 4 | 马克思主义学院 School of Marxism | 6.2 | |
| | 形势与政策 V Situation and Policy V | 必修 Compulsory | 0 | 0 | 第 5 学期 Semester 5 | 马克思主义学院 School of Marxism | 6.2 | |
| | 形势与政策 VI Situation and Policy VI | 必修 Compulsory | 0 | 0 | 第 6 学期 Semester 6 | 马克思主义学院 School of Marxism | 6.2 | |

| | | | | | | | | |
|-----------------------------------|---|-------------------------------|-----|-----|----------------------|--------------------------------------|--------------|--|
| | 形势与政策VII Situation and Policy VII | 必修 Compulsory | 0 | 0 | 第 7 学期 Semester 7 | 马克思主义学院 School of Marxism | 6.2 | |
| | 形势与政策VIII Situation and Policy VIII | 必修 Compulsory | 2 | 0 | 第 8 学期 Semester 8 | 马克思主义学院 School of Marxism | 6.2 | |
| 军事类 Military Courses | 军事理论 Military Theories | 必修 Compulsory | 2 | 0 | 第 1 学期 Semester 1 | 武装部 Security Office | 6.1 | |
| | 军事技能 Military Skills | 必修 Compulsory | 2 | 2 | 第 1 学期 Semester 1 | 武装部 Security Office | 8.2,9.1,12.2 | |
| 外语类 Foreign Language Courses | 英语 I College English I | 必修 Compulsory | 2 | 0 | 第 1 学期 Semester 1 | 外国语学院 School of Foreign languages | 10.3 | |
| | 英语II College English II | 必修 Compulsory | 2 | 0 | 第 2 学期 Semester 2 | 外国语学院 School of Foreign languages | 10.3 | |
| | 通用学术英语 English for General Academic Purposes | 必修 Compulsory | 2 | 0 | 第 3 学期 Semester 3 | 外国语学院 School of Foreign languages | 10.3 | |
| | 职场英语 Workplace English | 限修 Distributional Elective | 2 | 0 | 第 4 学期 Semester 4 | 外国语学院 School of Foreign languages | 10.3,12.1 | 限修 1 门, 2 学分 Limited to 1 course, 2 credits |
| | 交际与文化视听说 Viewing, Listening & Speaking in English -- Communication & Culture | | | | | | | |
| | 语言、文化与翻译 Language, Culture and Translation | | | | | | | |
| | 英语公共演讲 Public Speaking in English | | | | | | | |
| 体育类 Physical Education Courses | 体育 I Physical Education I | 必修 Compulsory | 1 | 1 | 第 1 学期 Semester 1 | 体育学院 School of Physical Education | 9.1,12.2 | |
| | 体育II Physical Education II | 必修 Compulsory | 1 | 1 | 第 2 学期 Semester 2 | 体育学院 School of Physical Education | 9.1,12.2 | |
| | 体育III Physical Education III | 必修 Compulsory | 0.5 | 0.5 | 第 3 学期 Semester 3 | 体育学院 School of Physical Education | 9.1,12.2 | |
| | 体育IV Physical Education IV | 必修 Compulsory | 0.5 | 0.5 | 第 4 学期 Semester 4 | 体育学院 School of Physical Education | 9.1,12.2 | |
| | 体育健康课程 I Diversified Physical Education Courses I | 必修 Compulsory | 0.5 | 0.5 | 第 5 学期 Semester 5 | 体育学院 School of Physical Education | 9.1,12.2 | |

| | 体育健康课程II Diversified Physical Education Courses II | 必修 Compulsory | 0.5 | 0.5 | 第 6 学期 Semester 6 | 体育学院 School of Physical Education | 9.1,12.2 | |
|---|--|-----------------------------|----------------|---|---------------------------|--|---|-------------|
| 通识与多元化课程 General Education and Diversified Courses 共 10 学分，其中必修 6 学分，限修 0 学分，选修 4 学分 A total credits of 10, including 6 for compulsory courses, 0 for distributional electives and 4 for free electives | | | | | | | | |
| 课程类型 Course Type | 课程名称 Course Name | 课程性质 Nature of Course | 总学分 Credits | 课内实 践学分 In-class practice credits | 开课学期 Semester | 开课学院 School | 支撑毕业要 求指标点 Indicators which Support Graduation Requirements | 备注 Notes |
| “交通天下”通识教育课程（含跨学科课程） Core General Education Courses (Interdisciplinary Courses) | “交通天下”通识教育课程 (含跨学科课程) Core General Education Courses (Interdisciplinary Courses) | 选修 Free Electives | 4 | 0 | 2-8 学期 Semester 2-8 | 全校 The whole school | 6.1,6.3 | |
| 新生研讨课 Freshman Seminar | 地质资源与地质工程概论 Introduction to Geological Resources and Geological Engineering | 必修 Compulsory | 2 | 0 | 第 1 学期 Semester 1 | 地球科学与 环境工程学 院 Faculty of Geosciences and Environmenta l Engineering | 6.1,6.3 | |
| 劳动教育课程 Labor Education Courses | 劳动教育课程 Labor Education Courses | 必修 Compulsory | 2 | 0 | 4-7 学期 Semester 4-7 | 全校 The whole school | 6.1,7.1 | |
| 公共艺术课程 Public Art Courses | 公共艺术课程 Public Art Courses | 必修 Compulsory | 2 | 0 | 4-7 学期 Semester 4-7 | 全校 The whole school | 6.1,7.1 | |
| 学科与专业基础课程 Discipline and Specialty foundational Courses 共 81 学分，其中必修 81 学分，限修 0 学分，选修 0 学分 A total credits of 81, including 81 for compulsory courses, 0 for distributional electives and 0 for free electives | | | | | | | | |
| 课程类型 Course Type | 课程名称 Course Name | 课程性质 Nature of Course | 总学分 Credits | 课内实 践学分 In-class practice credits | 开课学期 Semester | 开课学院 School | 支撑毕业要 求指标点 Indicators which Support Graduation Requirements | 备注 Notes |
| 数学类 Mathematics Courses | 高等数学 I Higher Mathematics I | 必修 Compulsory | 5 | 0 | 第 1 学期 Semester 1 | 数学学院 School of Mathematics | 1.1 | |
| | 高等数学 II Higher Mathematics II | 必修 Compulsory | 5 | 0 | 第 2 学期 Semester 2 | 数学学院 School of Mathematics | 1.1 | |
| | 线性代数 A Linear Algebra A | 必修 Compulsory | 4 | 0 | 第 1 学期 Semester 1 | 数学学院 School of Mathematics | 1.1,2.1,11.1 | |

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| | 概率论与数理统计 Probability and Statistics | 必修 Compulsory | 3 | 0 | 第 4 学期 Semester 4 | 数学学院 School of Mathematics | 1.1,2.1, 11.1 | |
| 物理类 Physics Courses | 大学物理 AI College Physics AI | 必修 Compulsory | 4 | 0 | 第 2 学期 Semester 2 | 物理科学与技术学院 School of Physical Science and Technology | 1.2 | |
| | 大学物理实验 I Experiment in College physics I | 必修 Compulsory | 1 | 1 | 第 2 学期 Semester 2 | 物理科学与技术学院 School of Physical Science and Technology | 1.2 | |
| | 大学物理 AII College Physics AII | 必修 Compulsory | 4 | 0 | 第 3 学期 Semester 3 | 物理科学与技术学院 School of Physical Science and Technology | 1.2 | |
| | 大学物理实验 II Experiment in College physics II | 必修 Compulsory | 1 | 1 | 第 3 学期 Semester 3 | 物理科学与技术学院 School of Physical Science and Technology | 1.2 | |
| 计算机基础类 Basic Computer Courses | 计算机程序设计基础 Introduction to Program | 必修 Compulsory | 3 | 1 | 第 2 学期 Semester 2 | 计算机与人工智能学院 School of Computing and Artificial Intelligence | 5.2,12.1 | |
| 化学类 Chemistry Courses | 工程化学 A Engineering Chemistry A | 必修 Compulsory | 3 | 1 | 第 1 学期 Semester 1 | 化学学院 School of Chemistry | 1.3 | |
| 专业基础课 Professional Foundational Courses | 工程制图及计算机绘图 Engineering Drafting and computer Drafting | 必修 Compulsory | 3 | 1 | 第 3 学期 Semester 3 | 土木工程学院 School of Civil Engineering | 3.3, 5.2 | |
| | 工程力学 Engineering mechanics | 必修 Compulsory | 4 | 1 | 第 3 学期 Semester 3 | 力学与航空航天学院 School of Mechanics and Aerospace Engineering | 1.4 | |
| | 岩体力学 Rock Mechanics | 必修 Compulsory | 4 | 1 | 第 5 学期 Semester 5 | 地球与环境工程学院 Faculty of Geosciences and Environmental Engineering | 1.4 | |
| | 工程测量 B Engineering surveying B | 必修 Compulsory | 3 | 1 | 第 2 学期 Semester 2 | 地球与环境工程学院 Faculty of Geosciences and Environmental Engineering | 3.3 | |

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| 专业基础课 Professional Foundational Courses | 普通地质学(含实验) Physical Geology | 必修 Compulsory | 3 | 1 | 第 2 学期 Semester 2 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 1.5, 7.1 | |
| | 工程地质学 Engineering geology | 必修 Compulsory | 4 | 1 | 第 5 学期 Semester 5 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 1.4 | |
| | 晶体光学及光性矿物学 Crystal optics and optical mineralogy | 必修 Compulsory | 2 | 1 | 第 3 学期 Semester 3 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 1.5,3.1,4.1 | |
| | 结晶学与矿物学 Crystallography and Mineralogy | 必修 Compulsory | 3 | 1 | 第 3 学期 Semester 3 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 1.5,3.1,4.1 | |
| | 构造地质学 B Structural Geology B | 必修 Compulsory | 5 | 2 | 第 4 学期 Semester 4 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 1.5,4.1,10.1 | |
| | 岩石学 Petrology | 必修 Compulsory | 4 | 1 | 第 4 学期 Semester 4 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 1.5,3.1,4.1 | |
| | 水文地质学基础 A Introduction to Hydrogeolog y A | 必修 Compulsory | 3 | 1 | 第 6 学期 Semester 6 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 2.4,4.3,5.1,7.2 | |
| | 古生物地史学 Paleogeohistory | 必修 Compulsory | 3 | 1 | 第 4 学期 Semester 4 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 4.1 | |
| | 地球物理勘探 Geophysical Exploration | 必修 Compulsory | 4 | 1 | 第 6 学期 Semester 6 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 2.3,3.1,4.2,5.1 | |

| | 地球化学 geochemistry | 必修 Compulsory | 3 | 1 | 第 5 学期 Semester 5 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 2.4,4.3 | |
|--|--|-----------------------------|----------------|---|-------------------------|--|---|-------------|
| 专业教育课程 Specialized Courses 共 22 学分，其中必修 20 学分，限修 2 学分，选修 0 学分 A total credits of 22, including 20 for compulsory courses, 2 for distributional electives and 0 for free electives | | | | | | | | |
| 课程类型 Course Type | 课程名称 Course Name | 课程性质 Nature of Course | 总学分 Credits | 课内实 践学分 In-class practice credits | 开课学期 Semester | 开课学院 School | 支撑毕业要 求指标点 Indicators which Support Graduation Requirements | 备注 Notes |
| 专业核心课 Specialized Core Course | 矿床学 Deposits | 必修 Compulsory | 4 | 1 | 第 5 学期 Semester 5 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 2.2 | |
| | 矿相学 mineragraphy | 必修 Compulsory | 3 | 1 | 第 5 学期 Semester 5 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 2.2,3.1,5.1 | |
| | 矿产勘查学 Mineral exploration | 必修 Compulsory | 3 | 1 | 第 6 学期 Semester 6 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 2.2 | |
| | 新能源勘查与开发 Exploration and development of new energy | 必修 Compulsory | 3 | 1 | 第 6 学期 Semester 6 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 2.3,3.4,4.2,7.2 | |
| | 矿业经济学 Economics of the Mineral Industries | 必修 Compulsory | 2 | 0.5 | 第 7 学期 Semester 7 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 2.3,5.1 | |
| | 非传统资源学 Non Traditional Resource Science | 必修 Compulsory | 3 | 1 | 第 6 学期 Semester 6 | 地球与环境 工程学院 Faculty of Geosciences and Environmenta l Engineering | 3.3 | |

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|---|---|-------------------------------|----------------|-------------------------------------|----------------------------|---|---|---|
| | 专业外语（地质） Special English in Geological Engineering | 必修 Compulsory | 2 | 0.5 | 第 7 学期 Semester 7 | 地球与环境 工程学院 Faculty of Geosciences and Environmental Engineering | 10.3 | |
| 专业限修课 Specialized Restricted Courses | 遥感地质学 Remote Sensing Geology | 限修 Distributional Elective | 2 | 0.5 | 第 6 学期 Semester 6 | 地球与环境 工程学院 Faculty of Geosciences and Environmental Engineering | 2.4 | 限修 1 门，2 学分 Limited to 1 course, 2 credits |
| | 环境科学与工程概论 Introduction to Environmental Engineering | | 2 | 0.5 | 第 7 学期 Semester 7 | 地球与环境 工程学院 Faculty of Geosciences and Environmental Engineering | | |
| 实践教学环节 Practice Courses 共 15 学分，其中必修 15 学分，限修 0 学分，选修 0 学分 A total credits of 15, including 15 for compulsory courses, 0 for distributional electives and 0 for free electives | | | | | | | | |
| 课程类型 Course Type | 课程名称 Course Name | 课程性质 Nature of Course | 总学分 Credits | 课内实践学分 In-class practice credits | 开课学期 Semester | 开课学院 School | 支撑毕业要求指标点 Indicators which Support Graduation Requirements | 备注 Notes |
| 集中性实践教学环节：基本技能训练、工程实践、综合课程设计、社会与文化素质和实践、毕业实习与毕业设计 Centralized Practical Teaching Process: Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality Practice, Graduation Internship and Graduation Design | 普通地质实习 Practice of Physical Geology | 必修 Compulsory | 2 | 2 | 短 1 学期 Short Semester 1 | 地球与环境 工程学院 Faculty of Geosciences and Environmental Engineering | 3.2,9.1,10.2 | |
| | 工程测量实习 B Practice of Engineering Survey B | 必修 Compulsory | 1 | 1 | 短 1 学期 Short Semester 1 | 地球与环境 工程学院 Faculty of Geosciences and Environmental Engineering | 3.2,10.1 | |
| | 地质测绘实习 Practice of Geological Survey | 必修 Compulsory | 3 | 3 | 短 2 学期 Short Semester 2 | 地球与环境 工程学院 Faculty of Geosciences and Environmental Engineering | 2.5,3.2,3.4,9.2,10.1 | |
| | 资源勘查综合实习 Practice of Resources Prospecting Engineering | 必修 Compulsory | 3 | 3 | 短 3 学期 Short Semester 3 | 地球与环境 工程学院 Faculty of Geosciences and Environmental Engineering | 2.5,5.2,9.2,10.2,11.2 | |

| | 毕业设计（论文） Graduation Practice graduation Design | 必修 Compulsory | 4 | 4 | 第 8 学期 Semester 8 | 地球与环境 工程学院 Faculty of Geosciences and Environmental Engineering | 2.5,6.3,8.2,10.2,11.2 | |
|--|--|--------------------------|----------------|-------------------------------------|------------------------|--|---|---|
| 创新创业实践：创新创业训练计划项目、个性化实验、学科竞赛、创新讲座等 Innovation and Entrepreneurship Practice: Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc | 创新创业实践 Innovation and Entrepreneurship Practice | 必修 Compulsory | 2 | 2 | 3-7 学期 Semester 3-7 | 全校 The whole school | 4.3,9.2 | 按照《西南交通大学创新实践学分认定与管理办法》规定执行 By Credit Recognition and Management of Innovative Practice in Southwest Jiaotong University |
| <p style="text-align: center;">必修环节 A compulsory part 共 0 学分，其中必修 0 学分，限修 0 学分，选修 0 学分 A total credits of 0, including 0 for compulsory courses, 0 for distributional electives and 0 for free electives</p> | | | | | | | | |
| 课程类型 Course Type | 课程名称 Course Name | 课程性质 Nature of Course | 总学分 Credits | 课内实践学分 In-class practice credits | 开课学期 Semester | 开课学院 School | 支撑毕业要求指标点 Indicators which Support Graduation Requirements | 备注 Notes |
| “第二课堂”项目：思想政治与道德素养类项目、学术科技与创新创业类项目、艺术体验与审美修养类项目、文化沟通与交往能力类项目、心理素质与身体素质类项目、社会工作与领导能力类项目、社会实践与志愿服务类项目 "The Second Lesson" Project: Ideological and Political Education and Moral Literacy Projects, Academic and Technological Innovation and Entrepreneurship Projects, Art Experience and Aesthetic Education Projects, Cultural Communication and Interpersonal Skills Projects, Psychological | “第二课堂”项目 "The Second Lesson" Project | 必修 Compulsory | 0 | 0 | 1-8 学期 Semester 1-8 | 校团委 Communist Youth League Committee | 6.1,7.1 | |

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| ical and Physical Health Projects, Social Work and Leadership Development Projects, Social Practice and Volunteering Projects | | | | | | | | |
| 大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students Assessment of Students' Physical Fitness | 大学生综合素质提升 Comprehensive Quality Improvement Courses for College Students | 必修 Compulsory | 0 | 0 | 1-8 学期 Semester 1-8 | 校团委 Communist Youth League Committee | 6.1,7.1 | |
| | 学生体质达标测评 Assessment of Students' Physical Fitness | 必修 Compulsory | 0 | 0 | 秋季学期 Fall semester | 体育学院 School of Physical Education | 9.1 | |
| 学分总计 Total Credits | | | 161 | | | | | |