

地质工程专业培养方案

Undergraduate Program of Geological Engineering

I. 专业介绍 Introduction

西南交通大学地质工程专业以轨道交通工程地质为特色，紧密结合国家和区域经济社会发展需求，建设轨道交通领域国内一流、国际知名的应用与创新复合型专业。

地质工程专业具有悠久的发展历史和深厚的学术积淀。1905 年学校设立矿科，开设地质学课程；1958 年，为适应宝成和成昆铁路等国家重点建设需要，经铁道部批准，学校创办水文地质与工程地质专业，成为铁路行业唯一设有地质工程专业的高等院校。我国地质学界的学术泰斗何杰、陈清如、薛禹群等院士先后出自于本专业。在 60 余年办学历程中，一直秉持“严谨治学、严格要求”双严传统，具有鲜明的西部山区地域优势和轨道交通行业特色。近期响应国家“一带一路”倡议，依托川藏、滇藏、中巴、中尼等铁路工程，结合我校双一流建设，瞄准青藏高原复杂艰险山区重大工程地质问题，进行一流专业建设。

本专业为国家级特色和国家卓越工程师培养计划专业，强调“地质过程-力学机理-工程技术”三位一体的学术理念，培养具有深厚地质学和数理力学基础，能在轨道交通、土木、建筑等工程建设中独立从事勘察、设计、施工、管理工作，且具有社会担当和健全人格、职业操守和科学素养、历史眼光和全球视野、创新精神和批判思维的地质工程专业高素质人才。

Characterized by rail transit engineering geology, the geological 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 rail transit.

Geological engineering boasts a long development history and profound academic accumulation. In 1905, SWJTU set up a mining department to offer geology courses. In 1958, in order to meet the needs of key national construction projects such as Baoji-Chengdu Railway and Chengdu-Kunming Railway, SWJTU, with the approval of the Ministry of Railways, established the hydrogeology and engineering geology major, becoming the only institution of higher learning in the railway industry with a major of geological engineering. Academicians He Jie, Chen Qingru, Xue Yuqun, etc., leading academic figures in the field of geology in China, all graduated from this major. In the course of over 60 years of running a school, SWJTU has always been upholding the tradition of “rigorous scholarship and strict requirements”, with distinct regional strengths in western mountainous areas and characteristics of rail transit industry. Recently, in response to the “Belt and Road Initiative”, SWJTU, relying on Sichuan-Tibet, Yunnan-Tibet, China-Pakistan, China-Nepal and other railway projects, and in combination with its two first-class constructions, aims to conduct first-class professional construction for major engineering geological problems in the complex and dangerous mountainous areas of the Qinghai-Tibet Plateau.

This major is a major in national characteristic and outstanding engineers training program. It emphasizes the trinity academic concept of “geological process-mechanical mechanism-engineering technology”. It aims to cultivate geological engineering professionals who have profound geological and mathematical mechanics foundation, who can independently engage in survey, design, construction and management in rail transit, civil construction and other engineering construction, and who have social responsibility and sound personality, professional ethics and scientific literacy, historical vision and global vision, innovative spirit and critical

thinking.

专业代码: 081401

Program Code: 081401

专业名称: 地质工程

Program Name: Geological 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,获得基本工程训练、具有创新精神的地质工程专业技术人才。毕业生主要到铁路等工程建设部门从事与工程地质相关的规划、勘测、设计、施工、科技开发经营管理等方面的工作。经过五年左右的工作锻炼,毕业生具备地质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: 掌握地质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: 具有地质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: 掌握工程地质学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 geological engineering professionals 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, acquire basic engineering training and have innovative spirit. Graduates are mainly engaged in planning, surveying, design, construction, scientific and technological development and management related to engineering geology in railway and other engineering construction departments. After about five years of work, graduates will have the actual working competence of geological 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 general and specialized technical knowledge and relevant skills of geological engineering.

Goal 2: Have the ability to analyze and address problems in geological engineering, and have related scientific research capacity and professional capacity.

Goal 3: Master basic knowledge of project management in engineering geology and have the ability to participate in project management.

Goal 4: Have the ability of continuous learning, effective communication and communication.

Goal 5: Have good professional ethics and shoulder professional and social responsibility.

III.专业毕业要求 Graduation Requirements

毕业要求 1: 具有扎实的数学、物理、力学、化学基础知识,掌握工程地质的基本理论、方法及基本技能,能用于解决工程建设和运营中的复杂工程地质问题。

毕业要求 2: 能够应用数学、力学、地球物理勘探及勘察技术、工程地质理论等自然科学及工程科学原理,并结合文献调研和其它获取信息的方法,分析工程建设和运营过程中的复杂工程地质问题,并获得可靠结论。

毕业要求 3: 掌握室内外工作方法和地质现象描述的基本技能,具有通过工程地质综合勘察获取工程设计相关地质参数的能力,能够开展工程勘察、工程地质条件评价及地质灾害减灾防灾工程设计的基本能力,并了解相关的安全、环保、法律等知识。

毕业要求 4: 系统掌握基础地质、地球物理及工程地质的理论、方法及技术,具有较强的创新意识,具备运用多学科方法开展工程地质问题综合研究的基本能力。

毕业要求 5: 具备使用岩土特性相关测试设备及模拟软件等现代工具,解决工程地质相关参数、岩土体稳定、地质灾害防治等复杂工程地质问题的能力。

毕业要求 6: 能正确认识工程地质问题对社会、健康、安全、法律以及文化的影响,具有相应的环保、法律及安全等意识,并理解应承担的责任。

毕业要求 7: 熟悉国家有关工程地质勘察、工程地质条件评价及环境方面的方针、政策及法规,能够理解和评价工程建设运营中的地质问题对环境、经济和社会可持续发展的影响。

毕业要求 8: 具有良好的人文社会科学素养;崇尚科学,具有严谨治学、理论联系实际、开拓进取、求实创新的科学作风;具有较强的社会责任感及良好的职业道德。

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: 能熟练编制专业相关图表和撰写专业研究报告;掌握一门外国语言,能阅读本专业的外文文献,并具有听、说、写、译的基本能力;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: 掌握工程地质条件评价及工程经济评价和管理的决策方法,并在工程地质问题分析和工程实践中加以应用。

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。

Graduation requirement 1: Graduates should have solid basic knowledge of mathematics, physics, mechanics and chemistry, and master basic theories, methods and skills of engineering geology to solve complex engineering geological problems in engineering construction and operation.

Graduation requirement 2: Graduates can apply principles of natural science and engineering science such as mathematics, mechanics, geophysical exploration and survey technology, engineering geological theory, etc., and analyze complex engineering geological problems in the process of engineering construction and operation through literature research and other methods so as to obtain reliable conclusions.

Graduation requirement 3: Graduates should master the basic skills of indoor and outdoor working methods and description of geological phenomena, have the ability to obtain relevant geological parameters of engineering design through comprehensive engineering geological survey, have the basic ability to conduct engineering survey, evaluation of engineering geological conditions and engineering design of geological disaster mitigation and prevention, and

understand relevant safety, environmental protection, legal and other knowledge.

Graduation requirement 4: Graduates should systematically master the theories, methods and technologies of basic geology, geophysics and engineering geology, have a strong sense of innovation, and have the basic ability to conduct comprehensive research on engineering geological problems by using multidisciplinary methods.

Graduation requirement 5: Graduates should have the ability to employ modern tools such as geotechnical property-related testing equipment and simulation software to address complex engineering geological problems such as engineering geological related parameters, geotechnical stability, geological disaster prevention, etc.

Graduation requirement 6: Graduates should correctly understand the impact of engineering geological problems on society, health, safety, law and culture, have corresponding awareness of environmental protection, law and safety, and understand their due responsibilities.

Graduation requirement 7: Graduates should be familiar with national guidelines, policies and regulations on engineering geological survey, evaluation of engineering geological conditions and environment, and able to understand and evaluate the impact of geological problems arising from engineering construction and operation on sustainable development of environment, economy and society.

Graduation requirement 8: Graduates should have good humanities and social science literacy; advocate science, conduct rigorous research, integrate theory with practice, and pursue a pioneering and enterprising, realistic and innovative style; have a strong sense of social responsibility and good professional ethics.

Graduation requirement 9: Graduates should have strong team consciousness and cooperation spirit, and assume roles of individual, team member and responsible person in the team under the multi-disciplinary background.

Graduation requirement 10: Graduates should be able to skillfully prepare professional related charts and write professional research reports; master a foreign language, read foreign language documents of this major, and have basic abilities of listening, speaking, writing and translating; have a certain international perspective and able to communicate under a cross-cultural background.

Graduation requirement 11: Graduates should master the decision-making methods of engineering geological condition evaluation and engineering economic evaluation and management, and apply them in engineering geological problem analysis and engineering practice.

Graduation requirement 12: Graduates should have healthy physique and good psychological quality; have the consciousness to acquire new knowledge, and have the ability to continuously learn and adapt to development.

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：地质工程

Main Subject: Geological Engineering

专业核心课程：结构力学、工程测量、普通地质学、岩石学、构造地质学、土质土力学、岩体力学、水文地质学基础、地球物理勘探、工程地质学

Specialized Core Course: Structural Mechanics, Engineering surveying, Physical Geology, Petrology, Structural Geology, Soil Mechanics, Rock Mechanics, Introduction to Hydrogeology, Geophysical Exploration, Engineering Geology.

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						
		必修 Compulsory		限修 Distributional Electives		选修 Free Electives		小计 Subtotal
		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）					4		4
	劳动教育课程 Labor Education Courses	2						2
	公共艺术课程 Public Art Courses	2						2
	新生研讨课 Freshman Seminar	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	32.5	15.5					48
专业教育课程 Specialized Courses	专业核心课 Specialized Core Course	12	8					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 Practice, Graduation Internship and Graduation Design		13					13
	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	短 1 学期 Short 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 School of Geosciences and Environmental 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	
	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	00	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	
	材料力学 B Mechanics of Materials B	必修 Compulsory	4	1	第 4 学期 Semester 4	力学与航空航天学院 School of Mechanics and Aerospace Engineering	1.4	
	理论力学 B Theoretical Mechanics B	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	
	工程测量 B Engineering surveying B	必修 Compulsory	3	1	第 2 学期 Semester 2	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	3.3	
	普通地质学(含实验) Physical Geology	必修 Compulsory	3	1	第 2 学期 Semester 2	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	1.5, 7.1	
	结构力学 D Structural Mechanics D	必修 Compulsory	4	0	第 5 学期 Semester 5	土木工程学院 School of Civil Engineering	1.4	

专业基础课 Professional Foundational Courses	结构设计原理 B Structures Design Theory B	必修 Compulsory	2	0.5	第 5 学期 Semester 5	土木工程学院 School of Civil Engineering	3.3	
	构造地质学 A Structural Geology A	必修 Compulsory	6	3	第 4 学期 Semester 4	地球科学与 环境工程学院 School of Geosciences and Environmenta l Engineering	1.5,4.1, 10.1	
	结晶学与矿物学 Crystallography and Mineralogy	必修 Compulsory	3	1.5	第 3 学期 Semester 3	地球科学与 环境工程学院 School of Geosciences and Environmenta l Engineering	1.5,3.1, 4.1	
	岩石学 Petrology	必修 Compulsory	4	2	第 4 学期 Semester 4	地球科学与 环境工程学院 School of Geosciences and Environmenta l Engineering	1.5,3.1, 4.1	
	水文地质学基础 B Introduction to Hydrogeology B	必修 Compulsory	2	0.5	第 5 学期 Semester 5	地球科学与 环境工程学院 School of Geosciences and Environmenta l Engineering	2.4,4.3, 5.1,7.2	
	地貌与第四纪地质学 Introduction to Geomorphology and Quaternary Geology	必修 Compulsory	2	0.5	第 5 学期 Semester 5	地球科学与 环境工程学院 School 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	地球科学与 环境工程学院 School of Geosciences and Environmenta l Engineering	2.3,3.1, 4.2,5.1	
	地下水动力学 Groundwater Dynamics	必修 Compulsory	2	0.5	第 6 学期 Semester 6	地球科学与 环境工程学院 School of Geosciences and Environmenta l Engineering	2.4,4.3	
	工程地质数值分析及计算 方法 Numerical analysis and computation method of engineering geology	必修 Compulsory	2	1	第 7 学期 Semester 7	地球科学与 环境工程学院 School of Geosciences and Environmenta l Engineering	2.1, 5.2,11.1	

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	土质土力学 Soil Mechanics	必修 Compulsory	4	1	第 5 学期 Semester 5	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	2.2	
	岩土力学实验 Experiment in Soil Mechanics	必修 Compulsory	1	1	第 5 学期 Semester 5	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	2.2,3.1, 5.1	
	岩体力学 Rock Mechanics	必修 Compulsory	4	1.5	第 6 学期 Semester 6	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	2.2	
	岩土工程勘察及测试技术 Geotechnical Engineering Survey and Testing Technology	必修 Compulsory	2	0.5	第 6 学期 Semester 6	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	2.3,3.4, 4.2,7.2	
	岩土工程原位实验及勘察方案设计（课程设计） Field Testing and Project Design in Geotechnical Engineering	必修 Compulsory	1	1	第 6 学期 Semester 6	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	2.3,5.1	
	基础工程与地基处理（含课程设计） Foundation Engineering and Ground Treatment	必修 Compulsory	2	0.5	第 6 学期 Semester 6	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	3.3	
	工程地质学（含课程设计） Engineering Geology	必修 Compulsory	4	2	第 6 学期 Semester 6	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	2.4,3.4, 4.3,7.2, 11.2	

	专业外语（地质） Special English in Geological Engineering	必修 Compulsory	2	0.5	第 7 学期 Semester 7	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	10.3	
专业限选课 Specialized Restricted Courses	遥感地质学 Remote Sensing Geology	限修 Distributional Elective	2	0.5	第 6 学期 Semester 6	地球科学与环境工程学院 School 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	限修 Distributional Elective	2	0.5	第 7 学期 Semester 7	地球科学与环境工程学院 School of Geosciences and Environmental Engineering		

实践教学环节

Practice Courses

共 13 学分，其中必修 13 学分，限修 0 学分，选修 0 学分

A total credits of 13, including 13 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	地球科学与环境工程学院 School 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	地球科学与环境工程学院 School 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	地球科学与环境工程学院 School of Geosciences and Environmental Engineering	2.5,3.2, 3.4,9.2, 10.1	
	工程地质综合实习 Practice of Engineering Geology	必修 Compulsory	3	3	短 3 学期 Short Semester 3	地球科学与环境工程学院 School 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	地球科学与 环境工程学院 School of Geosciences and Environmenta l 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	地球科学与 环境工程学院 School of Geosciences and Environmenta l Engineering	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
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								
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 and Physical Health Projects, Social Work and Leadership Development Projects, Social Practice and Volunteering Projects	“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	

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	9.1	
	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					