



China University of Geosciences, Beijing (CUGB)

中国地质大学（北京）

Training Program for International Master Student

来华留学硕士研究生英文培养方案

China University of Geosciences, Beijing

中国地质大学（北京）

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Basic Regulations of China University of Geosciences, Beijing (CUGB) on the Training of Postgraduate Students Studying in China

中国地质大学（北京）来华留学研究生培养工作基本规定

In accordance with the *Regulations of the Peoples Republic of China on Degree, Interim Measures for the Implementation of the Regulations of the Peoples Republic of China on Degree and Trial Measures for the Award of Chinese Degree by Ordinary Institutions of Higher Learning to International Student in China* and the spirit of the relevant documents issued by the Academic Degree Committee of the State Council and the Ministry of Education, combined with the specific circumstances of our school, this regulation is formulated.

根据《中华人民共和国学位条例》《中华人民共和国学位条例暂行实施办法》和《关于普通高等学校授予来华留学生我国学位试行办法》以及国务院学位委员会、国家教育部的有关文件精神，结合我校具体情况，制定本规定。

These regulations apply to academic postgraduate student studying in China, and their educational system and length of study shall comply with the *China University of Geosciences (Beijing) International Students Status Management Regulations*. Each discipline shall formulate training programs for postgraduate student studying in China in accordance with these regulations.

本规定适用于学术型来华留学研究生，其学制与学习年限执行《中国地质大学（北京）来华留学生学籍管理办法》（中地大京国际发〔2021〕8号）。各学科根据本规定制定来华留学研究生培养方案。

一、Training Objectives

培养目标

1. Understand Chinese culture and basic national conditions, adhere to a friendly political stance towards the country, respect Chinese social moral and custom, abide by law and regulations, have good conduct, be honest and trustworthy, have good physical and mental health, and good scientific research ethic and professionalism.

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。

2.To meet the needs of scientific and technological progress and social development, master solid basic theories and systematic expertise in this discipline, have a wide range of knowledge and strong self-learning ability, and also the ability to engage in scientific research

or independently undertake specialized technical work. Chinese proficiency requires a preliminary ability to use Chinese language everyday and read Chinese materials for the major.

适应科技进步和社会发展需要，在本学科上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。

3. Have innovative spirit, creativity and entrepreneurial quality.

具有创新精神、创造能力和创业素质。

According to the above-mentioned three requirements and the first-class discipline standard, each discipline, combined with its own development characteristic and the reality of postgraduate student studying in China, defines the training orientation of postgraduate student studying in China, and formulates training objective with the characteristic of discipline.

各学科根据上述三点要求及一流学科标准，结合自身发展特色和来华留学研究生的实际，明确来华留学研究生的培养定位，制定有本学科特色的培养目标。

二、Training Direction

培养方向

The training direction should be set according to the characteristics of the discipline and the trend of the development of science and technology in this field, and should be scientific, standardized and relatively stable. We should pay close attention to the fields of great or far-reaching significance in economic, scientific and technological, and social development, so that the training of graduate students studying in China is based on the frontier of discipline development in China. Encourage the establishment of training direction in emerging interdisciplinary programs and set up training direction in the research fields required by national and social development that overseas postgraduate originally comes from.

培养方向设置要依据本学科的特点和本领域科技发展的趋势，要科学规范，相对稳定；要密切关注经济、科技、社会发展中具有重大或深远意义的领域，使来华留学生的培养立足于我国的学科发展前沿。鼓励在新兴交叉学科设置培养方向，鼓励在来华留学研究生所在国家和社会发展需要的研究领域设置培养方向。

三、Enrollment, Admission and Student Status Management

招生、录取及学籍管理

The recruitment and admission of overseas postgraduate student studying in China and relevant management of student on campus shall implement *China University of Geosciences (Beijing) Management Measures for Recruitment and Training of International Student*.

来华留学生的招收、录取及在校生的相关管理具体执行《中国地质大学（北京

）留学生招收和培养管理办法》（中地大京发〔2019〕72号）。

The majors that our university recruits for postgraduate student studying in China are subject to the majors announced to the public in the current year. The admission time is September each year, the admission time for special scholarship student can be arranged according to the actual situation. The postgraduate entrance examination for studying in China will be conducted by means of pre-enrollment qualification review and an interview with the instructor (hereinafter referred to as the instructor) in the first week after enrollment. The arrangement of tutors for postgraduate student studying in China is generally determined by the International Cooperation and Exchange Office and the relevant training school based on the application materials.

我校招收来华留学研究生的专业以当年度对外发布的专业为准。入学时间为每年的九月，专项奖学金生可根据实际情况安排入学时间。来华留学研究生入学考试采取入学前资格审查和入学后第一周指导教师（以下简称导师）面试的方式进行。来华留学研究生导师的安排一般根据学生的申请材料，由国际合作与交流处以及相关培养学院商定后确定。

Management of student status for postgraduate student studying in China, including admission of new student (enrollment education), foreign affairs procedure, registration and payment, discipline and attendance, suspension and resumption of study, transfer of school and major, leave, withdrawal, rewards and punishments, graduation and completion, etc. are all according to *China University of Geosciences (Beijing) International Students Status Management Regulations*, among them, for the management of scholarships for the postgraduate studying in China, please refer to *China University of Geosciences (Beijing) Beijing Foreign Student Scholarship Application Method*.

来华留学研究生的学籍管理，包括新生入学（入学教育）、外事手续、注册与缴费、纪律与考勤、休学与复学、转学与转专业、请假、退学、奖励与处分、毕业与结业等，执行《中国地质大学（北京）来华留学生学籍管理办法》（中地大京国际发〔2021〕8号），其中来华留学研究生的奖学金管理，具体参照《中国地质大学（北京）北京市外国留学生奖学金申请办法》（中地大京国际发〔2021〕12号）。

四、Training Mode and Study Period

学习年限与培养方式

China University of Geosciences, Beijing has a 3-year study period for postgraduate study in China, and the maximum study period is 4 years. In principle, postgraduate study in China will not be extended. Doctoral student studying in the University of Geosciences (Beijing) generally has a study period of 4 years. Those who have studied for 4 years need to apply for an extension of the study period, and the maximum study period is 6 years.

中国地质大学（北京）来华留学硕士研究生学制为3年，学习年限最长为4年，原则上，来华留学硕士研究生不予延期。

中国地质大学（北京）来华留学博士研究生学习年限一般为4年，学习满4年者，需要申请延长学习年限，最长学习年限为6年。

In principle, the cumulative time of postgraduate students studying in China for course study and scientific research work at CUGB shall not be less than half of the overall study period.

来华留学研究生在我校进行课程学习和科学研究工作的时间原则上累计不得少于整体学习年限的一半。

For doctoral student studying in China, there are generally no Master-Doctor successive programs. The overall length of study for joint education programs and dual-degree programs should also meet the above-mentioned requirements.

对来华留学博士研究生一般不设置硕博连读项目及硕士转博士项目。联合培养项目、双学位培养项目的总体学习年限同样应满足上述学习年限要求。

Chinese and/or English are the language of training for graduate students studying in China. The training of graduate students whose language is Chinese shall be carried out according to the academic postgraduate training program of our university. The dissertation may be completed in English, but a Chinese abstract should be written. The language of dissertation defense may be Chinese or English. The approval materials and resolutions of the defense must be written in Chinese and archived, and English copies may be attached.

来华留学研究生的培养语言为中文和/或英文。培养语言为中文的来华留学研究生参照我校当年学术型研究生培养方案执行。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。

No changing in major or tutor is permitted after three months since the registration unless there is a special reason.

来华留学硕士研究生入学三个月之后，如无特殊原因，不可更换专业、不可更换导师。

The credit system is applied to postgraduates studying in China, which includes course study, practice and degree thesis. The tutor shall bear the responsibility for training of international postgraduates. The tutor (group) should be responsible for making the training plan of international students, guidance of their thesis proposals, scientific research and their thesis writing. It is encouraged to establish the university-enterprise joint training model, and for qualified inter disciplines and co-constructed disciplines, a guidance group headed by tutors can be established.

来华留学研究生实行学分制，采取课程学习、实践训练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。导师（组）负责制定来华留学

硕士研究生个人培养计划、组织开题报告、指导科学研究和学位论文等。鼓励有条件的培养单位建立校所、校企联合培养模式、以及交叉学科、共建学科实施导师组的指导模式。

五、Training Program

培养方案的制定

(一) Formulation and Modification of Training Program for International Postgraduate Students

来华留学研究生培养方案的制定及修订

Academic Degree Assessment Committee is responsible for formulating and modifying the training programs of each discipline. The training program of international postgraduates refers to *Primary Requirements for Master Degrees of First-Level Disciplines* issued by Discipline Evaluation Group of Academic Degrees Committee of the State Council. The training program of international Ph.D. students refers to *Primary Requirements for Doctoral Degrees of First-Level Disciplines* issued by Discipline Evaluation Group of Academic Degrees Committee of the State Council and *Basic Requirements for Professional Doctoral Degree* compiled by the National Professional Degree Graduate Education Steering Committee. It will be modified properly according to the development of national and university education, the demand of training talents, and the reality of international students.

学位评定分委员会负责组织制定及修订各学科研究生培养方案。来华留学硕士研究生的培养方案参照国务院学位委员会学科评议组编制的《一级学科硕士学位基本要求》制定；来华留学博士研究生的培养方案，应根据不同学位类型，分别参照国务院学位委员会学科评议组编制的《一级学科博士学位基本要求》制定，并根据国家及学校研究生教育的发展及人才培养工作的需要，结合留学生的实际情况，适时修订。

(二) Formulation of Personal Training Plan of International Postgraduate Students

来华留学研究生个人培养计划的制定

The personal training plan of international postgraduate students shall be based on the training program of the discipline first, and then it will be specified by the tutor (group) and the student himself together. The personal training plan should be individualized and on-demand, considering the knowledge structure of international postgraduate students and the demand of thesis. The plan include course study plan, practice plan, and research plan of thesis. The course study plan and practice plan shall be made within two weeks after the entrance, while the research plan of thesis can be discussed in detail in thesis proposals. Once the personal training plan is made, it shall not be changed.

根据本学科的培养方案，由导师（组）与来华留学硕士研究生本人共同制定来华留学硕士研究生个人培养计划。个人培养计划应在考虑来华留学硕士研究生知识能力结构

与学位论文要求的基础上，充分体现个性化及按需定制的原则。个人培养计划包括课程学习计划、实践训练计划和学位论文研究计划。课程学习计划及实践训练计划应在留学研究生入学后2周内制定，学位论文研究计划应在开题报告中详细描述。个人培养计划制定确认后，不得随意变更。

(三) Requirements of Knowledge Structure and Credits

培养方案的主要内容

Each school must design its course programs adapting to the course system of postgraduate students at China University of Geosciences, Beijing, considering background of international students from different countries and special requirements of students from different scholarship programs, so that to improve the training of students in their primary knowledge and practical abilities.

培养学院在课程体系设计上，应与我校研究生课程体系相适应，同时兼顾来自不同国家的留学生的背景、考虑不同专项奖学金生的特殊需求，加强对留学研究生基础知识的传授以及实践能力的培养。

The training program of international postgraduate students is consist of common degree programs, compulsory major courses, theoretical courses and comprehensive practice. Please refer to Table 1 for the lowest credits requirements for international postgraduate students. Among them, common degree programs and professional degree courses belong to degree courses, including Chinese language, general conditions of China, scientific ethics and writing, and professional courses, which must be completed.

来华留学硕士研究生培养环节的课程设置包含公共学位课、专业学位课、专业选修课及实践环节四大模块，表1 为来华留学硕士研究生的培养方案课程设置。其中公共学位课和专业学位课属于学位课程，包括汉语、中国概况、科技道德与写作以及专业类课程，必须完成。选修课程中除了标注必修的外，可以任选。

Comprehensive practice is one of the most important methods to improve the teaching and scientific research ability of postgraduates and test the learning effect of postgraduates. Master students can participate in scientific research practice, teaching practice, management practice, social practice or other types of practical activities, requiring 2 credits.

实践环节是提高研究生的教学、科研能力，检验研究生学习效果的重要手段之一。硕士研究生可参加科研实践、教学实践、管理实践、社会实践或其他类别的实践活动，要求达到2个学分。

Table 1 Knowledge Structure and Credits Requirements for International Research Master Degree Students

表 1 来华留学生英文培养方案课程设置-硕士

| Courses Types 课程类别 | Courses Numbers 课程编号 | Courses names 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Lecture Departments 开课单位 | Remarks 备注 |
|-----------------------------------|-----------------------------------|---|---------------|---------------|-------------------|-----------------------------|----------------------|
| Common Degree Programs 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Conditions of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |
| Compulsory Major Courses 专业学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 32 | 2 | | | |
| | | | | | | | ≥2 credits 不少于2学分 |
| Major Optional Course 专业选修课 | | | | | | | ≥6 credits 不少于6学分 |
| | | | | | | | |
| | | | | | | | |
| | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | |
| Compulsory Parts 必修环节 | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | — | | | |
| | Interim Report 论文中期报告 | | | — | | | |
| | Academic report delivery 作学术报告 | | | — | | | |

Remarks: Common Degree Programs are offered by International Cooperation and Exchange Office.

备注：公共学位课由国际合作与交流处统一开设。

The training program of international doctoral students is consist of common degree programs, compulsory major courses, theoretical courses and comprehensive practice. Please refer to Table 2 for the lowest credits requirements for international doctoral students. Among them, common degree programs and professional degree courses belong to degree courses, including Chinese language, general conditions of China, scientific ethics and writing, and professional courses, which must be completed. Doctoral students are encouraged to take non-specialized courses outside the degree program, and the credits earned will be listed on the transcript.

来华留学博士生的课程设置分为公共学位课和选修课两部分，表 2 为来华留学博士研究生的培养方案课程设置，其中公共学位课和专业学位课属于学位课程，包括汉语、中国概况、科技道德与写作以及专业类课程，必须完成。选修课程中除了标注必修的外，可以任选。鼓励博士生在学位课之外选修非本专业课程，所得学分列入成绩单。

Table 2 Knowledge Structure and Credits Requirements for International Doctoral Students

表 2 来华留学生英文培养方案课程设置-博士

| Courses Types 课程类别 | Courses Numbers 课程编号 | Courses names 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Lecture Departments 开课单位 | Remarks 备注 |
|-----------------------------------|-------------------------|---|---------------|---------------|-------------------|-----------------------------|----------------------|
| Common Degree Programs 公共学位课 | X21504001 | Chinese Language 汉语 | 80 | 5 | Autumn | — | |
| | X21504003 | General Conditions of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |
| Compulsory Major Courses 专业学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 48 | 3 | | | |
| Major Optional Courses 专业选修课 | | | | | | | ≥2 credits 不少于2学分 |
| | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | |

| Courses Types 课程类别 | Courses Numbers 课程编号 | Courses names 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Lecture Departments 开课单位 | Remarks 备注 |
|--------------------------|-----------------------------------|-----------------------|---------------|---------------|-------------------|-----------------------------|---------------|
| Compulsory Parts 必修环节 | Thesis Opening Report 论文开题报告 | | | — | | | |
| | Interim Report 论文中期报告 | | | — | | | |
| | Academic report delivery 作学术报告 | | | — | | | |
| | Pre-oral defense 预答辩 | | | — | | | |

Remarks: Common Degree Programs are offered by International Cooperation and Exchange Office.

备注：公共学位课由国际合作与交流处统一开设。

For international postgraduate students whose master major is not matching with undergraduate major, they can choose two to three undergraduate courses as selective courses under the guidance of the tutor (group). The credits of these courses will be calculated as half of the original course credits, which is not included into the total credits of Master Degree.

对缺少本学科本科层次专业基础的跨学科培养的来华留学研究生，可在导师（组）指导下，将 2-3 门本学科的本科核心课程作为留学硕士生选修课，所修课程学分按原课程学分的 1/2 计，且不计入硕士学位的总学分要求。

For international postgraduate students who are from special scholarship, double-degree and joint-training programs, please refer to relevant agreements on the basis of fulfilling the requirements above.

专项奖学金生、双学位、联合培养等项目的来华留学硕士研究生的课程学习要求在完成上述要求的基础上见相关协议。

六、The Setting of Training Steps

培养环节设置要求

The credit system is applied to international postgraduate students, which requires them to fulfill total credits and subtotal credits required for each part in the knowledge structure of training program, before they apply for thesis defense. To this end, they shall refer to their training plans and the advice from their tutor (group).

来华留学硕士研究生实行学分制，要求来华留学硕士研究生依据培养方案，参照导师（组）建议，于申请学位论文答辩前满足学科培养方案的知识能力结构中所规定的各部分学分及总学分要求。

（一）Theoretical Courses and Credits Requirements

学位理论课及学分要求

Curriculum for international postgraduates consists of academic literacy courses, basic disciplinary courses, major courses, interdisciplinary courses, and so on. The curriculum of postgraduate students and Ph.D. students is interconnected, and in general each credit corresponds to 16 credit hours.

来华留学硕士研究生理论课程体系包括表 1 中的公共学位课、专业学位课、专业选修课等。研究生课程设置采取硕博打通模式，一般每学分对应 16 课内学时。

1. Academic Literacy Courses

公共学位课

This group of courses is designed for the cultivation goal of basic academic ability, science and technology and academic ethics, including scientific research method, Chinese language proficiency, scientific writing and reporting, science and technology ethics and academic ethics, etc. Language and cultural courses are compulsory courses for the degree, organized by the International Cooperation and Exchange Office, and should be completed in the first academic year, including:

本组课程针对“具备基本学术能力、科技及学术道德伦理”的培养目标而设。包括汉语、中国概况、科技道德与写作等方面的课程。公共学位课由国际合作与交流处组织开设，理论上在第一学年完成，包括：

| | | | |
|---------------------------------|-----------|---------|------|
| ❖ Chinese Language | 8 Credits | 汉语 | 8 学分 |
| ❖ General Conditions of China | 2 Credits | 中国概况 | 2 学分 |
| ❖ HSK level 3 | 1 Credit | HSK三级 | 1 学分 |
| ❖ Scientific Ethics and Writing | 1 Credit | 科技道德与写作 | 1 学分 |

Chinese-Level 1 (2 credits), Chinese-Level 2 (1 credit) and Introduction to China (1 credit)

In addition, the credit requirements of this course group in the training program of each discipline can be set on the basis of the minimum required credits specified in Table 1. For more information about course study and score management of international postgraduates, please refer to *the Rules of the International School of China University of Geosciences, Beijing on Course Study Management for International Postgraduates*.

此外，各学科培养方案中本课程组的学分要求，可在表 1 规定的最低必修学分基础上按需设置。来华留学硕士研究生的课程学习与成绩管理，具体见《中国地质大学（北京）来华留学生学业考核及成绩管理细则（修订稿）》（中地大京国际发〔2021〕11号）

International postgraduates entitled to special scholarship, dual degree and joint training program shall complete all said requirements on course study as well as other requirements

set in relevant agreements.

专项奖学金生、双学位、联合培养等项目的来华留学硕士研究生的课程学习要求在完成上述要求的基础上见相关协议。

2. Basic Disciplinary Courses & Major Courses

专业学位课

The group of courses is designed for the cultivation goal of mastering solid, broad, systematic and in-depth specialized knowledge of the basic theory of the discipline and being familiar with the development of the frontier of the discipline. All disciplines are required to clearly set the core curriculum and course selection requirements in the training program. In addition to core courses, the credit requirements of course groups in the training programs of each discipline can be set on the basis of the minimum required credits specified in Table 1.

本组课程针对“掌握坚实宽广的学科基础理论、系统深入的专门知识以及熟悉学科前沿发展”的培养目标而设。要求各学科在培养方案的本组别中，明确设定核心课程及选课要求。除核心课程外，各学科培养方案中课程组的学分要求，可在表 1 规定的最低必修学分基础上按需设置。

At least three credits of mathematics courses should be completed for international postgraduate students. Mathematics courses are compulsory courses for the degree and will be organized by the International Cooperation and Exchange Office of China University of Geosciences, Beijing. They should be completed in the first academic year.

来华留学硕士研究生至少科技文献综述以及地球科学进展等课程，应在第一学年完成。

❖ Review of Scientific Literature 3 Credits 科技文献综述 3学分

❖ Progress in Earth Science 3 Credits 地球科学进展 3学分

3. Interdisciplinary Courses 专业选修课

Interdisciplinary courses are offered by the other training schools and the International School.

其它培养学院以及国际学院开设的课程均可作为跨学科课。

(二) Comprehensive Practice 实践环节

1. Professional Practice (organized as appropriate by the training school)

专业实践（由培养学院视情况选择实施）（硕士）

Professional practice aims to cultivate the practical ability and innovative consciousness of postgraduate students, which involves diversified practical activities to improve the application ability of theoretical knowledge. The school shall formulate assessment standards, and tutor will take charge of the assessment, as well as record scores.

专业实践以培养研究生实践能力和创新意识为目的，开展多元化实践活动，提高理论知识的运用能力。由学院制定考核标准，指导教师负责考核，记载成绩。

2. Academic Activities

做学术报告

The academic activities required for the credits is to select and listen to academic presentations hosted by the graduate school and the training school.

学分规定的学术报告环节是指选听由研究生院及学院邀请的学术报告。

It is required that the total number of academic presentations selected by international postgraduate students shall not less than eight times, and the sponsor will record the attendance..

硕士研究生在学期间要求参加8次以上学术活动，由院（部）负责考核。学术活动及其考核在研究生学位论文答辩前完成。

Doctoral students shall participate in more than 10 academic activities during their studies, and make at least one academic report in the school (department) or the university. Before dissertation defense, academic papers must be published in academic journals. For specific requirements, please refer to *Regulations of China University of Geosciences, Beijing on Scientific Research Achievements for Graduate Students Applying for Degrees*. In addition, doctoral students should also participate in teaching practice and social practice activities

博士生在学期间应参加10次以上的学术活动，并在院（部）或全校范围内至少作一次学术报告。在学位论文答辩之前，须在学术刊物上公开发表学术论文，具体要求详见《中国地质大学（北京）关于研究生申请学位时科研成果的规定》（中地大京发〔2018〕4号）。此外，博士生还应参加教学实践和社会实践活动。

七、Degree Thesis and Relevant Works

学位论文及相关工作

The conduction of master's degree thesis is a comprehensive training process in which master students participate in systematic scientific research under the guidance of their supervisor (group), and acquire the ability to combine theory with practice, innovate thinking ability and carry out scientific research work ability. During this process, the supervisor should adhere to the moral of teaching tirelessly; Master students should carry forward the spirit of innovation and perseverance.

硕士学位论文工作的开展，是硕士研究生在导师（组）指导下，参与完成系统的科学研究，获得理论联系实际能力、创新思维能力及开展科学研究工作能力的综合训练过程。过程中导师要坚持言传身教、诲人不倦的师德；硕士生要发扬勇于创新、坚持不懈的学风。

（一）Thesis Proposals

开题报告

The thesis proposal of international postgraduate students shall be uniformly organized and implemented by the school, and the time from thesis proposal to the application for thesis defense shall be no less than 6 months. Full-time doctoral students are required to complete the thesis proposal no later than the second semester of the third year, and the time from the thesis proposal to the defense of the dissertation application is not less than 10 months.

来华留学研究生开题报告由学院统一组织实施，且开题报告至申请学位论文答辩时间不少于 6个月。要求博士研究生最晚于三年级第二学期完成开题报告，且开题报告至申请学位论文答辩时间不少于10个月。

The detailed rules of the thesis proposal defense shall be implemented in accordance with *the Administrative Regulations of Proposal Defense for Postgraduate Students at China University of Geosciences, Beijing*.

开题答辩细则，遵照《中国地质大学（北京）学位论文开题暂行管理办法》执行。

International postgraduate students are encouraged to choose the topic of thesis in combination with the national conditions of their home country.

提倡留学研究生进行与其本国实际相结合的论文选题。

（二）Thesis Midterm Assessment 学位论文中期检查

The mid-term assessment shall be carried out after completing the course study and obtaining the required credits, generally from the beginning of the third semester to the end of the fourth semester of postgraduate enrollment, combined with literature review and thesis opening report. For detailed information, please refer to the *Implementation Measures for the Mid-term Assessment of Graduate Students of China University of Geosciences, Beijing*.

中期考核工作要在完成课程学习并获得规定学分后进行，一般在研究生入学的第三学期初至第四学期结束前，结合文献综述和开题报告进行。参考《中国地质大学（北京）研究生中期考核实施办法》。

The content of the assessment includes course transcripts, mid-term assessment form with comments from the supervisor and comments of the review team, and mid-term report of the dissertation. After the mid-term assessment is completed, the assessment team will fill in the *Interim Assessment Form* and sign the comments. Those who fail must be reorganized within the specified time. Graduate students who fail the mid-term assessment for two consecutive times will be dismissed from study.

考核内容包括课程学习成绩单、含导师评语和评议组意见的中期考核表、学位论文中期报告。中期考核完成后，由考核小组填写《中期考核表》并签署意见，未通过者须在规定时间内重新组织。连续两次未通过中期考核的研究生，取消学习资格。

(三) Extension 延期申请

In general, international postgraduate students are not allowed to extend their study period. Those who need to extend their study period due to special reasons such as suspension of schooling or government-funded overseas study, should go through relevant examination and approval procedures.

来华留学研究生一般不允许延长学习年限，因休学等特殊原因需要延长者，应按相关审批流程办理。

(四) Thesis Review and Defense

学位论文评阅与答辩

Degree thesis defense includes the fulfillment of the thesis/dissertation qualification approval, academic misconduct literature check, thesis review, and thesis defense qualification approval, degree thesis/dissertation oral defense, etc. Affairs related to the thesis review, defense and degree conferral for international postgraduates are the same as those for Chinese postgraduates and are implemented in accordance with *the Implementation Regulations on Academic Degree Conferrals of China University of Geosciences, Beijing*, and should meet the requirements of each training school.

学位论文评阅与答辩，包括完成学位论文资格审查、学术不端文献检测、学位论文评阅、学位论文答辩审批、学位论文口头答辩等环节。具体执行《中国地质大学（北京）学位授予工作实施细则》，并满足各培养单位具体要求。

At least 2 weeks are offered for the international Master's Degree candidates.

来华留学硕士研究生应至少留有两周的答辩时间。

For International postgraduates under joint programs, one expert can be invited from overseas cooperation unit.

对联合培养的来华留学研究生，其他单位的专家可来自境外合作单位（仅限1名）。

Graduation certificate shall be issued by the International Cooperation and Exchange Office after the international postgraduate student passes the degree thesis defense. Degree certificate shall be issued to international postgraduates after the approval of both Academic Degree Evaluation Sub-Committee at School-Level and Academic Degree Evaluation Committee.

来华留学研究生完成毕业（学位）论文答辩并通过者，准予毕业，由国际合作与交流处颁发毕业证书。准予毕业的留学生，经培养学院分学位委员会和我校学位委员会审查符合授予学位条件者，颁发学位证书。

Based on the recommendations of the training schools, Graduate School shall evaluate Excellent Master's Degree Thesis in proportion to international postgraduates applying for Master's Degree conferral every two year.

研究生院根据培养学院推荐意见，对每年度申请授予硕士学位的留学研究生按一定比例评选优秀硕士学位论文。

(五) Publication of Academic Papers

发表论文要求

International postgraduate students are encouraged to publish academic papers in combination with their research work

鼓励来华留学硕士研究生在学期间结合科研工作有学术论文发表。

八、Termination of Study

终止培养

An international postgraduate will be terminated from the training program if any of the following cases occurs:

在培养过程中，有下列情况之一者，终止培养：

1. The student who has a bad performance of morality and academic ethics;

因思想品德及学术道德问题，不宜继续培养者；

2. The student who is disqualified to apply for a degree because of duplicate checking of thesis;

因学位论文查重被取消学位申请资格者；

3. The student fails in the entrance language examination and still fails after one semester's academic probation;

入学语言测试不合格，试读一学期仍未达到要求者；

4. The student fails to pass the report of thesis proposal twice;

开题报告两次均不通过者；

5. The student fails to pass in-process inspection of thesis;

没有通过中期检查者；

6. The student has not been approved when application for study period extension or has not applied for extension when his study period overdue;

学习年限逾期未申请延期、或延期申请未获批准者；

7. The student applies for the termination of study at China University of Geosciences, Beijing with the agreement of the supervisor and the training school;

由研究生本人提出终止学习要求且经责任导师同意、所在学院批准者；

8. The student's termination is proposed by the supervisor and the training school;

由责任导师提出终止培养并经所在学院批准者；

9. Others.

由于其他原因不宜继续培养者。

Those who are terminated from the training program shall be conferred the Certificate of Successful Completion of the Courses if they have finished all courses' study and meet the requirements of the training program. For those who fail to complete all courses' study, only a certificate for the courses study is conferred.

终止培养者，如课程全部结束且符合培养方案要求，可发课程结业证书；如未完成课程学习，只提供所学课程的学习证明。

The regulations apply to the international postgraduates enrolled in or after 2021.

本规定适用于2021年（含）以后入学的英文授课学术型来华留学研究生。

The right to interpret the regulations belongs to the Graduate School and the International Cooperation and Exchange Office. If the requirement of discipline training program is higher than these regulations, it shall be carried out according to high standards.

本规定解释权归国际合作与交流处。若学科培养方案要求高于本规定，按高标准执行。

(0202) Applied Economics Training Program for International Master Student

(0202) 应用经济学 硕士留学生 培养方案

一、Training Goal 培养目标

The cultivation of master students in this discipline emphasizes moral, intellectual and physical development, and requires students to love the motherland, support the leadership of the Party, abide by the law and discipline, and conduct themselves well. They should have a solid theoretical foundation, master systematic applied economics and relevant professional knowledge and discipline development trends. And can correctly use economics, mathematics, statistics and other research methods to solve the theoretical and practical problems in applied economics, independently engaged in scientific research, teaching or management work. Specific requirements :(1) possess high political and ideological quality, master scientific world outlook and methodology, develop morally, intellectually and physically in an all-round way, and become high-level professionals needed by socialist modernization. (2) Have solid basic theories and professional knowledge of economics, master scientific methodology, be able to conduct investigation and research, design schemes, build models and conduct empirical tests for real economic problems, and be able to independently engage in teaching, scientific research and management of the discipline. (3) Master a foreign language and have a high level of foreign language, can skillfully read the literature of the subject, have good listening and speaking ability.

本学科硕士生的培养强调德、智、体全面发展，要求学生热爱祖国，拥护党的领导，遵纪守法，品行端正，培养具有扎实的理论基础，掌握系统的应用经济学及相关方向的专业知识和学科发展动态，并能正确运用经济学、数学、统计学等研究方法解决应用经济学方面的有关理论和实际问题，独立从事科学研究、教学工作或管理工作的高级复合型人才。具体要求：（1）具有较高政治思想素质，掌握科学世界观与方法论，德智体全面发展，成为社会主义现代化建设需要的高层次专业人才。（2）具备扎实的经济学基础理论与专业知识，掌握科学的方法论，基本能够针对现实经济问题进行调查研究、设计方案、构建模型、实证检验，能够独立从事本学科的教学、科研和管理工作。（3）掌握一门外语并具有较高的外语水平，能熟练地阅读本学科文献资料，具有较好的听说能力。

二、Research Directions 研究方向

| Research Direction 研究方向 | Research Content 研究内容 |
|---|---|
| <p>1.Industrial economics 产业经济学</p> | <p>This direction takes industrial activities in social economy as the main research object, and mainly applies relevant theories and research methods of industrial economics to carry out researches on industrial organization and industrial policy, input-output analysis, industrial transformation and upgrading and innovation, policy evaluation of comprehensive environmental and ecological governance, sustainable development of mining industry, industrial ecological economic efficiency and environmental policy and so on.</p> <p>该方向以社会经济中的产业活动为主要研究对象，主要运用产业经济学的相关理论和研究方法开展包括产业组织与产业政策、投入产出分析、产业转型升级与创新、环境与生态综合治理政策评价、矿业可持续发展、产业生态经济效率与环境政策等方面的研究。</p> |
| <p>2.Regional economics 区域经济学</p> | <p>This direction takes regional economic activities as the main research object, and mainly applies relevant theories and research methods of regional economics to carry out regional economic theories and policies, regional coordinated development, new urbanization and urban-rural integration, rural revitalization, regional division of labor and trade, regional mining development and so on.</p> <p>该方向以区域经济活动为主要研究对象，主要运用区域经济学的相关理论和研究方法开展包括区域经济理论与政策、区域协调发展、新型城镇化与城乡一体化、乡村振兴、区域分工与贸易、区域矿业发展等。</p> |
| <p>3.International trade 国际贸易学</p> | <p>This direction takes international trade activities as the main research object, and mainly applies relevant theories and research methods of economics to carry out theories and policies of international trade, transfer of implied resources and environment elements in international trade, global value chain and value-added accounting of trade, international trade in mineral resources, and "One Belt and One Road" initiative.</p> <p>该方向以国际贸易活动为主要研究对象，主要运用经济学的相关理论和研究方法开展包括国际贸易理论与政策、国际贸易隐含资源环境要素转移、全球价值链与贸易增加值核算、矿产资源国际贸易、“一带一路”倡议等。</p> |
| <p>4.Finance 金融学</p> | <p>This direction takes financial activities as the main research object, and mainly applies relevant theories and research methods of finance to carry out financial engineering and risk management (investment decision optimization, financial risk contagion, financial derivatives), energy finance, climate finance, green finance, mining finance, etc.</p> <p>该方向以金融活动为主要研究对象，主要运用金融学的相关理论和研究方法开展包括金融工程与风险管理（投资决策优化、金融风险传染、金融衍生品）、能源金融、气候金融、绿色金融、矿业金融等。</p> |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for postgraduate students and Ph.D. students are interconnected, and in general each credit is equivalent to 16 class hours.

来华留学硕士研究生学制3年，最长学习年限4年，不少于31学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式，一般每学分对应16课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|-----------------------------|------------------------|--|---------------|---------------|-------------------|--|----------------------|
| Public Courses 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |
| Compulsory Courses 专业学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 32 | 2 | | | |
| | X21307007 | Resource and Environmental Economics 资源环境经济 | 32 | 2 | | School of Economics and Management 经济管理学院 | ≥2 credits 不少于2学分 |
| | X21307004 | International Finance Management 国际金融管理 | 32 | 2 | | School of Economics and Management 经济管理学院 | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|--|---|---------------|---------------|-------------------|--|----------------------|
| Optional Course 专业选修课 | X21307006 | Research Methods of Data and Model 数据模型与方法 | 32 | 2 | | School of Economics and Management 经济管理学院 | ≥6 credits 不少于6学分 |
| | X21307008 | Resource and Environmental Management 资源环境管理 | 32 | 2 | | School of Economics and Management 经济管理学院 | |
| | X21307005 | Mining Finance 矿业金融 | 16 | 1 | | School of Economics and Management 经济管理学院 | |
| | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | |
| Compulsory Parts 必修环节 | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | —— | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | —— | |
| | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | —— | | | |
| | Interim Report 论文中期报告 | | | —— | | | |
| | Academic report delivery 作学术报告 | | | —— | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.

备注：公共学位课、必修环节中 Basic Practice of Chinese 汉语基础实践、Chinese Professional application 汉语专业应用由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读经典著作和专业学术期刊目录

[1] American Economic Review

[2] Econometrica

- [3] Journal of Political Economy
- [4] Quarterly Journal of Economics
- [5] Energy Economics
- [6] Energy Policy
- [7] Journal of Economic Perspectives
- [8] Review of Environmental Economics and Policy
- [9] Journal of the Association of Environmental and Resource Economists
- [10] Review of Economic Studies
- [11] Journal of Economic Growth
- [12] Ecological Economics
- [13] Applied Energy
- [14] Resources Policy
- [15] Regional Studies
- [16] Economics of Energy & Environmental Policy
- [17] Applied Economic Perspectives and Policy
- [18] Journal of Finance
- [19] Brookings Papers on Economic Activity
- [20] Journal of Financial Economics
- [21] Environmental and Natural Resource Economics, Jonathan M. Harris, Houghton Mifflin Company 2006.

(0403) Physical Education Training Program for International Master Student

(0403) 体育学 硕士留学生 培养方案

一、 Training Goal 培养目标

Respect the Chinese culture and the basic national condition, obey the Chinese social morality, customs and habits, possess the realistic scientific spirits, qualified academic morality and the innovative spirits; Combination of theory and practice, guided by social needs, with basic quality training and technical application capabilities as the main line, mastering systematic and solid sports theory, possessing the knowledge and practical skills required in the fields of sports industry management, industrial management, education and training, etc. Efforts should be made to cultivate the theoretical and practical level of outdoor sports, to serve the development of national sports, and to have innovative spirit and practical ability "foundation, strong ability, high quality" research and application-oriented talents.

尊重中国文化和基本国情，遵从中国社会公德和风俗习惯，具备求实的科学作风、良好的学术道德和勇于创新的精神；理论和实践相结合，以社会需求为导向，以基本素质培养和技术应用能力为主线，掌握系统扎实的体育理论，具有体育行业管理、产业经营、教育培训等领域所需知识技能与实践能力和实践能力，着力培养户外运动方面的理论和实践水平，服务国家体育发展，具有创新精神和实践能力的“基础实、能力强、素质高”的研究和应用型人才。

二、 Research Directions 研究方向

| Research Direction 研究方向 | Research Content 研究内容 |
|---|---|
| 1. Physical Education and Training 体育教育训练学 | <p>This direction is based on the modern education and teaching theory and the scientific theory of sports human body, studying the laws of physical education and sports training, and providing scientific guidance for the teaching, training, scientific research and management of many sports events such as ball games, track and field, gymnastics, etc.</p> <p>该方向以现代教育教学理论和运动人体科学理论为基础，研究体育教育与运动训练的规律，为球类、田径、体操等诸多体育运动项目的教学、训练、科研与管理提供科学指导。</p> |

| Research Direction 研究方向 | Research Content 研究内容 |
|--|--|
| 2.National Traditional Sports 民族传统体育学 | This direction is based on Chinese martial arts, covering a comprehensive emerging discipline of Chinese folk sports and traditional sports health preservation. Promote cultural integration through the research of traditional national sports. 该方向以中国武术为主干,涵盖中华民族民间体育和传统体育养生的一门综合性新兴学科。通过对民族传统体育项目的研究,促进文化交融。 |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for postgraduate students and Ph.D. students are interconnected, and in general each credit is equivalent to 16 class hours.

来华留学硕士研究生学制3年,最长学习年限4年,不少于31学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式,一般每学分对应16课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|------------------------|---|---------------|---------------|-------------------|--|---------------|
| Public Courses 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |
| Compulsory Courses 专业 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|--|--|---------------|---------------|-------------------|----------------------------------|----------------------|
| 学位课 | SZ14003 | Sports training 运动训练学 | 32 | 2 | Autumn | Department of P. E. 体育部 | ≥2 credits 不少于2学分 |
| Optional Course 专业选修课 | SZ14004 | Exercise Physiology 运动生理学 | 32 | 2 | Autumn | Department of P. E. 体育部 | ≥6 credits 不少于6学分 |
| | SX14005 | Outdoor sports training theory and practice 户外运动训练理论与实践 | 32 | 2 | Autumn | Department of P. E. 体育部 | |
| | SX14009 | Quality Extension Theory and Practice 素质扩展理论与实践 | 32 | 2 | Autumn | Department of P. E. 体育部 | |
| | S21314007 | National traditional sports culture 民族传统体育文化 | 32 | 2 | Spring | Department of P. E. 体育部 | |
| | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | 必选 |
| Compulsory Parts 必修环节 | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | —— | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | —— | |
| | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | —— | | | |
| | Interim Report 论文中期报告 | | | —— | | | |
| | Academic report delivery 作学术报告 | | | —— | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.

备注：公共学位课、必修环节中 Basic Practice of Chinese 汉语基础实践、Chinese Professional application 汉语专业应用由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读

读经典著作和专业学术期刊目录

一、Classic Works 经典著作：

1. 《Technical Skills for Adventure Programming》, Mark Wagstaf
 2. 《Wilderness and Rescue Medicine》, Jeffrey Isaac
 3. 《Outdoor Leadership : Theory and Practice》, Bruce Martin
 4. 《Outdoor Recreation : An Introduction》, Ryan Plummer
 5. 《Adventure Education : Theory and Applications》, Project Adventure
 6. 《Climbing Self Rescue : Improvising Solutions for Serious Situations》, Andy Tyson
 7. 《Altitude Illness : Prevention and Treatment》, Steven Bezruchka
 8. 《Climbing : Training for Peak Performance》, Clyde Soles
 9. 《The Outdoor Athlete : Total Training for Outdoor Performance》, Steve Ilg
 10. 《Safety , Risk and Adventure in Outdoor Activities》, Bob Barton
 11. 《Sport Biomechanics》, Zaziolki et al
 12. 《体育运动心理学研究进展》,张力为、任未多
《Sports Psychology Research Progress》, Liwen Zhang, Weiduo Ren
 13. 《实用运动生理学》,杨锡让
《Practical Exercise Physiology》, Xirang Yang
 14. 《运动训练理论与方法》,图多-博姆帕
《Sports Training Theory and Methods》, Tudor-Boompa
 15. 《实用运动医学》,于长隆、曲绵域
《Practical Sports Medicine》, Changlong Yu, Mianyu Qu
 16. 《体育教学改革新视野》,毛振明
《New Vision of Physical Education Reform》, Zhenming Mao
 17. 《体育科学研究方法》,张力为
《Sports Research Methodology》, Liwen Zhang
 18. 《体育统计与 SPSS 》,王晓芬
《Sports Statistics and SPSS》, Xiaofen Wang
- 二、Professional Academic Journals 学术期刊:
1. 《体育科学》,国家体育总局
《Sports Science》, General Administration of State Sports of China
 2. 《天津体育学院学报》,天津体育学院
《Journal of Tianjin Institute of Physical Education》, Tianjin Institute of Physical Education
 3. 《上海体育学院学报》,上海体育学院
《Journal of Shanghai University of Sport》, Shanghai University of Sport
 4. 《北京体育大学学报》,北京体育大学
《Journal of Beijing Sport University》, Beijing Sport University

5. 《体育与科学》,江苏省体育科学研究所
《Sports and Science》, Jiangsu Institute of Sports Science
6. 《体育学刊》,华南师范大学
《Journal of Physical Education》, South China Normal University
7. 《中国体育科技》,国家体育总局
《China Sports Science and Technology》, State Sports General Administration
8. 《Journal of Sport and Health Science》, China
9. 《European Journal of Sport Science》, European Journal of Sports Science, UK
10. 《Journal of Applied Sport Psychology》, Journal of Applied Sports Psychology, UK
11. 《Journal of Sport Management》, Sports Management Magazine, United States
12. 《Journal of Sports Medicine and Physical Fitness》, Journal of Sports Medicine and Health, Italy

(0708) Geophysics Training Program for International Master Student

(0708) 地球物理学 硕士生 培养方案

一、Training Goal 培养目标

Respect the Chinese culture and the basic national condition, obey the Chinese social morality, customs and habits, possess the realistic scientific spirits, qualified academic morality and the innovative spirits; possess a solid foundation of the Mathematics, Physics, Geology, and Computer Science, master the basic theories, professional knowledge and skills of Geophysics, understand the trends of development and the academic frontiers of Geophysics, have the ability to carry on the scientific research and academic communication; could undertake the general research subject independently and produce the innovative achievements in one aspect, undertake the teaching, research, and management in the domains of deep earth, deep sea, deep space, resources, environment, and engineering.

尊重中国文化和基本国情，遵从中国社会公德和风俗习惯，具备求实的科学作风、良好的学术道德和勇于创新的精神；具有扎实的数学、物理、地质学、计算机技术等基础知识，掌握系统的地球物理学基本理论、专业知识和技能，了解地球物理学领域的发展趋势和学术前沿，具有开展科学研究和学术交流的能力，能够独立承担本学科的一般研究课题并做出一定的创新成果，能够在深地、深海、深空以及资源、环境、工程等领域承担地球物理学的教学、科研和管理等工作。

二、Research Directions 研究方向

| Research Direction 研究方向 | Research Content 研究内容 |
|-----------------------------------|--|
| 1.深部地球物理 Deep Geophysics | Utilize different geophysical methods including gravity, magnetic, electromagnetic, and seismic methods to study the 3D structures of physical properties in the deep crust and mantle, investigate the deep dynamic processes including the plate movement, mantle convection, magmatic action and deep mineralization, and reveal the mechanisms of exchange of materials or energy between the internal spheres of the earth. 该方向主要利用重力、磁法、电法、地震等固体地球物理方法研究地球深部壳幔三维物性结构，探讨板块运动、地幔对流、岩浆活动、深部成矿等深部动力过程以及地球内部各圈层之间物质（或能量）交换的机制。 |

| Research Direction 研究方向 | Research Content 研究内容 |
|--|---|
| 2.海洋地球物理 Marine Geophysics | <p>Apply the geophysical methods including gravity, magnetic, electromagnetic, radioactive, seismic methods to study the issues based on scientific observation including submarine topography of beach shallow sea and deep shallow sea, submarine geological structures, mineral resources in sea area, seawater thermohaline structure, and the movement of the sea.</p> <p>该方向主要利用重力、地磁、电磁、放射性、地震等地球物理方法，研究滩浅海、深浅海海底地形、海底地质结构、海域矿产资源、海水温盐结构和海水运动等科学观测研究等领域的问题。</p> |
| 3.空间物理 Space Geophysics | <p>Through simulation, inversion, and in situ measurements from the spacecrafts to study the space weather caused by the solar eruptive events and to study the intrinsic magnetic field of planets. Investigate the acceleration and propagating mechanisms of solar energetic particles, the composition of coronal mass ejections, multi-layer electromagnetic response during magnetic storms, and internal thermal state and their relation to dynamo magnetic field on Mars and the Moon.</p> <p>该方向主要利用数值模拟、反演和卫星原位观测分析来研究太阳爆发活动的空间天气效应和行星内禀磁场演化。探究太阳高能粒子加速和传输机制、日冕物质抛射成分特征、磁暴时地球多圈层电磁响应、月球/火星内部热状态与内禀磁场关联等问题。</p> |
| 4.勘探地球物理 Exploration Geophysics | <p>Apply multiple geophysical methods, including gravity, magnetic, electromagnetic, seismic methods to solve the subsurface geophysical problems in gas exploration, mineral resource exploration, geohydrological environment and engineering. To support the mineral deposit and energy resources for sustainable development of economy.</p> <p>综合应用重力、磁法、电法、地震等方法解决油气勘探、矿产资源探测、水文环境与工程中的浅地表地球物理问题，为经济可持续发展提供矿产和能源完全保障。</p> |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for postgraduate students and Ph.D. students are interconnected, and in general each credit is equivalent to 16 class hours.

来华留学硕士研究生学制3年，最长学习年限4年，不少于31学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式，一般每学分对应16课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|-----------------------------|------------------------|---|---------------|---------------|-------------------|--|---------------------------|
| Public Courses 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |
| Compulsory Courses 专业学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 32 | 2 | | | |
| | X21310002 | Fundamentals of Geophysics 地球物理基础 | 32 | 2 | Autumn | School of Geophysics and Information Technology 地球物理与信息技 术学院 | ≥2 credits 不少于 2 学分 |
| Optional Course 专业选修课 | X21310001 | Electrical Exploration 电法勘探 | 32 | 2 | Autumn | School of Geophysics and Information Technology 地球物理与信息技 术学院 | ≥6 credits 不少于 6 学分 |
| | X21310003 | Gravity and Magnetic Exploration 重磁勘探 | 32 | 2 | Autumn | School of Geophysics and Information Technology 地球物理与信息技 术学院 | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|--|--------------------------------------|---------------|---------------|-------------------|--|------------------|
| | X21310005 | Seismic Exploration 地震勘探 | 32 | 2 | Autumn | School of Geophysics and Information Technology 地球物理与信息技术学院 | |
| | X21310004 | Rock Physics 岩石物理 | 32 | 2 | Spring | School of Geophysics and Information Technology 地球物理与信息技术学院 | |
| | X21312002 | Space Geodesy 空间大地测量 | 16 | 1 | | 土地科学技术学院 School of Land Science and Technology | |
| | B21301003 | Advanced tectonic geology 高级构造地质学 | 32 | 2 | | 地球科学与资源学院 School of Earth Sciences and Resources | |
| | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | 必选 Compulsory |
| Compulsory Parts 必修环节 | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | —— | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | —— | |
| | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | —— | | | |
| | Interim Report 论文中期报告 | | | —— | | | |
| | Academic report delivery 学术报告 | | | —— | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.

备注:公共学位课、必修环节中 Basic Practice of Chinese 汉语基础实践、Chinese Professional application 汉语专业应用由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读经典著作和专业学术期刊目录

一、Classic Works 经典著作：

1. Stein, S., Wysession, M., An introduction to seismology, earthquakes, and earth structure, Blackwell Publishing, 2003
2. Masaru, K., Geomagnetism (Treatise on Geophysics, Volume 5), Elsevier, 2009
3. Schrijver, C.G., Siscoe, G.L., Heliophysics, Cambridge University Press, 2010
4. Fiona, S., Karsten, B., Practical Magnetotellurics, Cambridge University Press, 2005
5. Chave, A.D., Jones, A.G., The magnetotelluric method: Theory and practice. Cambridge University Press, 2012.
6. LaFehr T.R., Nabighian M.N., FUNDAMENTALS OF GRAVITY EXPLORATION. Society of Exploration Geophysicists, USA., 2012
7. Kaufman A.A., Hansen R.O., PRINCIPLES OF THE GRAVITATIONAL METHOD. Elsevier, UK., 2008

二、Professional Academic Journals 学术期刊：

1. Earth and Planetary Science Letters
2. Journal of Geophysical Research
3. Geophysical Research Letters
4. Geophysics
5. Tectonophysics
6. Physics of the Earth and Planetary Interiors
7. Geophysical Journal International
8. Geophysical Prospecting
9. Geochemistry, Geophysics, Geosystems
10. Seismological Research Letters
11. Review of Geophysics
12. Surveys in Geophysics
13. Bulletin of the Seismological Society of America
14. Journal Applied Geophysics
15. Pure and Applied Geophysics
16. SCIENCE CHINA Earth Sciences
17. Science Bulletin
18. Earth and Planetary Physics
19. Earthquake Science

(0709) Geology Training Program for International Master Student

(0709) 地质学 硕士留学生 培养方案

一、Training Goal 培养目标

The master's degree program is adhered to the guideline of "targeting major national demands and the frontiers of earth science and technology". The program emphasizes students' academic ethics, original and integrated creativity, learning capabilities, academic communication capabilities, teamwork vitality, patriotism, and social responsibility, and is aimed to strengthen individuals' interest in earth sciences research, enhance their understanding of academic research and norms, sophisticate their ability to apply the fundamental theories and knowledge of geology, develop their geological field and laboratory skills, and open their academic insight. The program is designed to prepare students to meet the challenge of research questions in earth sciences, and for research, technique, and management positions in the field of geology.

本学科始终坚持以“面向国家重大需求和国际地球科学技术前沿”为指导思想，以恪守学术道德、具有原始创新和集成创新能力、较好的学习能力、学术交流能力、团队合作精神、家国情怀和社会责任感为人才培养的重点内容，侧重培养对于地质学领域的科学研究有浓厚兴趣，对于学术研究和规范有深刻理解，能够较熟练运用地质学基础理论和知识，独立开展野外地质工作或熟练掌握基本的实验技术，具备一定的学术洞察力，能够针对地质学领域的科学问题提出解决方案并最终实现研究目标，独立从事地质学科学研究、技术研发和管理的科技创新型拔尖人才和高层次工程技术人才。

二、Research Directions 研究方向

| Research Direction 研究方向 | Research Content 研究内容 |
|---|---|
| 1.Mineralogy, Petrology, Mineral Deposit Geology 矿物学、岩石学、 矿床学 | Taking minerals, rocks, ores, and other earth and planetary materials as the research objects, the theories and research methods of geology and related disciplines are used to carry out research on the structure, composition and evolution of the Earth and other planets. The main research areas include genetic mineralogy and prospecting mineralogy, magmatism and deep processes, sedimentology, metamorphic petrology, regional mineral deposit geology, mineral |

| Research Direction 研究方向 | Research Content 研究内容 |
|---|--|
| | <p>deposit geology, etc.</p> <p>Features and advantages: theoretical research on genetic mineralogy and magmatic-hydrothermal evolution are closely integrated with critical metal mineralization, basic geological theory, and mineral resource exploration.</p> <p>该方向以矿物、岩石、矿石等地球和行星物质为研究对象，主要运用地质学和相关学科的理论和研究方法，开展地球结构、物质组成及演化等方面的研究。主要研究领域包括：成因矿物学与找矿矿物学、岩浆作用与深部过程、沉积学、变质岩石学、区域成矿学、矿床成因等。特色与优势：成因矿物学理论研究、岩浆热液演化与战略性金属成矿、基础地质理论与矿产资源勘查密切结合。</p> |
| 2.Geochemistry 地球化学 | <p>Taking the Earth and other astronomical objects as the research objects, the theories and research methods of chemistry and physics are used to conduct research on the chemical composition, chemical process, and chemical evolution of related geological units. The main research fields include isotope geochemistry, environmental geochemistry, exploration geochemistry, computational-experimental and fluid geochemistry, etc.</p> <p>Features and advantages: leading the application of stable isotopes of magnesium, iron, zinc, zirconium, and nickel in revealing deep carbon and oxygen cycles and processes. Provide theoretical and experimental guidance for research on diagenesis and mineralization, environmental remediation, and multi-layer interaction of the Earth.</p> <p>该方向以地球（或部分天体）为研究对象，主要运用化学和物理学的相关理论和研究方法开展相关地质体的化学组成、化学作用和化学演化方面的研究。主要研究领域包括：同位素地球化学、环境地球化学、勘查地球化学、计算-实验和流体地球化学等。特色与优势：开拓应用镁、铁、锌、锆、镍金属稳定同位素，揭示深部碳、氧循环及过程。为成岩成矿、环境修复、层圈相互作用等提供理论和实验指导。</p> |
| 3.Paleontology and Stratigraphy (including Paleoanthropology 古生物学与地层学 (含古人类学) | <p>This subject mainly takes paleontology, ancient humans, and strata as the research objects, and applies relevant theories and methods of geobiology and related subjects to carry out studies on the history of earth evolution, the origin and evolution of life on Earth, and the interaction of life and environment. Main research areas include integrative stratigraphy, the rhythm and major geological events of earth evolution, deep-time environment, paleoecology-paleogeography-paleoclimatology, etc.</p> <p>Features and advantages: research in the theory and practice of integrative stratigraphy, earth history, and major geological events.</p> |

| Research Direction 研究方向 | Research Content 研究内容 |
|--|---|
| | <p>该方向主要以古生物、古人类、地层为研究对象，应用地球生物学及相关学科的相关理论和研究方法，开展地球演化历史、地球生命起源与演化、生命和环境相互作用等方面的研究。主要研究领域：综合地层学、地球演化的节律和重大地质事件、深时环境、古生态-古地理-古气候学等。在综合地层学的理论与实践、地球历史和重大地质事件研究方面具有重要特色和优势。</p> |
| <p>4.Structural Geology 构造地质学</p> | <p>This subject applies the relevant theories and investigations of mathematics, physics, chemistry and geology, and methods of physics and numerical simulation to carry out research on geometry, kinematics, and dynamics of geological structures. Areas of active research include the morphology, formation condition and mechanism, the pattern of distribution and combination, evolution history, geodynamics of different scale structures ranging from microstructures to global structures.</p> <p>Features and advantages: studies of lithosphere-mantle deep process and surface response provide a scientific basis for resource exploration and development, engineering stability evaluation, geological disaster prevention, and geological environmental protection.</p> <p>该方向以地质构造为研究对象，主要运用数学、物理学、化学和地质学相关理论和调查研究、物理与数值模拟等方法开展几何学、运动学和动力学方面的研究，研究内容包括从显微构造到全球构造等各种尺度构造的形态特征、形成条件与机制、分布与组合规律、演化史、地球动力学等。特色与优势：岩石圈-地幔的深部过程与浅表响应研究，为资源探查与开发、工程稳定性评价、地质灾害防治和地质环境保护提供科学依据。</p> |
| <p>5.Quaternary Geology 第四纪地质学</p> | <p>Research in this field take the Quaternary products as its research object, and use the relevant theories and methods of geology and geography to carry out studies on the Quaternary stratigraphy, paleontology, sedimentology, neotectonics, and paleoclimate, etc. The main research areas include Quaternary environmental evolution, neotectonics and geological disasters, geo-tourism resource evaluation and planning, national park evaluation and planning, etc.</p> <p>Features and advantages: research on Quaternary environmental evolution, geo-tourism resource evaluation and planning, neotectonics and geological disasters, etc.</p> <p>该方向以第四纪时期形成的产物为研究对象，运用地质学、地理学的相关理论和方法，开展第四纪地层、古生物、沉积、新构造、古气候等方面的研究，主要的研究领域包括：第四纪环境演变、新构造运动与地质灾害、地质旅游资源评价与规划、国家公园评价与规划等。特色与优势：第四纪环境演变、地质旅游资源评价与规划、新构造运动与地质灾害等方面的研究。</p> |

| Research Direction 研究方向 | Research Content 研究内容 |
|--|--|
| 6.Gemology 宝石学 | <p>This field is focused on the studies of gemstones, which mainly uses related theories and methods in gemology and related disciplines to conduct research on the physical and chemical properties of gems, genesis and prospecting criteria of mineral deposits, origin traceability, resource development, artificial synthesis and improvement, and quality and process evaluation. The main research fields include gem mineralogy, gem material science, gem mineral deposit geology, gem evaluation and culture.</p> <p>Features and advantages: this subject relies on the theoretical and technical advantages of the subject of mineralogy, petrology, and mineral deposit geology in the "double first-class" discipline of geology, innovatively develops science and technology in gemology, and serves for the purpose of social economic and cultural construction.</p> <p>该方向为我校自主设置的专业方向。该方向以珠宝玉石为研究对象，主要运用宝石学及相关学科的相关理论和研究方法开展珠宝玉石的物理化学性质，矿床成因和找矿标志，产地溯源，资源开发利用，人工合成与改善和珠宝玉石质量工艺评价等方面的研究。主要研究领域包括：宝石矿物学，宝石材料学，宝石矿床学，珠宝玉石评估与文化。特色与优势：本方向依托地质学“双一流”学科中矿物学、岩石学、矿床学理论与技术优势，创新发展宝石学科学与工艺等方面，服务社会经济与文化建设领域。</p> |
| 7.Hydrogeology 水文地质学 | <p>This subject focuses on the study of groundwater (water sphere) science, specifically the origins, formation, evolution of groundwater, and the resource and environment effects in the interaction between groundwater (water sphere) and the mantle, lithosphere, biosphere and atmosphere, so as to provide a scientific basis for the rational development and utilization of groundwater resources and the harmonious development of man and nature.</p> <p>Features and advantages: ecological hydrogeology, environmental hydrogeology, pollution hydrogeology, earthquake hydrogeology, mining hydrogeology, etc.</p> <p>该方向主要研究地下水（圈）的科学，研究地下水的形成与演化规律，以及在地下水（圈）与地幔和岩石圈、生物圈、大气圈相互作用过程中的资源环境效应，进而为合理开发利用地下水资源，实现人与自然和谐发展提供科学依据。特色与优势：生态水文地质、环境水文地质、污染水文地质、地震水文地质、矿区水文地质等方面。</p> |
| 8.Planetary Science and Comparative | <p>Research in this subject focus on the structure, composition, evolution, and genesis of celestial bodies in and outside the solar system, as well as the interaction between planets in the solar system.</p> |

| Research Direction 研究方向 | Research Content 研究内容 |
|--|---|
| Planetology 行星地质与比较行星学 | <p>The main research objectives include geological activities and processes, composition, structure, and evolution of celestial bodies in the solar system, impact structure on planetary surface, geochemical characteristics of various meteorites, surface and internal structure of asteroids and comets, etc.</p> <p>Features and advantages: research on the geological evolution of the moon.</p> <p>该方向是研究太阳系及太阳系外各类天体结构、成分和演化与成因以及太阳系行星间相互作用的科学。主要内容包括：太阳系天体地质活动和过程、成分与结构和演化、行星表面撞击构造特征、各类陨石的地球化学特征分析、小行星和彗星的表面和内部结构特征等。特色和优势：月球地质演化研究。</p> |
| 9.Geobiology 地球生物学 | <p>This subject focuses on the study of epigenetic earth system, and mainly uses the related theories and methods of geology and biology to carry out research on the interaction between the biosphere and other spheres of the Earth. The main research areas include the succession of biological communities and the evolution of the earth's environment, biogeochemistry and global change, mineral-microbe interactions, and microbes in extreme environment.</p> <p>Features and advantages: research on co-evolution of life and environment during major geological catastrophic periods, microbial processes, and global changes, etc.</p> <p>该方向以表生地球系统为研究对象，主要运用地质学与生物学的相关理论和研究方法开展生物圈与地球其他个圈层之间相互作用的研究。主要研究领域包括：生物群落演替与地球环境演变、生物地球化学与全球变化、矿物-微生物相互作用、极端环境微生物等方面。特色与优势：重大地质突变期生命与环境协同演化、微生物过程与全球变化等。</p> |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for Master and Ph.D. student are interconnected, and in general each credit is equivalent to 16 class hours. 来华留学硕士研究生学制3年，最长学习年限4年，不少于31学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式，一般每学分对应16课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Number 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|-----------------------------|-----------------------|---|---------------|---------------|-------------------|---|---------------------------------|
| Public Courses 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | —— | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | | —— | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | | —— | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | —— | |
| Compulsory Courses 专业学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Sciences 地球科学进展 | 32 | 2 | Autumn 秋季 | School of Earth Sciences and Resources 地球科学与资源学院 | Core and Compulsory 核心课程, 必选 |
| | B21301001 | Advanced Methods and Frontiers of Mineralogy, Petrology and Ore Deposit 矿物学、岩石学和矿床学先进方法和前沿 | 32 | 2 | Autumn 秋季 | School of Earth Sciences and Resources 地球科学与资源学院 | ≥8credits 不少于8学分 |
| | B21501001 | High-temperature geochemistry and cosmochemistr 高温地球化学与宇宙化学 | 32 | 2 | Autumn 秋季 | Institute of Earth Sciences 科学研究院 | |
| | B21301002 | Advanced Paleobiology 高级古生物学 | 32 | 2 | Spring 春季 | School of Earth Sciences and Resources 地球科学与资源学院 | |

| Course Type 课程类别 | Course Number 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|---------------------|-----------------------|---|---------------|---------------|-------------------|---|---------------|
| | B21301003 | Advanced tectonic geology 高级构造地质学 | 32 | 2 | Spring 春季 | School of Earth Sciences and Resources 地球科学与资源学院 | |
| | B21301006 | Reconstruction of Quaternary Climate 第四纪气候重建 | 16 | 1 | Autumn 秋季 | School of Earth Sciences and Resources 地球科学与资源学院 | |
| | B21301004 | Global change and Geomicrobiology 全球变化与地球微生物学 | 32 | 2 | Spring 春季 | School of Earth Sciences and Resources 地球科学与资源学院 | |
| | X21305003 | Hydrogeochemical processes and PHREEQC modeling 水文地球化学过程与 PHREEQC 模拟 | 32 | 2 | Spring 春季 | Water Resources and Environment 水资源与环境学院 | |
| | B21305001 | Advances in Water Resources and Environment 水资源与环境研究进展 | 32 | 2 | Autumn 秋季 | Water Resources and Environment 水资源与环境学院 | |
| | X21305001 | Remediation of Groundwater Pollution 地下水污染修复 | 16 | 1 | Autumn 秋季 | Water Resources and Environment 水资源与环境学院 | |
| | X21305002 | Uncertainty Analysis for Groundwater Flow Modeling 地下水模拟不确定性分析 | 16 | 1 | Autumn 秋季 | Water Resources and Environment 水资源与环境学院 | |

| Course Type 课程类别 | Course Number 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|---------------------------|--|--|---------------|---------------|-------------------|---|---------------|
| | B21301027 | Formation and Evolution of a Habitable Earth 宜居地球的形成和演化 | 32 | 2 | Autumn 秋季 | School of Earth Sciences and Resources 地球科学与资源学院 | |
| Optional Courses 专业选修课 | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | |
| | X21308001 | English Film Appreciation 影视欣赏 | 32 | 2 | | School of Foreign Language 外国语学院 | |
| Compulsory Parts 必修环节 | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | —— | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | —— | |
| | Subject Practice 专业实践 | | | 2 | | | |
| | Thesis Proposal 论文开题报告 | | | —— | | | |
| | Thesis Progress Report 论文中期报告 | | | —— | | | |
| | Academic Presentation 作学术报告 | | | —— | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.
备注: 公共学位课、必修环节中 Basic Practice of Chinese 汉语基础实践、Chinese Professional application 汉语专业应用由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读经典著作和专业学术期刊目录

1. Classic Works

(一) 经典著作

Mineralogy, Petrology, Mineral Deposit Geology

矿物学、岩石学、矿床学方向

1. Chen, G., Li, S., et al., Genetic mineralogy and prospecting mineralogy, Chongqing Publishing House, 1987.

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Geological Publishing House, 2004.

肖庆辉, 邓晋福, 马大铨等, 花岗岩研究思维与方法, 地质出版社, 2004.

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邓晋福, 罗照华等, 岩石成因、构造环境与成矿作用, 北京, 地质出版社, 2004.

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Geochemistry

地球化学方向

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22. Treatise on Geochemistry Elsevier, 2003.

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Paleontology and Stratigraphy

古生物学与地层学方向

24. 沙金庚, 世纪飞跃-辉煌的中国古生物学, 科学出版社, 2009.

25. Gong, Y. & Zhang, K., *Fundamentals and Frontiers of Stratigraphy (Second Edition)*, China University of Geosciences Press, 2016.
龚一鸣, 张克信, *地层学基础与前沿 (第二版)*, 中国地质大学出版社, 2016.
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构造地质学方向

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Quaternary Geology

第四纪地质学方向

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Gemology

珠宝学方向

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余晓艳, 有色宝石学教程(第二版), 地质出版社, 2016.

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郭颖, 玉雕与玉器, 地震出版社, 2007.

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72. 吴瑞华, 白峰, 卢琪, 钻石学教程, 地质出版社, 2005.
73. 古柏林, 张瑜生 译, 宝石内含物大图解, 大知出版社, 1995.
74. Pedersen M.C., Gem and Ornamental Materials of Organic Origin, NAG Press, London, 2010.
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77. Nassau K., Gemstone Enhancement: History, Science and State of the Art, Butterworth-Heinemann, 1994.
78. Read P.G., Gemology, Elsevier, 2005.

Hydrogeology

水文地质学方向

79. Applied Environment Microbiology, American Society for Microbiology
80. Bioresource Technology, Elsevier
81. Environmental Science & Technology, American Chemical Society
82. Ground Water, Elsevier
83. Journal of Contaminant Hydrology, Elsevier
84. 地学前缘, 中国地质大学(北京)
85. 环境科学学报, CNKI

Planetary Science and Comparative Planetology

行星地质与比较行星学方向

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Biogeology

地球生物学方向

97. 谢树成等, 地球生物学, 科学出版社, 2011.
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101. 汪品先, 田军, 黄恩清, 马文涛, 地球系统与演变, 科学出版社, 2018.
102. 戎嘉余, 袁训来, 詹仁斌, 邓涛, 生物演化与环境, 中国科学技术出版社, 2018.
103. Chameides W. L., Perdue E. M. (著), 张晶 (译), 生物地球化学循环, 高等教育出版社, 2012.
104. Ehrlich H. L., Newman D. K. (著), 王增林, 王世虎, 李希明 (译), 地质微生物学, 中国石化出版社, 2020.
105. 张自立, 王振英, 系统生物学, 科学出版社, 2009.

2. Professional Journals (in alphabetical order)

(二) 专业学术期刊目录 (按英文字母排序)

1. 宝石及宝石学杂志
2. 冰川冻土
3. 沉积学报
4. 地理学报
5. 地球科学
6. 地学前缘
7. 地质学报
8. 第四纪研究
9. 古地理学报
10. 古脊椎动物学报
11. 古人类学报
12. 古生物学报
13. 光谱学与光谱分析
14. 海洋地质与第四纪地质
15. 环境科学
16. 环境科学学报
17. 矿床地质
18. 矿物学报

19. 科学通报
20. 水利学报
21. 水科学进展
22. 水文地质工程地质
23. 微体古生物学报
24. 现代地质
25. 岩石学报
26. 岩石矿物学杂志
27. 中国科学 D 辑
28. 中国地质
29. 中国环境科学
30. *Advances in Water Resources*
31. *Annual Review of Earth and Planetary Sciences*
32. *American Mineralogist*
33. *Astrobiology*
34. *Basin Research*
35. *Carbonate sedimentology*
36. *Chemosphere*
37. *Earth and Planetary Science Letter*
38. *Earth-Science Reviews*
39. *Economic Geology*
40. *Environmental Geology*
41. *Environmental Science & Technilogy*
42. *Environmental Pollution*
43. *Gems and Gemology*
44. *Geobiology*
45. *Geochimica et Cosmochimica Acta*
46. *Geochemistry*
47. *Geological Society of America Bulletin*
48. *Geology*
49. *Geomicrobiology Journal*
50. *Geomorphology*
51. *Groundwater*
52. *Hydrogeology Journal*
53. *Hydrological Processes*
54. *Hydrology and Earth System Sciences*
55. *Lethaia*

56. Lithos
57. Marine Geology
58. Mineralium Deposita
59. National Science Review
60. Journal of Contaminant Hydrology
61. Journal of Geophysics Research-Solid Earth.
62. Journal of Hydrology
63. Journal of Hazardous Materials
64. Journal of Paleontology
65. Journal of Petrology
66. Journal of Sedimentary Research
67. Journal of Structural Geology
68. Journal of Structural Geology Elsevier
69. Nature
70. Nature Geoscience
71. Ore Geology Reviews
72. Palaeogeography Palaeoclimatology Palaeocology
73. Palaios
74. Paleobiology
75. Palaeontology
76. Precambrian Research
77. Physics of the Earth's Deep Interiors
78. Quaternary Geochronology
79. Quaternary International
80. Quaternary Research
81. Quaternary Science Reviews
82. Science
83. Science of the Total Environment
84. Sedimentary Geology
85. Sedimentology
86. Tectonics
87. Tectonophysics
88. The Holocene
89. The Journal of Gemmology
90. Journal of Vertebrate Paleontology
91. Water Research
92. Water Resource Research

(0710) Biology Training Program for International Master Student

(0710) 生物学 硕士留学生 培养方案

一、Training Goal 培养目标

The master's degree in biology is based on the building of morality, and cultivate peoples advocacy for science who are honesty and trustworthy, friendly to China, have good scientific literacy and cooperative spirit, have rigorous style of study, humble, enterprising, dedicated, and a strong sense of career and social responsibility , possess solid and broad basic theories of biology, systematic professional knowledge and experimental scientific research skills, meet the needs of the international job market, and be professionals engaged in teaching, scientific research, production, environmental protection, scientific and technological management of biology and other related disciplines.

生物学硕士学位点以立德树人为根本，培养崇尚科学，诚实守信，对华友好，具有良好的科学素养和合作精神，学风严谨，谦虚、进取、敬业，有较强的事业心和社会责任感，具备扎实宽广的生物学基础理论、系统的专业知识和实验科研技能，符合国际就业市场需求，具有从事生物学及相关学科的教学、科研、生产、环境保护及科技管理等方面工作的高级专业人才。

二、Research Directions 研究方向

| Research Direction 研究方向 | Research Content 研究内容 |
|--|---|
| 1. Applied Biology and Environmental Remediation 应用生物学与环境修复 | <p>Applying biological principles and methods to study and solve related scientific problems in water and soil environmental management, the research focuses on the process and mechanism of interaction between microorganisms and the environment, the interaction between wetland and the environment and its response, and phytoremediation technology for heavy metal contaminated sites. Provide scientific basis and key technologies to ensure the sustainable development of ecology and environment.</p> <p>应用生物学原理和方法研究解决水土环境治理的相关科学问题，重点开展微生物与环境的相互作用过程及机理、湿地与环境相互作用及其响应、重金属污染场地的植物修复技术等方面的研究，为保障生态与环境的可持续发展提供科学依据与关键技术。</p> |

| Research Direction 研究方向 | Research Content 研究内容 |
|--------------------------------------|--|
| 2. Geological Microbiology 地质微生物学 | <p>Based on ecosystems with typical geological significance, the research focuses on the functions of microbial communities and their mediated biogeochemical cycles by them, focusing on the interaction mechanism, processes and environmental effects between microorganisms and minerals, as well as the geological effects of microorganisms in extreme environments, etc.</p> <p>立足具有典型地学意义的生态系统，重点开展微生物群落功能以及其介导的生物地球化学循环过程等方面的研究，重点关注微生物与矿物相互作用机理、过程及环境效应、极端环境微生物的地质作用等。</p> |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for postgraduate students and Ph.D. students are interconnected, and in general each credit is equivalent to 16 class hours.

来华留学硕士研究生学制 3 年，最长学习年限 4 年，不少于 31 学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式，一般每学分对应 16 课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|------------------------------------|------------------------|--|---------------|---------------|-------------------|-------------------------------------|---------------|
| Public Courses 公共 学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |
| Compulsory Courses 专业 学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 32 | 2 | | | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|------------------------|---|---------------|---------------|-------------------|---|----------------------|
| | X21305001 | Remediation of Groundwater Pollution 地下水污染修复 | 16 | 1 | Autumn | School of Water Resources and Environment 水资源与环境学院 | ≥2 credits 不少于2学分 |
| | X21305002 | Uncertainty Analysis for Groundwater Flow Modeling 地下水模拟不确定性分析 | 16 | 1 | Autumn | School of Water Resources and Environment 水资源与环境学院 | |
| Optional Course 专业选修课 | B21301004 | Global change and Geomicrobiology 全球变化与地球微生物学 | 16 | 1 | | School of Earth Science and Resources 地球科学与资源学院 | ≥6 credits 不少于6学分 |
| | X21305003 | Hydrogeochemical processes and PHREEQC modeling 水文地球化学过程与 PHREEQC 模拟 | 32 | 2 | | School of Water Resources and Environment 水资源与环境学院 | |
| | X21305004 | Hydrological Processes and Modeling 水文过程与模拟 | 32 | 2 | | School of Water Resources and Environment 水资源与环境学院 | |
| | X21305005 | Numerical Methods in Geotechnics 岩土工程数值模拟方法 | 16 | 1 | | School of Water Resources and Environment 水资源与环境学院 | |
| | X21307007 | Resource and Environmental Economics 资源环境经济 | 32 | 2 | | School of Economics and Management 经济管理学院 | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|--|---|---------------|---------------|-------------------|--|---------------|
| | X21307008 | Resource and Environmental Management 资源环境管理 | 32 | 2 | | School of Economics and Management 经济管理学院 | |
| | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | |
| Compulsory Parts 必修环节 | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | — | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | — | |
| | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | — | | | |
| | Interim Report 论文中期报告 | | | — | | | |
| | Academic report delivery 学术报告 | | | — | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.
备注: 公共学位课由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读经典著作和专业学术期刊目录

1. Applied Environment Microbiology, American Society for Microbiology
2. Biogeochemistry, Elsevier
3. Bioresource Technology, Elsevier
4. Chemical Engineering Journal, Elsevier
5. Environmental Conservation, Elsevier
6. Environmental Pollution, Elsevier
7. Environmental Science & Technology, American Chemical Society
8. Environmental Toxicology, Elsevier
9. Geomicrobiology Journal, Elsevier
10. Journal of Hazardous Materials, Elsevier
11. Nature, Nature Group
12. Nature Communications, Nature Group
13. Science of the Total Environment, Elsevier
14. Soil Biology and Biochemistry, Elsevier

15. Water Research, Elsevier
16. Water Resource Research, American Geophysical Union
17. 环境科学, CNKI
18. 环境科学学报, CNKI
19. 科学通报, 中国科学院
20. 土壤学报, CNKI
21. 微生物学报, CNKI
22. 中国环境科学, CNKI

(0815) Hydraulic Engineering Training Program for International Master Student

(0815) 水利工程 硕士留学生 培养方案

一、Training Goal 培养目标

The Master's degree programs of hydraulic engineering is aimed at training qualified professional talents in the area of hydrologic sciences and water resources management, in keeping a friendship attitude with China, a global view, a spirit of innovation and a rigorous style of study, complying with the academic norms and professional ethics, establishing a broad and solid foundation of knowledge in science and engineering, mastering basic theories, methods and techniques in hydraulic engineering, understanding the properties and roles of groundwater, working smoothly in scientific writing and international academic communications, achieving practical experiences of case studies and technology applications in hydraulic engineering. Graduated Master students are adequate for jobs of hydraulic engineering management, teaching or project design in government departments, education institutions or enterprises.

水利工程硕士学位点学科致力于培养水文科学与水资源管理领域的高级专业人才，对华友好，具有国际化视野和创新精神，学风严谨、恪守学术规范与职业道德，具备宽厚扎实的理工科知识基础，掌握水利工程领域的基本理论和技术方法，理解地下水的特性和作用，胜任科技论文写作和国际学术交流，有水利工程案例研究和技术应用的实践经验。毕业硕士能够在政府管理部门、科研教育机构或企业承担水利工程领域的管理、教学或项目设计工作。

二、Research Directions 研究方向

| Research Direction 研究方向 | Research Content 研究内容 |
|---|--|
| 1. Hydrology and Water Resources 水文学及水资源 | Mainly study on hydrological processes at the basin and field scales, including water balance and runoff variation patterns in catchments, changing trends in water resources, moisture and salt transfer in the soil-plant-atmosphere continuum, climato-hydrological models, distributed hydrological modeling and rational development and utilization of water resources, etc. 以流域和田间尺度水文过程为主，研究流域水量转化与径流变化规律、水资源变化趋势、土壤-植物-大气连续体水盐交换机理、气候水文模型、分布式水文模型以及水资源合理开发利用等。 |

| Research Direction 研究方向 | Research Content 研究内容 |
|---|--|
| 2. Groundwater Sciences and Engineering 地下水科学与工程 | Study on scientific and engineering problems of groundwater, including groundwater recharge and discharge, groundwater circulation and evolution processes, characteristics of aquifers, survey and monitoring methods in sub-surface hydrology, groundwater resources assessment, groundwater modeling as well as utilization and protection of groundwater resources, etc. 研究地下水的科学与工程问题, 包括地下水补给与排泄、地下水循环演变规律、含水层类型特征、地下水文调查与观测方法、地下水资源评价、地下水模拟、地下水开发利用与保护工程等。 |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for postgraduate students and Ph.D. students are interconnected, and in general each credit is equivalent to 16 class hours.

来华留学硕士研究生学制3年, 最长学习年限4年, 不少于31学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式, 一般每学分对应16课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|-----------------------------|------------------------|---|---------------|---------------|-------------------|-------------------------------------|---------------|
| Public Courses 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |
| Compulsory Courses 专业学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 32 | 2 | | | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|------------------------|---|---------------|---------------|-------------------|---|----------------------|
| | X21305004 | Hydrological Processes and Modeling 水文过程及其模拟 | 32 | 2 | Autumn | School of Water Resources and Environment 水资源与环境学院 | ≥2 credits 不少于2学分 |
| | X21305002 | Uncertainty Analysis for Groundwater Flow Modeling 地下水模拟不确定性分析 | 16 | 1 | Autumn | School of Water Resources and Environment 水资源与环境学院 | |
| Optional Course 专业选修课 | X21305001 | Remediation of Groundwater Pollution 地下水污染修复 | 16 | 1 | Autumn | School of Water Resources and Environment 水资源与环境学院 | ≥6 credits 不少于6学分 |
| | X21302001 | FIDIC Conditions of Contract for Construction 菲迪克条款与项目管理 | 32 | 2 | | School of Engineering and Technology 工程技术学院 | |
| | X21307008 | Resource and Environmental Management 资源环境管理 | 32 | 2 | | School of Economics and Management 经济管理学院 | |
| | X21307006 | Research Methods of Data and Model 数据模型与方法 | 32 | 2 | | School of Economics and Management 经济管理学院 | |
| | B21301027 | Formation and Evolution of a Habitable Earth 宜居地球的形成和演化 | 32 | 2 | | School of Earth Science and Resources 地球科学与资源学院 | |
| | X21312002 | Space Geodesy 空间大地测量 | 32 | 2 | | School of Land Science and Technology 土地科学技术学院 | |
| | | | | | | | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|-----------------------------|--|----------------------------------|---------------|---------------|-------------------|-------------------------------------|---------------|
| | X21314001 | Taijiquan(24-forms) 24 式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | |
| Compulsory Parts 必修环节 | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | —— | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | —— | |
| | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | —— | | | |
| | Interim Report 论文中期报告 | | | —— | | | |
| | Academic report delivery 作学 术报告 | | | —— | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.
备注：公共学位课、必修环节中 Basic Practice of Chinese 汉语基础实践、Chinese Professional application 汉语专业应用由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读经典著作和专业学术期刊目录

1. Hydraulics of Groundwater, Jacob Bear, McGraw-Hill, 1979
2. Handbook of Hydrology, David R. Maidment (ed), McGraw-Hill, 1992
3. Water Resource Research, America Geophysical Union
4. Advances in Water Resources, Elsevier Sci Ltd
5. Journal of Hydrology, Elsevier Science BV
6. Hydrogeology Journal, Springer-Verlag Berlin, IAH
7. Hydrological Processes, John Willey & Sons Ltd
8. Hydrology and Earth System Sciences, the European Geosciences Union
9. Groundwater, Ground Water Publishing CO
10. Journal of Contaminant Hydrology, Elsevier Science BV
11. 水利学报, CNKI
18. 水科学进展, CNKI
19. 水文地质工程地质, CNKI
20. 水动力学研究与进展, CNKI

(0816) Surveying and Mapping Training Program for International Master Student

(0816) 测绘科学与技术 硕士留学生培养方案

一、Training Goal 培养目标

The purpose of this major is to cultivate research-oriented talents of surveying and mapping of geographic information major with solid theoretical foundation, systematic professional knowledge and professional skills, good moral quality, and a deep understanding of the progress and dynamics of modern surveying and mapping science and technology, for better integration with the development of the society. Specific training objectives are as follows:

1. Understand Chinese culture and basic national conditions, adhere to the political position of being friendly to China, respect Chinese social ethics and customs, abide by laws and regulations, conduct properly, be honest and trustworthy, be physically and mentally healthy, and have good scientific research ethics and professional dedication.

2. Master the theories and methods of geographical space information's acquisition, processing and comprehensive analysis, and understand the latest information of the development of scientific and technological in the Chinese and foreign research status.

3. Chinese proficiency requires preliminary ability to use daily language and read Chinese materials of the major.

4. Be able to host and implement scientific research projects that intersect with geo-knowledges and other related disciplines and innovative research projects in the frontier of surveying and mapping science and technology.

5. Have good interpersonal communication and team work ability, be practical and realistic, and have rigorous scientific style.本专业旨在培养具有坚实的理论基础、系统的专业知识和熟练的专业技能,具备良好道德品质,了解近代测绘科学与技术的进展与动态,面向我社会发展所需的测绘地理信息专业研究型人才。具体培养目标如下:

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。

2、熟练掌握地理空间信息的获取、处理、综合分析的理论和方法,了解从事研究方向的国内外科技发展的最新动态;

3、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;

4、能够主持和实施与地学等相关学科交叉的科学研究项目和测绘科学与技术前沿

的创新性研究项目；

5、具有良好的人际交往与团队合作能力，具有实事求是、严谨的科学作风。

二、Research Directions 研究方向

| Research Direction 研究方向 | Research Content 研究内容 |
|--|--|
| 1.Geodesy and surveying engineering 大地测量学与测量工程 | <p>To study the shape and gravity field of the earth and its neighboring stars and their time-varying regulations, as well as the precise determination of space point positions and deformation monitoring. The main research areas include: multiple systems GNSS precise positioning and gravity measurement, GNSS ionosphere/troposphere inversion, GNSS/INS and other multiple sources sensors seamless indoor and outdoor positioning technology, satellite orbit determination, precision engineering and industrial surveying, geological disaster monitoring and parameter inversion and other theories and methods.</p> <p>研究地球及其邻近星体形状和重力场及其随时间变化的规律、以及空间点位置精密测定和变形监测等理论与技术方法。主要研究内容包括：多系统 GNSS 精密定位与重力测量，GNSS 电离层/对流层反演，GNSS/INS 等多源传感器室内外无缝定位技术、卫星定轨、精密工程与工业测量、地质灾害监测及其参数反演等理论与方法等。</p> |
| 2.Photographic surveying and remote sensing 摄影测量与遥感 | <p>To research the acquisition, interpretation and application of surface, environment and process information using aerospace, aeronautical and ground equipment. The main research areas include: imaging mechanism and model, digital photographic surveying, microwave remote sensing, laser radar, high resolution remote sensing image processing and analysis, intelligent interpretation of remote sensing big data, remote sensing and geographic applications of resources, environment and planets, etc.</p> <p>研究利用航天、航空和地面设备对地表、环境及过程获取信息，并进行解译与应用。主要研究内容包括：成像机理与模型、数字摄影测量、微波遥感、激光雷达、高分辨率遥感图像处理与分析、室内外场景建模、遥感大数据智能解译、资源环境与行星遥感及地学应用等。</p> |
| 3.Cartography and geographic information engineering 地图制图学与地理信息工程 | <p>To study the storage, processing, analysis, management and application of geographic space information, and develop and establish the method of geographic information systems. The main research areas include: map design and compilation, collection of multivariate geographic data, information visualization, spatial analysis and modeling, virtual geographic environment, data mining and knowledge discovery, GIS software engineering, etc.</p> <p>研究地理空间信息存储、处理、分析、管理和应用，开发与建立地理信息系统的方法。主要研究内容包括：地图设计与编绘、多元地理数据的采集、信息可视化、空间分析建模、虚拟地理环境、数据挖掘与知识发现、GIS 软件工程等。</p> |

| Research Direction 研究方向 | Research Content 研究内容 |
|--|--|
| 4. Geographic space intelligence 地理空间智能 | <p>To research and develop the dynamic perception and intelligent reasoning ability of spatial intelligence on geographical phenomena and earth science processes. The main research areas include: urban dynamic change prediction, intelligent transportation decision-making, intelligent prediction and risk assessment of natural disasters, spatial big data analysis, smart city and smart earth, etc.</p> <p>研究与开发空间智能对地理现象和地球科学过程的动态感知、智能推理的能力，主要研究内容包括：城市动态变化预测、智能交通决策、自然灾害智能预测与风险评估、空间大数据分析、智慧城市与智慧地球等。</p> |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for postgraduate students and Ph.D. students are interconnected, and in general each credit is equivalent to 16 class hours.

来华留学硕士研究生学制3年，最长学习年限4年，不少于31学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式，一般每学分对应16课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|-----------------------------|------------------------|---|---------------|---------------|-------------------|----------------------------------|---------------|
| Public Courses 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |
| Compulsory Courses 专业学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 32 | 2 | Autumn | | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|---------------------------------|--|--|---------------|---------------|-------------------|--|------------------------------|
| | X21312002 | Space Geodesy 空间大地测量 | 16 | 1 | Autumn | | ≥2 credits 不少于 2 学分 |
| | X21312001 | Progress in Surveying and Mapping Science and Technology 测绘科学与技术进 展 | 32 | 2 | Spring | | |
| Optional Course 专业 选修课 | S21312040 | Planetary Geologic Mapping 行星地质制图 | 32 | 2 | Spring | School of Land Science And Technology 土地科学技 术学院 | ≥6 credits 不少于 6 学分 |
| | S21312030 | LiDAR Technology and 3D Modelling LiDAR 技术与三维 建模 | 32 | 2 | Spring | | |
| | S21312037 | Analysis and Application of the Big Data of Remote Sensing Image | 32 | 2 | Spring | | |
| | S21304001 | Frontiers of Information Technology | 16 | 1 | Spring | School of Engineering and Technology 信息工程学 院 | |
| | X21314001 | Taijiquan(24-forms) 24 式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | |
| Compulsory Parts 必修环节 | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | —— | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | —— | |
| | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | —— | | | |
| | Interim Report 论文中期报告 | | | —— | | | |
| | Academic report delivery 作学 术报告 | | | —— | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.

备注：公共学位课、必修环节中 Basic Practice of Chinese 汉语基础实践、Chinese Professional application 汉语专业应用由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读经典著作和专业学术期刊目录

Book:

著作:

1. Design and Implementation of Geographic Information System. Xincan Wu et al, Publishing House of Electronics Industry
《地理信息系统设计与实现（第二版）》，电子工业出版社，吴信才等；
2. GIS design and implementation. Manchun Li et al, Science Press
《GIS 设计与实现》，科学出版社，李满春等；
3. Principles and Methods of Geographic Information System Software Engineering. Shuoben Bi et al, Science Press
《地理信息系统软件工程的原理与方法》，科学出版社，毕硕本等
4. Principles and Methods of Remote Sensing Application Analysis. Yingshi Zhao et al, Science Press
《遥感应用分析原理与方法》，赵英时等著，科学出版社,2003 年
5. Spatial analysis in GIS. Xiangnan Liu et al, Science Press
GIS 空间分析(第三版) 刘湘南等 科学出版社
6. Remote Sensing and Geoscience Application. Dongping Ming et al, Science Press
遥感地学应用 明冬萍等 科学出版社
7. Geostatistics (Spatial statistical analysis). Xinqi Zheng et al, Science Press
地统计学(空间统计分析) 郑新奇等 科学出版社
8. Land management geographic information system. Xinqi Zheng et al, Wuhan University Press
土地管理地理信息系统 郑新奇等 武汉大学出版社
9. Spatial analysis technology and application of landscape pattern. Xinqi Zheng et al, Science Press
景观格局空间分析技术及其应用 郑新奇等 科学出版社
10. Fuzzy forecasting and comprehensive assessment information system about urban environment. Tingyan Xing et al, China University of Geosciences Press
城市环境模糊预测与综合评价信息系统 邢廷炎等 中国地质大学出版社
11. Remote sensing cloud computing and scientific analysis: Application and practice. Jinwei Dong et al, Science Press
遥感云计算与科学分析：应用与实践 董金玮等 科学出版社
12. Digital Elevation Model. Zhilin Li et al, Wuhan University Press

- 《数字高程地面模型》李志林等，武汉测绘科技大学出版社
13. Principles of probability statistics and applications in measurement. Qinghai Li et al, Surveying and Mapping Publishing House
《概率统计原理和在测量中的应用》李庆海等，测绘出版社
14. Resource remote sensing and mapping. Zhaohong Bu, Nanjing Institute of Technology Press
《资源遥感与制图》卜兆宏等，南京工业出版社
15. Microwave remote sensing technology and application. Shousheng Xie et al, Publishing House of Electronics Industry
《微波遥感技术与应用》谢寿生等，电子工业出版社
16. Radar image analysis and geological application. Donghua Guo, Science Press
《雷达图象分析及地质应用》郭华东，科学出版社
17. 《Geodesy》 Wolfgang Torge, Walter de Gruyter & Co
18. 《GPS Satellite Surveying》 ALFRED LEICK 等，Wiley
19. 《Digital Image Processing》 Kenneth R. Castleman, Prentice Hall
20. 《Geographic Information Systems and Science》 Paul Longley, Michael F. Goodchild, John Wiley and Sons
21. 《Introduction to Remote Sensing》 James B. Campbell, Randolph H. Wynne, The Guilford Press
22. Principles and methods of geographical information systems. Xincai Wu et al, Publishing House of Electronics Industry
《地理信息系统原理与方法》吴信才等，电子工业出版社
23. Design and implementation of geographical information systems. Xincai Wu et al, Publishing House of Electronics Industry
《地理信息系统设计与实现》吴信才等，电子工业出版社
24. Introduction to Maps. Qi Wang et al, China University of Geosciences Press
《地图概论》王琪等，中国地质大学出版社
25. Spatial Databases: A Tour. Shashi Shekhar et al, China Machine Press
《空间数据库》shekhar 著，谢昆青译，机械工业出版社
26. Integration and Realization of Spatial Information System. Deren Li, Wuhan University Press
《空间信息系统的集成与实现》李德仁等，武汉测绘科技大学出版社
27. Principles and Algorithms of Geographic Information System. Lixin Wu et al. Science Press

- 《地理信息系统原理与算法》吴立新等，科学出版社
28. Geographic Information System Fundamentals. Jianya Gong, Science Press
《地理信息系统基础》龚健雅，科学出版社
29. Geographic Information System. Shouyi Lu, Higher Education Press
《地理信息系统》陆守一等，高等教育出版社
30. Spatial Analysis and Geovisualization in GIS. Bin Jiang et al, Higher Education Press
《GIS 环境下的空间分析和地学视觉化》江滨等，高等教育出版社
31. Principles and Methods of Geographic Information System Integration. Guonian Lv, Science Press
《地理信息系统集成原理与方法》闫国年等，科学出版社
32. Digital City——Theory, method and Application. Jicheng Cheng et al, Science Press
《数字城市——理论、方法与应用》承继成等，科学出版社
33. Three-dimensional data field visualization. Zesheng Tang, Tsinghua University Press
《三维数据场可视化》唐泽圣，清华大学出版社
34. Photogrammetry. Jianqing Zhang, Li Pan, Shugen Wang, Wuhan University Press
《摄影测量学（第二版）》张剑清、潘励、王树根，武汉大学出版社
35. Digital photogrammetry. Zuxun Zhang, Jianqing Zhang, Wuhan University Press
《数字摄影测量学》张祖勋、张剑清，武汉大学出版社
36. Key scientific issues of quantitative remote sensing. Renhua Zhang, Higher Education Press
《定量遥感若干关键科学问题研究》张仁华，高等教育出版社
37. InSAR Technology Principle and Practice, Honglei Yang, et al., Science Press
《InSAR 技术原理及实践》杨红磊等，科学出版社。

Professional Academic Journal:

专业学术期刊:

1. Acta Geodaetica et Cartographica Sinica (拉丁语)
测绘学报
2. Geomatics and Information Science of Wuhan University
武汉大学学报（信息科学版）
3. Bulletin of Surveying and Mapping
测绘通报
4. Journal of Geodesy and Geodynamics
大地测量与地球动力学

5. Science of Surveying and Mapping
测绘科学
6. Journal of Geomatics
测绘信息与工程（更名为测绘地理信息）
7. National Remote Sensing Bulletin
遥感学报
8. Journal of Image and Graphics
中国图象图形学报.
9. Earth Science
地球科学
10. Journal of Software
软件学报
11. Chinese Journal of Computers
计算机学报
12. Journal of Computer Research and Development
计算机研究与发展
13. Journal of Chinese Computer Systems
小型微型计算机系统
14. Computer Science
计算机科学.
15. Computer Engineering and Applications
计算机工程与应用
16. Journal of Chinese Mini-Micro Computer
微型计算机
17. Application Research of Computers
计算机应用研究
18. Journal of Computer-Aided Design & Computer Graphics
计算机辅助设计与图形学学报
19. Computer Systems & Applications
计算机系统应用
20. Computer Engineering
计算机工程
21. Computer Applications and Software
计算机应用与软件

22. International Journal of Geodesy
23. Survey Review
24. ISPRS Journal of Photogrammetry and Remote Sensing
25. International Journal of Digital Earth
26. Remote Sensing
27. Cartographic Journal
28. Photogrammetric Engineering and Remote Sensing
29. Mathematical Geosciences
30. Remote Sensing of Environment
31. International Journal of Geographical Information System
32. International Journal of Remote Sensing
33. Computer Vision, Graphics, and Image Processing
34. Computer & Graphics
35. Computers & Geosciences
36. Computers, Environment and Urban Systems
37. Computer Aided Geometric Design
38. The Computer Journal
39. IEEE Transactions on Geoscience and Remote Sensing
40. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
41. International Journal of Image and Data Fusion

(0820) Oil and Gas Engineering Training Program for International Master Student

(0820) 石油与天然气工程 硕士留学生 培养方案

一、Training Goal 培养目标

Through the training, the international students should have a good knowledge of Chinese culture and national conditions. The students should adopt a friendly political stance toward China, respect Chinese social morality and customs. In addition, being law-abiding, honest, trustworthy, physical, and mental health, having good academic ethics and professional dedication are required. The international students are also encouraged to handle the fundamental theory and professional knowledge of oil and gas engineering, have the ability of conducting research in oil/gas field development geology, theory and technology of oil/gas drilling and production, and theory and method of oil/gas development, etc, be equipped with the ability of innovation and the version of international, and have the ability of conducting research, teaching, managing, doing high-tech work. After graduation, the international students should have the ability to communicate using Chinese and read the professional materials that are written in Chinese.

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。掌握石油与天然气工程学科的基础理论和系统的专业知识，具有从事油气田开发地质、油气钻采理论与技术、油气开发理论与方法等方向科学研究的能力。具备创新意识、国际化视野和从事科学研究、教学、管理、技术等工作能力。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。

二、Research Directions 研究方向

| Research Direction 研究方向 | Research Content 研究内容 |
|---|---|
| 1. Oil/Gas Field Development Geology 油气田开发地质 | <p>This research field includes high-resolution sequence stratigraphy, sedimentary microfacies, identification and classification of reservoir types, reservoir characterization, reservoir structure and flow units, geological modeling of oil and gas reservoirs and evaluation of residual oil and gas distribution.</p> <p>该方向研究领域主要包括高分辨率层序地层学、沉积微相、油气藏类型识别与划分、储层表征、储层构型和流动单元、油气藏地质建模以及剩余油气分布评价等。</p> |

| Research Direction 研究方向 | Research Content 研究内容 |
|---|--|
| 2. Theory and technology of oil/gas drilling and production 油气钻采理论与技术 | <p>This research fields includes drilling rock mechanics, multiphase flow in wellbore, wellbore trajectory design, theory and technology of monitoring while drilling in complicated structure wells, production test, production technology design, stimulation stragies, well completion and reservoir protection, etc.</p> <p>该方向研究领域主要包括油气井钻井岩石力学、井筒多相流动、井眼轨迹设计、复杂结构井随钻监测理论与技术、试油试采、采油工艺设计、油气井增产措施、完井与储层保护等</p> |
| 3. Theory and method of oil/gas development 油气开发理论与方法 | <p>This research field includes conventional/unconventional/deep reservoir development, multiphase flow of low-permeability and high-water-cut gas reservoirs, digital core reconstruction, modern well test theory and method, numerical simulation of oil and gas reservoirs, reservoir production analysis, reservoir development adjustment, geotherm and gas hydrate development, etc.</p> <p>该方向研究领域主要包括常规/非常规/深层油气藏开发、低渗透及高含水油气藏多相渗流理论、数字岩心重构、现代试井理论与方法、油气藏数值模拟、油藏动态分析、油气藏开发调整、地热及天然气水合物资源开发等理论与方法的攻关研究。</p> |
| 4. Oilfield chemistry and EOR technology 油田化学与提高采收率技术 | <p>This research field includes intelligent water development by chemical flooding, Nanometer techniques in oil production, wettability reversal of oil and gas reservoirs, chemical control method and technology of dominant channel, unconventional fracturing and energizing development, multi-medium compound flooding theory and method, heavy oil thermal recovery and chemical viscosity-reduction, microbial enhanced oil recovery theory, etc.</p> <p>该方向主要研究领域包括化学驱智能水开发、油气藏纳米采油与润湿反转、优势通道化学调控方法与工艺、非常规压裂增能开发、多介质复合驱油理论与方法、稠油热采及化学降粘、微生物采油理论方法等。</p> |
| 5. Theory and method of artificial intelligence for oil/gas field development 油气田开发人工智能理论与方法 | <p>This research field includes big data theory and method in oil/gas field, oil and gas field development with intelligent optimization theory and method, intelligent numerical simulation technology and oil field intelligent production control technology, providing theoretical and technical support for artificial intelligence of oil and gas field development.</p> <p>该方向主要研究领域包括油气田大数据理论与方法、油气田开发智能优化理论与方法、智能数值模拟技术、油田智能化生产操控技术等研究，为油气田开发的人工智能化提供理论基础与技术支持。</p> |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for Master and Ph.D. student are interconnected, and in general each credit is equivalent to 16 class hours.

来华留学硕士研究生学制 3 年，最长学习年限 4 年，不少于 31 学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式，一般每学分对应 16 课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|-----------------------------|------------------------|---|---------------|---------------|-------------------|-------------------------------------|------------------------|
| Public Courses 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |
| Compulsory Courses 专业学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 32 | 2 | | | |
| | X21306001 | Advances in Oil and Gas Field Development 油气田开发科技进展 | 48 | 3 | | | ≥2 credits 不少于 2 学分 |
| Optional Course 专业选修课 | X21306002 | Artificial intelligence application in petroleum engineering 人工智能与油气工程 | 32 | 2 | | | ≥6 credits 不少于 6 学分 |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|--|---|---------------|---------------|-------------------|-------------------------------------|---------------|
| | X21306003 | Oil and gas reservoir engineering 油气藏工程 | 32 | 2 | | | |
| | S21306001 | Progress in unconventional energy exploration and development 非常规油气勘探与开发进展 | 48 | 3 | | | |
| | X21306005 | Computational Methods in Petroleum Engineering 油藏工程计算方法 | 16 | 1 | | | |
| | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | |
| Compulsory Parts 必修环节 | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | —— | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | —— | |
| | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | —— | | | |
| | Interim Report 论文中期报告 | | | —— | | | |
| | Academic report delivery 作学术报告 | | | —— | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.

备注：公共学位课、必修环节中 Basic Practice of Chinese 汉语基础实践、Chinese Professional application 汉语专业应用由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读经典著作和专业学术期刊目录

1. Petrophysics, Djebbar Tiab、Erle C.Donaldson, 2004
2. The flow of homogeneous fluids through porous media, M.Muskat, 1946
3. Flow of fluids through porous materials, Royal Eugene Collins, 1961
4. Wells test analysis, Raghavan, Rajagopal , 1993

5. Gas Reservoir Engineering, John Lee, Robert & A.Wattenbarger, 1996
6. Advance Reservoir Engineering, Tarek Ahmed、 Paul D.McKinney, 2005
7. Fundamentals of numerical reservoir simulation, Donald W. Peaceman, 1977
8. Petroleum reservoir simulation, Khalid Aziz, 1979
9. Reservoir simulation, Robert L. Dalton, 1990
10. Integrated flow modeling, John R.Fanchi, 2000
11. Applied reservoir simulation, Turgay Ertekin et al., 2001
12. Shared Earth modeling-Methodologies for integrated reservoir simulations, John R.Fanchi, 2002
13. Enhanced Oil Recovery. Don W. Green. Henry L. Doherty Memorial Fund of AIMS Society of Petroleum Engineers
14. Chemical Enhanced Oil Recovery (cEOR) - a Practical Overview. World's largest Science, Technology & Medicine Open Access book publisher
15. Modern Chemical Enhanced Oil Recovery Theory and Practice, James J. Sheng. ISBN 978-1-85617-745-0, 2011 Gulf Professional Publishing (ELSEVIR)
16. Enhanced Oil Recovery Field Case Studies. James J. Sheng, Ph. D. Gulf Professional Publishing (ELSEVIR)
17. Petroleum Engineer's Guide to Oil Field Chemicals and Fluids, Johannes Karl Fink. ISBN: 978-0-12-383844-5, 2011 Gulf Professional Publishing(ELSEVIR)
18. SPE Journal
19. Journal of Petroleum Science and Engineering
20. Journal of Natural Gas Science and Engineering
21. 石油勘探与开发
22. 石油学报
23. 石油科学
24. 天然气工业
25. 中国石油大学学报.自然科学版
26. 石油钻采工艺
27. 油田化学
28. 新疆石油地质
29. 西南石油大学学报
30. 大庆石油地质与开发
31. 西安石油大学学报
32. 油气地质与采收率
33. 天然气地球科学
34. 断块油气田

35. 特种油气藏
36. 大庆石油地质与开发
37. 中国海上油气
38. 石油钻探技术
39. 岩性油气藏
40. 钻井液与完井液

(0830) Environmental Science and Engineering Training Program for International Master Student

(0830) 环境科学与工程 硕士留学生 培养方案

一、Training Goal 培养目标

Taking morality as the foundation and fostering people as the foundation, adhering to the principle of all-round development of morality, intellect, Physique and the United States, cultivating people with lofty ideological quality, friendly political stand to China, and possessing good international communication ability and environmental management and leadership ability, to master the basic development trends of environmental science and Engineering Technology Development, meet the needs of the international job market, abide by academic ethics and norms, rigorous academic attitude, realistic and innovative spirit, and higher professional quality, senior international professionals qualified for teaching, research, production, promotion and technology management in institutions of higher learning, research institutes, government agencies, enterprises and related fields.

以立德树人为根本，坚持德、智、体、美全面发展方针，培养具有高尚的思想品质，对我国友好的政治立场，具备良好的国际交流能力和环境管理与领导能力，掌握环境科学与工程发展的基本发展动态，符合国际就业市场需求，遵守学术道德和规范，严谨的治学态度，求实的创新精神，较高的专业素质，能够胜任高等院校、科研院所、政府机关、企业和有关领域的教学、科研、生产、推广以及技术管理工作的高级国际化专业人才。

二、Research Direction 研究方向

| Research Direction 研究方向 | Research Content 研究内容 |
|------------------------------------|---|
| 1. Environmental Science 环境科学 | <p>Based on the traditional natural sciences and the humanities and social sciences, environmental science is an interdisciplinary and comprehensive discipline which studies the interaction between human and the environment, The research interests include environmental chemistry, environmental ecology, environmental biology, environmental geography, environmental management, environmental economics, environmental law and environmental policy.</p> <p>环境科学是基于传统自然科学和人文社会科学研究人与环境相互作用及其调控的综合性交叉学科，主要研究内容包括环境化学、环境生态学、环境生物学、环境地学、环境管理学、环境经济学、环境法学和环境政策学等。</p> |

| Research Direction 研究方向 | Research Content 研究内容 |
|--------------------------------------|--|
| 2. Environmental Engineering 环境工程 | <p>Using physical, chemical, biological and ecological methods, environmental engineering focuses on preventing, controlling and remediating various kinds of environmental pollutants. The research interests include the prevention and remediation of air pollution, water pollution and soil pollution, solid waste disposal and resources, as well as noise, radioactive materials, light, heat, electromagnetic wave and other physical pollution prevention and control technology and engineering measures.</p> <p>环境工程关注采用物理、化学、生物和生态等方法对各类环境污染物进行综合防治，主要研究内容包括大气污染、水污染和土壤污染的防治和修复，固体废物处置与资源化，以及噪声、放射性物质、光、热、电磁波等物理性污染防治技术和工程措施等。</p> |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for postgraduate students and Ph.D. students are interconnected, and in general each credit is equivalent to 16 class hours.

来华留学硕士研究生学制3年，最长学习年限4年，不少于31学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式，一般每学分对应16课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|-------------------------|------------------------|--|---------------|---------------|-------------------|-------------------------------------|---------------|
| Public Courses 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|------------------------------------|------------------------|--|---------------|---------------|-------------------|---|------------------------------|
| Compulsory Courses 专业 学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 32 | 2 | | | |
| | X21305001 | Remediation of Groundwater Pollution 地下水污染修复 | 16 | 1 | Autumn | School of Water Resources and Environment 水资源与环 境学院 | ≥2 credits 不少于 2 学分 |
| | X21305002 | Uncertainty Analysis for Groundwater Flow Modeling 地下水模拟不确定 性分析 | 16 | 1 | Autumn | School of Water Resources and Environment 水资源与环 境学院 | |
| Optional Course 专业 选修课 | B21301004 | Global change and Geomicrobiology 全球变化与地球微 生物学 | 16 | 1 | | School of Earth Science and Resources 地球科学与 资源学院 | ≥6 credits 不少于 6 学分 |
| | X21305003 | Hydrogeochemical processes and PHREEQC modeling 水文地球化学过程 与 PHREEQC 模拟 | 32 | 2 | | School of Water Resources and Environment 水资源与环 境学院 | |
| | X21305004 | Hydrological Processes and Modeling 水文过程与模拟 | 32 | 2 | | School of Water Resources and Environment 水资源与环 境学院 | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|--|---|---------------|---------------|-------------------|---|---------------|
| | X21305005 | Numerical Methods in Geotechnics 岩土工程数值模拟方法 | 16 | 1 | | School of Water Resources and Environment 水资源与环境学院 | |
| | X21307007 | Resource and Environmental Economics 资源环境经济 | 32 | 2 | | School of Economics and Management 经济管理学院 | |
| | X21307008 | Resource and Environmental Management 资源环境管理 | 32 | 2 | | School of Economics and Management 经济管理学院 | |
| | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | |
| Compulsory Parts 必修环节 | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | — | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | — | |
| | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | — | | | |
| | Interim Report 论文中期报告 | | | — | | | |
| | Academic report delivery 作学术报告 | | | — | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.

备注：公共学位课、必修环节中 Basic Practice of Chinese 汉语基础实践、Chinese Professional application 汉语专业应用由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读经典著作和专业学术期刊目录

1. Applied Environment Microbiology, American Society for Microbiology
2. Applied Geochemistry, Elsevier

3. Biogeochemistry, Elsevier
4. Bioresource Technology, Elsevier
5. Chemical Engineering Journal, Elsevier
6. Chemosphere, Elsevier
7. Ecotoxicology and Environmental Safety, Elsevier
8. Electrochimica Acta, Elsevier
9. Environmental Conservation, Elsevier
10. Environmental Pollution, Elsevier
11. Environmental Science & Policy, Elsevier
12. Environmental Science & Technology, American Chemical Society
13. Environmental Toxicology, Elsevier
14. Geochimica et Cosmochimica Acta, Elsevier
15. Geomicrobiology Journal, Elsevier
16. Ground Water, Elsevier
17. Journal of Colloid and Interface Science, Elsevier
18. Journal of Contaminant Hydrology, Elsevier
19. Journal of Hazardous Materials, Elsevier
20. Nature, Nature Group
21. Nature Communications, Nature Group
22. Science of the Total Environment, Elsevier
23. Soil Biology and Biochemistry, Elsevier
24. Water Research, Elsevier
25. Water Resource Research, American Geophysical Union
26. 地球科学, 中国地质大学(武汉)
27. 地学前缘, 中国地质大学(北京)
28. 环境工程学报, CNKI
29. 环境化学, CNKI
30. 环境科学, CNKI
31. 环境科学学报, CNKI
32. 环境科学研究, CNKI
33. 环境科学与技术, CNKI
34. 科学通报, 中国科学院
35. 农业环境科学学报, CNKI
36. 气候与环境研究, CNKI

37. 生态学报, CNKI
38. 生态学杂志, CNKI
39. 水处理技术, CNKI
40. 水科学进展, CNKI
41. 水文地质工程地质, 中国地调局
42. 土壤学报, CNKI
43. 微生物学报, CNKI
44. 应用生态学报, CNKI
45. 中国环境科学, CNKI
46. 中国科学 (D 辑), 中国科学院地理所
47. 中国农业科学, CNKI
48. 中国人口资源与环境, CNKI
49. 中国生态农业学报, CNKI
50. 自然资源学报, CNKI

(1201) Management Science and Engineering Training Program for International Master Student

(1201) 管理科学与工程 硕士留学生培养方案

一、Training Goal 培养目标

To cultivate students who master the professional qualities with system science, management science and information technology. The ability, such as independent analysis and solving problems in modern enterprises and engineering projects, should be possessed. High-quality innovative and comprehensive management talents with all-round development of morality, intelligence and physique should be cultivated. The basic requirements include: (1) Excellent ideological and moral quality, strong dedication and professionalism, adapt to the requirements of economic construction and social development, and serve social development actively. (2) Understanding the latest research findings and development trends of management science and engineering. Being able to master the basic theories and systematic professional knowledge. Having the ability of carrying out related scientific research independently and cooperatively and a certain ability of innovation. (3) Understanding enterprise operation and management and relevant decision-making methods. Being able to engage in business management, analysis and evaluation and other auxiliary decision-making in enterprises and related organizations. (4) Having basic Chinese skills, being able to read and translate Chinese professional literature. Mastering strong computer application skills.

培养掌握和运用系统科学、管理科学、信息技术，独立分析和解决现代企业和工程项目等方面的问题，德、智、体全面发展的高层次创新型、综合型管理人才。具体要求是：（1）思想品质和道德素质优良、具有强烈的事业心和敬业精神，适应经济建设、社会发展的要求，积极为社会发展服务；（2）了解管理科学与工程学科的最新研究成果和发展趋势，掌握坚实宽广的基础理论和系统深入的专业知识，具有一定的独立和合作开展科学研究相关工作的能力和一定的创新的能力；（3）了解企业经营管理及相关决策方法，具备在企业及相关组织从事经营管理、分析评价等辅助决策能力；（4）掌握汉语，能较为熟练地阅读和翻译汉语专业资料，具有较强的计算机应用能力。

二、Training Directions 研究方向

| Training Direction 研究方向 | Research Content 研究内容 |
|---|---|
| 1. System Simulation and Optimization Decision 系统模拟与优化决策 | <p>Guided by the theory of system science, this direction analyzes the constituent elements, influencing factors and their interaction of systems such as country, industry, enterprise, or city. Through simulation and emulation, the internal structure and operation law are analyzed, and optimization theories and methods are studied from system evaluation and prediction, system structure evolution, resource integration and allocation, multi-agent interaction mechanism, management mechanism and system, etc., providing decision-making methods and theoretical guidance for managers of governments and enterprises at all levels.</p> <p>该方向以系统科学的理论为指导，对国家、行业或产业、企业或者城市等系统的构成要素、影响因素及其相互作用关系进行分析，通过模拟和仿真，对其内在结构、运行规律进行分析，从系统评价与预测、系统结构演变、资源整合与配置、多主体交互机制、管理机制和体系等方面进行优化理论和方法的研究，为各级政府、企业等的管理者提供决策方法和理论指导。</p> |
| 2. Resource Management Engineering 资源管理工程 | <p>This direction is guided by resource economic management theories such as resource allocation, resource environmental compensation, and combines economics, management science and engineering theory and methods. It studies important resources such as mineral resources and energy, resource-based cities, and regional-watershed ecological environment from the aspects of relevant policies and implementation effects, improvement of modern mining management capacity, technical guidelines for resource development and utilization under the background of carbon neutrality, restoration of abandoned industrial and mining lands and introduction of social funds. This provides theoretical and practical guidance for the transformation and development of resource-based cities, regional/watershed ecological restoration management, coastal zone functional zoning and management, national park management and resource environmental protection.</p> <p>该方向以资源配置资源环境补偿等资源经济管理理论为指导，将经济学、管理科学与工程理论方法相结合，以矿产、能源等重要矿产资源，资源型城市，区域—流域生态环境为研究对象，以及相关政策与实施效果、矿业现代治理能力提升、碳中和背景下资源开发利用技术指引、工矿废弃地修复与社会资金引入等方面进行研究，为资源型城市转型与发展、区域性/流域性生态修复管理、海岸带功能区划与管理、国家公园管理与资源环境保护等提供理论与实践指导。</p> |
| 3. Management Psychology and Behavioral Science 管理心理与行为 | <p>Guided by the theories of psychology and behavioral science, this direction reveals the laws of psychological activity, behavior generation and development of individuals, groups, and organizations in management activities through interviews, observation, psychological measurement, situational experiments, complex system modeling, data mining and machine learning, to realize scientific decision-making,</p> |

| Training Direction 研究方向 | Research Content 研究内容 |
|--|--|
| | <p>optimize the management environment and improve management efficiency. The output of this direction could be used to societal governance, macro economy management, public management, organization management, corporate Management, human resources management, safety management, economical management and relative fields.</p> <p>该方向是以心理学和行为科学的理论为指导，通过访谈、观察、心理测量、情景实验、复杂系统建模、数据挖掘和机器学习等方法，揭示管理活动中的个体、群体和组织中人的心理活动与行为产生与发展的规律，以实现科学决策，优化管理环境，提高管理效能。该方向可用于社会治理、宏观管理、公共管理、应急管理、组织管理、企业管理、人事管理、安全管理、经济管理等相关领域。</p> |
| 4. Risk and Emergency Management 风险与应急管理 | <p>This direction is mainly guided by the theory of risk management, emergency management and crisis management, engaged in methods and applications of research in these fields, to provide emergency management programs and optimization, achieving multi-state random occurrence of real-time dynamic decision-making. Studying the induces of the risk, examining and predicting the risk, and responding to the risk and recovery learning after the risk, comprehensively evaluating the risk, ability, responses, communication and organization of the system, to control and reduce the risk and offer decision madding for the risk.</p> <p>该方向主要以风险管理、应急管理和危机管理的基本理论为指导，从事风险管理、应急管理和危机管理理论方法及应用方面的研究，提供应急管理方案及优化，实现多状态随机发生的实时动态决策。研究风险形成的诱因、对风险进行检测与预警、响应及事后恢复学习，对组织和系统的风险、能力、响应、沟通、体制、社会等方面进行综合评估，致力于控制并降低组织或系统风险，提供应急管理决策。</p> |
| 5. Data Science and Business Intelligence 数据科学与商务智能 | <p>Based on the basic theories and algorithms of data mining, pattern discovery, business data analysis and prediction, collect, manage, and analyze structured and unstructured data and information through modern information technologies such as knowledge discovery and artificial intelligence. Support the formulation and optimization of business decisions by constructing data warehouse, management information system and decision support system. Solve the management and application problems of data analysis, data mining and artificial intelligence technology in business and industry (including mineral resources enterprises).</p> <p>该方向主要以数据挖掘、模式发现、商业数据分析与预测的基本理论和算法为基础，通过知识发现、人工智能等现代信息技术收集、管理和分析结构化和非结构化的数据和信息，构建数据仓库、管理信息系统、决策支持系统等，以辅助商业决策的制定和优化，解决数据分析、数据挖掘和人工智能技术在商务和工业（含矿产资源企业）中的管理和应用问题。</p> |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for postgraduate students and Ph.D. students are interconnected, and in general each credit is equivalent to 16 class hours.

来华留学硕士研究生学制3年，最长学习年限4年，不少于31学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式，一般每学分对应16课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|---------------------------------|------------------------|---|---------------|---------------|-------------------|--|------------------------------|
| Public Courses 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | Autumn | — | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | Spring | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | Spring | — | |
| Compulsory Courses 专业学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | Spring | — | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 32 | 2 | Autumn | School of Earth Sciences and Resources 地球科学与 资源学院 | |
| | X21307008 | Resource and Environmental Management 资源环境管理 | 32 | 2 | Autumn | School of economics and management 经济管理学院 | ≥2 credits 不少于 2 学分 |
| Optional Course 专业 选修课 | X21307002 | Crisis Management 危机管理 | 32 | 2 | Spring | School of economics and management 经济管理学院 | ≥6 credits 不少于 6 学分 |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|--|---|---------------|---------------|-------------------|--|---------------|
| | X21307005 | Mining Finance 矿业金融 | 16 | 1 | Spring | School of economics and management 经济管理学院 | |
| | X21307003 | Frontiers of Management Theories 管理理论前沿 | 32 | 2 | Autumn | School of economics and management 经济管理学院 | |
| | X21307006 | Research Methods of Data and Model 数据模型与方法 | 32 | 2 | Autumn | School of economics and management 经济管理学院 | |
| | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | Autumn | Department of P. E. 体育部 | |
| | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | — | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | — | |
| Compulsory Parts 必修环节 | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | — | | | |
| | Interim Report 论文中期报告 | | | — | | | |
| | Academic report delivery 作学术报告 | | | — | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.

备注：公共学位课、必修环节中 Basic Practice of Chinese 汉语基础实践、Chinese Professional application 汉语专业应用由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读

读经典著作和专业学术期刊目录

| | |
|---|---|
| 英文推荐阅读经典著作和专业学术期刊目录 Catalogue of English Classic Works and Professional Academic Journals for Reading | 中文推荐阅读经典著作和专业学术期刊目录 Catalogue of Chinese Classic Works and Professional Academic Journals for Reading |
|---|---|

| | |
|--|---|
| [1] Management Science | [1] Journal of Management Sciences in China 管理科学学报 |
| [2] Academy of Management Journal | [2] System Engineering-Theory & Practice 系统工程理论与实践 |
| [3] Academy of Management Review | [3] Management World 管理世界 |
| [4] American Economic Review | [4] Economic Research Journal 经济研究 |
| [5] MIS Quarterly | [5] China Economic Quarterly 经济学（季刊） |
| [6] Operations Research | [6] Journal of Quantitative & Technical Economics 数理经济技术经济研究 |
| [7] Journal of Operations Management | [7] China Soft Science 中国软科学 |
| [8] Production and Operations Management | [8] Journal of Financial Research 金融研究 |
| [9] European Journal of Operational Research | [9] Chinese Journal of Management Science 中国管理科学 |
| [10] Journal of Finance | [10] Journal of Systems Engineering 系统工程学报 |
| [11] Journal of Management Information Systems | [11] Management Review 管理评论 |
| [12] Academy of Management Annals | [12] Management Science 管理科学 |
| [13] Econometrica | [13] Journal of Industrial Engineering and Engineering Management 管理工程学报 |
| [14] Annals of Statistics | [14] Nankai Business Review 南开管理评论 |
| [15] Risk Analysis | [15] China Industrial Economics 中国工业经济 |
| [16] Psychological Science | [16] Social Sciences in China 中国社会科学 |
| [17] Annual Review of Psychology | [17] Statistical Research 统计研究 |
| [18] Journal of Applied Psychology | [18] Operations Research and Management Science 运筹与管理 |
| [19] Environmental and Resource Economics | [19] Journal of The China Society For Scientific and Technical Information 情报学报 |
| [20] Ecological Economics | [20] China Population Resources and Environment 中国人口资源环境 |

(1202) Business Administration Training Program for International Master Student

(1202) 工商管理 硕士留学生培养方案

一、Training Goal 培养目标

Through this training program, the students should have excellent academic ethics and humanistic quality, and a solid theoretical foundation of management. The students should master the basic methods of management theoretical research and applied research, should apply skillfully relevant technologies, methods, or tools to carry out theoretical academic research of business administration and solve practical problems of business administration and form unique academic opinions on the management of resource-based enterprises. The students will demonstrate certain knowledge in theoretical or practical innovation, literature reading, and language communication. In particular, they should be familiar with the special needs of the operation and management of mineral resource-based enterprises and be able to engage in management scientific research or management practice of industrial and commercial administration.

具有优良的学术道德和人文素养，具备扎实的管理学理论基础，掌握管理理论研究和应用研究基本方法，熟练应用相关技术、方法或工具开展工商管理的理论学术研究和解决工商管理现实问题，并对资源型企业经营管理形成独到的学术见解，展现一定的理论或实践创新能力，具有较强的文献阅读能力和语言交流能力。尤其是熟悉矿产资源型企业经营管理的特殊需求，具备从事工商管理的管理科学研究能力或管理实践工作能力。

二、Research Directions 研究方向

| Research Direction 研究方向 | Research Content 研究内容 |
|---|---|
| 1. Management and Evaluation of Resource based Enterprises 资源企业管理与评价 | It mainly studies the development, utilization, and evaluation of mineral resources of resource-based enterprises, as well as relevant management issues in the development, evaluation, and market promotion of new energy projects, focusing on the operation and management of resource-based enterprises, international trade of mineral products, technical and economic evaluation of mining/energy projects, mining/energy project management, etc. 主要研究资源型企业的矿产资源开发、利用和评价等，以及新能源项目开发、评价和市场推广等过程中相关管理问题，重点涉及资源型企业经营管理、矿产品国际贸易、矿业/能源项目技术经济评价、矿业/能源项目管理等。 |

三、Study Period and Credit Requirement 学习年限与学分要求

The length of study for postgraduate students in China is generally 3 years, and the maximum of study period is 4 years, and the credits should be no less than 31. Curriculum settings include Public Courses, Compulsory Courses, Optional Courses and other Compulsory Parts. The curriculums for postgraduate students and Ph.D. students are interconnected, and in general each credit is equivalent to 16 class hours.

来华留学硕士研究生学制3年，最长学习年限4年，不少于31学分。课程设置包括公共学位课、专业必修课、专业选修课及必修环节。研究生课程采取硕博打通模式，一般每学分对应16课内学时。

四、Curriculum Settings 课程设置

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|-----------------------------|------------------------|--|---------------|---------------|-------------------|---|------------------------------|
| Public Courses 公共学位课 | X21504002 | Chinese Language 汉语 | 128 | 8 | Autumn, Spring | — | |
| | X21504003 | General Introduction of China 中国概况 | 32 | 2 | | — | |
| | X21504004 | HSK level 3 HSK 三级 | 16 | 1 | | — | |
| | X21504005 | Scientific Ethics and Writing 科技道德与写作 | 16 | 1 | | — | |
| Compulsory Courses 专业学位课 | X21504006 | Review of Scientific Literature 科技文献综述 | 48 | 3 | | | |
| | X21301001 | Progress in Earth Science 地球科学进展 | 32 | 2 | | | |
| | X21307003 | Frontiers of Management Theories 管理理论前沿 | 32 | 2 | Autumn | | ≥2 credits 不少于 2 学分 |
| Optional Course 专业选修课 | X21307006 | Research Methods of Data and Model 数据模型与方法 | 32 | 2 | Autumn | School of economics and management 经济管理学院 | ≥6 credits 不少于 6 学分 |
| | X21307001 | Analysis of Business Operations 企业经营活动分析 | 32 | 2 | Spring | School of economics and management 经济管理学院 | |

| Course Type 课程类别 | Course Numbers 课程编号 | Course Name 课程名称 | Periods 学时 | Credits 学分 | Semesters 开课学期 | Department for Lecturing 开课单位 | Remarks 备注 |
|--------------------------|--|---|---------------|---------------|-------------------|--|---------------|
| | X21307008 | Resource and Environmental Management 资源环境管理 | 32 | 2 | | School of economics and management 经济管理学院 | |
| | X21307007 | Resource and Environmental Economics 资源环境经济 | 32 | 2 | | School of economics and management 经济管理学院 | |
| | X21307002 | Crisis Management 危机管理 | 32 | 2 | | School of economics and management 经济管理学院 | |
| | X21307005 | Mining Finance 矿业金融 | 16 | 1 | | School of economics and management 经济管理学院 | |
| | X21314001 | Taijiquan(24-forms) 24式简化太极拳 | 16 | 1 | | Department of P. E. 体育部 | |
| Compulsory Parts 必修环节 | Basic Practice of Chinese 汉语基础实践 | | | 1 | Autumn | —— | |
| | Chinese Professional application 汉语专业应用 | | | 2 | Summer | —— | |
| | Professional Practice 专业实践 | | | 2 | | | |
| | Thesis Opening Report 论文开题报告 | | | —— | | | |
| | Interim Report 论文中期报告 | | | —— | | | |
| | Academic report delivery 作学术报告 | | | —— | | | |

Remarks: Public Courses are offered by International Cooperation and Exchange Office.

备注：公共学位课、必修环节中 Basic Practice of Chinese 汉语基础实践、Chinese Professional application 汉语专业应用由国际合作与交流处统一开设。

五、Catalogue of Classic Works and Professional Academic Journals for Reading 推荐阅读经典著作和专业学术期刊目录

教材和专著：

- 【1】 Henry Mintzberg. The Strategy Process
- 【2】 Phillip Kotler. Marketing Management
- 【3】 Richard B. Chase,etc. Product and Operations Management
- 【4】 丹尼尔 A.雷恩著.孙耀君译.管理思想的演变.北京：中国社会科学出版社
- 【5】 斯蒂芬.P.鲁宾斯著.李原，孙健敏，黄小勇译.管理学.北京：中国人民大学出版社
- 【6】 迈克尔.波特著.陈小悦译.竞争战略.北京：华 Summer 出版社
- 【7】 迈克尔.波特著.陈小悦译.竞争优势.北京：华 Summer 出版社
- 【8】 迈克尔.波特著.李明轩，邱如美译.国家竞争优势.北京：华 Summer 出版社
- 【9】 弗雷德里克.温斯洛.泰罗.科学管理原理.北京：机械工业出版社
- 【10】 弗兰克.卡德斯等著.金钰译.消费者行为学.北京：中国人民大学出版社
- 【11】 威廉.爱德华兹.戴明等著.裴咏铭译.戴明管理思想精要:质量管理之父的领导力.北京：西苑出版社
- 【12】 邹仲海等编著.企业风险管理.北京：电子工业出版社
- 【13】 傅家骥等编著.工业技术经济学.北京：清华大学出版社
- 【14】 孔锐等编著.市场营销-大数据背景下的营销决策与管理.北京：清华大学出版社
- 【15】 王永贵编著.客户关系管理.北京：高等教育出版社
- 【16】 韩福荣主编.现代质量管理学.北京：机械工业出版社
- 【17】 姜启源等编.数学模型.北京：高等教育出版社
- 【18】 王可定，周献中主编.运筹决策理论方法新编.北京：清华大学出版社
- 【19】 赵丽芬，刘小元主编.管理理论与实务.北京：清华大学出版社

期刊：

- 【20】 工业工程与管理
- 【21】 管理世界
- 【22】 管理学报
- 【23】 管理科学学报
- 【24】 管理评论
- 【25】 环境科学学报
- 【26】 经济研究
- 【27】 经济研究经济学动态
- 【28】 珞珈管理评论
- 【29】 数量经济技术

- 【30】 世界经济
- 【31】 企业管理
- 【32】 南开管理评论
- 【33】 心理科学进展
- 【34】 心理学报
- 【35】 预测
- 【36】 运筹与管理
- 【37】 营销科学学报
- 【38】 中国管理科学
- 【39】 中国工业经济
- 【40】 中国人力资源开发
- 【41】 中国社会科学
- 【42】 中国工业经济
- 【43】 中国人口.资源与环境
- 【44】 Academy of Management Journal
- 【45】 Academy of Management Review
- 【46】 Administrative Science Quarterly
- 【47】 Annual Review of Organizational Psychology and Organizational Behavior
- 【48】 American Economic Review
- 【49】 Business Strategy and the Environment
- 【50】 Contemporary Accounting Research
- 【51】 Energy Economics
- 【52】 Human Resource Management Journal
- 【53】 Industrial Marketing Management
- 【54】 Journal of Business Venturing
- 【55】 Journal of Consumer Research
- 【56】 Journal of International Business Studies
- 【57】 Journal of Management
- 【58】 Journal of Marketing
- 【59】 Journal of Marketing Research
- 【60】 Journal of Organizational Behavior
- 【61】 Journal of Retailing and Consumer Services
- 【62】 Management Science
- 【63】 Organizational Behaviors and human decision processes

【64】 Organizational research methods

【65】 Resource Management

【66】 Resources Policy