华北电力大学（留学生）英语授课

North China Electric Power University (International Student)

Taught in English

管理科学与工程一级学科博士学位研究生培养方案

Training Program for Doctoral Students in First-level Discipline of Management Science and Engineering

（学科代码：1201 授予管理学博士学位）

(Discipline Code: 1201, Degree: Doctoral Degree of Management)

一、学科简介

I. Brief Introduction to the Discipline

华北电力大学“管理科学与工程”分别于 1997、2006 年获得国务院学位办授权一级学科硕士和博士点，并于 2009 年获国家人力资源与社会保障部批准“管理科学与工程博士后科研流动站”， 该学科是原国家电力工业部重点学科，现为北京市重点学科。2016 年获批“新能源电力与低碳发展研究”（智库型）北京市重点实验室，华北电力大学管理科学与工程学科在全国第四轮学科评估进入 B+档。学科核心专业工程管理为国家级和北京市特色专业，是华北电力大学首批双一流本科专业，中国科学评价研究中心和武汉大学中国教育质量评价中心发布的《2016 年中国大学及学科专业评价报告》中,该专业在全国 322 所开设该专业的高校中排名第 9。

The postgraduate and doctoral programs of the first-level discipline of “Management Science and Engineering” of North China Electric Power University were authorized by the Academic Degrees Committee of the State Council in 1997 and 2006 respectively; “the post-doctoral research program of Management Science and Engineering” was approved by the Ministry of Human Resources and Social Security in 2009; this discipline was a key discipline of the Ministry of Electric Power Industry, and is now a key discipline of Beijing. The Beijing Key Laboratory of "Research on New Energy Power and Low Carbon Development" (Think Tank) was approved in 2016. The discipline of Management Science and Engineering of North China Electric Power University has entered the B+ category in the fourth round of discipline evaluation nationwide. Engineering Management in the undergraduate program is a core major of the discipline and a characteristic specialty of China and Beijing. It is included in the first batch of double first-class undergraduate majors in North China Electric Power University. In *A Report on the Competitiveness Evaluation of Universities and Subjects in China in 2016* published by the Research Center for Chinese Science Evaluation and the Evaluation Center of Chinese Education Quality of the Wuhan

University, the major ranked 9th among 322 universities in China that offer the major.

学科具有国家级教学团队和北京市优秀教学团队，形成了由全国优秀教师、北京市教学名师和优秀教师、北京市师德标兵、教育部新世纪优秀人才组成的教学科研团队。近年来，学科科研经费居全国同类学科前列；每年在能源、工程、管理、经济等领域一流国际、国内学术期刊上发表 SCI、SSCI、EI、CSSCI、CSCD 收录高水平论文百余篇，论文质量名列前茅，在国内外获得很大的学术反响，形成了能源电力管理学派。

The discipline has a national-level teaching team, an excellent teaching team in Beijing, and a teaching and research team composed of national excellent teachers, famous teachers and excellent teachers in Beijing, teachers' moral pacesetters in Beijing, and new century excellent talents of the Ministry of Education. In recent years, the scientific research funding of this discipline ranks in the forefront of similar disciplines in China; every year, more than 100 high-level papers are published in first-class international and domestic academic journals in the fields of energy, engineering, management, economics and so on and included in SCI, SSCI, EI, CSSCI and CSCD. The quality of the papers is among the best, which has gained great academic response at home and abroad, forming the school of energy and power management.

学科定位：依托能源电力行业的优势资源，构建以“新能源电力”为特色的“管理科学与工程”学科平台，打造中国最具影响的能源电力管理科学人才教育基地，为国家能源战略和社会发展培养高质量的具有鲜明电力行业特色的专门人才，建成在全国具有重要影响的电力管理智库，形成具有国际影响力的能源电力管理中国学派。

Discipline orientation: Rely on the superior resources of the energy and power industry to construct the discipline platform of “Management Science and Engineering” characterized by "new energy power", build the most influential education base for scientific personnel of energy and power management in China, train high-quality professionals with distinctive characteristics of the power industry for the national energy strategy and social development, build an electric power management think tank with important influence in China, and form a Chinese school of energy and power management with international influence.

本学科通过多年创新发展，综合实力位居国内同类学科领先行列。长期以来，该学科致力于解决管理科学基础前沿和工程建设领域（特别是能源电力工程急需解决的）重大管理问题，在工程管理决策理论与方法、能源电力工程建设及运营管理、金融工程理论与方法、能源经济与低碳发展、信息化管理系统开发等方面开展了卓有成效的系列研究,培养了一大批优秀人才，为国家经济社会发展做出了重要贡献。

Through years of innovation and development, this discipline ranks in the forefront of similar disciplines in China in terms of the comprehensive strength. For a long time, the discipline has been committed to solving major management problems in the fundamental frontier of Management Science and in the field of engineering construction, especially urgent problems in energy and power engineering. It has

carried out a series of fruitful studies on Theory and Method of Engineering Management Decision-making, Construction and Operation Management of Energy and Power Engineering, Theory and Method of Financial Engineering, Energy Economy and Low Carbon Development, and Development of Information Management System, trained a large number of outstanding personnel and made important contributions to the economic and social development of China.

二、培养目标

II. Training Objectives

管理科学与工程博士学位研究生的培养，以培养德才兼备的创新型、国际化高级专门人才为目标。具体要求如下：

The doctoral program of Management Science and Engineering aims to cultivate innovative and international senior professionals with both ability and political integrity. The specific requirements are as follows:

1. 培养对中国有良好认知，理解中国社会主流价值观，具有相应的中文语言能力，具备一定跨文化和全球胜任力，在所在学科具有相当专业知识和学术能力的国际化人才。

1. Cultivate international talents who have a good understanding of China, understand the mainstream values of Chinese society, have corresponding Chinese language skills, have certain cross-cultural and global competencies, and have considerable professional knowledge and academic abilities in their disciplines.

2. 具有扎实的管理科学与工程学科基础理论和系统深入的专业知识，广泛了解本学科专业的国际前沿理论及最新发展动态，具有良好的数量分析能力和计算机应用能力，具有创造性地提出新的观点、理论、方法和科学地利用最新研究成果解决重要的实际管理问题特别是能源电力等领域实际管理问题的能力。

2. Students are required to have solid basic theories and systematic and in-depth professional knowledge of the discipline of Management Science and Engineering, have a wide understanding of the international cutting-edge theories and the latest development trends of the discipline, have good abilities of quantitative analysis and computer application, and have abilities to creatively put forward new viewpoints, theories and methods, and scientifically use the latest research results to solve important practical management problems, especially in the energy and power fields.

3. 能够较熟练地运用外语阅读本学科的文献资料，并撰写专业论文， 具备较好的听说能力，具备进行国际学术交流所应达到的水平。

3. Be proficient in using foreign languages to read the literature of the discipline and write professional papers, have good listening and speaking skills required in international academic exchanges.

三、研究方向

III. Research Direction

学科经过多年发展和积淀，形成了九个特色鲜明的优势研究方向：

After years of development and accumulation, the discipline has formed nine advantageous research directions with distinct characteristics:

1. 管理科学与应用

1. Management Science and Application

本研究方向的研究对象是针对现有管理理论与方法中存在的不足，在多元统计学、系统工程学、信息管理学、运筹学、经济学、优化理论和控制理论等现代管理学科知识的基础上，研究和探索更加科学有效地管理理论与方法。在此基础上，通过必要的实证性研究，将研究成果进行转化，以便为工程实践活动提供更加科学地理论指导与服务。其研究内容不仅注重管理方法的创新，而且更注重其实际应用效果。

In view of the shortcomings of the existing management theories and methods, this research direction focuses on studying and exploring more scientific and effective management theories and methods based on the knowledge of modern management disciplines such as multivariate statistics, systems engineering, information management, operations research, economics, optimization theory and control theory. On this basis, through necessary empirical research, the research results will be transformed in order to provide more scientific theoretical guidance and services for engineering practice. The research contents not only focus on the innovation of management methods, but also the practical application effect.

2. 能源管理理论与方法

2. Theory and Method of Energy Management

本研究方向可从宏观和微观两个角度进行研究。宏观方面研究主要是为政府及有关部门在对能源的开发，生产和消费的全过程进行计划、组织、调控和决策时提供科学的理论和方法，如能源预测预警方法、能源定价理论方法等。微观方面研究主要是为能源领域参与主体在低碳政策背景下的开发、建设、生产经营提供科学管理方法，使能源领域参与主体合理使用能源、控制浪费，达到节能减排、节能降耗、再创造效益的目的，以降低单位能耗成本，提升参与主体综合竞争力。

The research direction can be explored from both macroscopic and microscopic perspectives. From the macroscopic perspective, the research direction focuses on providing scientific theories and methods for the government and relevant departments in planning, organizing, regulating and making decisions on the whole process of energy development, production and consumption, such as energy forecasting and early warning methods, energy pricing theories and methods. From the microscopic perspective, the research direction focuses on providing scientific management methods for the development, construction, production and operation of the participants in the energy field under the low-carbon policy background, so as to enable the participants in the energy field to rationally use energy and control waste, meeting the goals of saving

energy, reducing emissions and re-creating benefits, reducing the unit energy consumption cost and enhancing the overall competitiveness of the participants.

3. 电力工程管理

3. Electric Power Engineering Management

本研究方向结合国内外传统能源及新能源电力工程项目的战略发展需求，基于工程管理创新的视角，引入前沿项目管理思想、理论与技术手段，以工程管理前沿理论与方法为基础，通过跨学科交叉研究以解决能源电力工程领域发展面临的系列管理问题。研究涉及电力工程全过程管理、电力企业运营项目化管理、电力工程运营维护管理体系、新能源电力项目组合管理、组合决策支持系统、电力工程项目绩效管理以及能源项目与人因工程等方面内容。

The research direction introduces cutting-edge project management ideas, theories and technical means combined with the strategic development demands of traditional energy and new energy power engineering projects at home and abroad and from the perspective of project management innovation. Based on the frontier theories and methods of engineering management, it aims to solve a series of management problems in the field of energy and power engineering through interdisciplinary research. The research involves the whole process management of power engineering, power enterprise operation project management, operation and maintenance management system of power engineering, new energy power project portfolio management, combination decision support system, performance management of power engineering projects, energy projects, human factors engineering and other aspects.

4. 工程项目管理理论与方法

4. Theory and Method of Engineering Project Management

本研究方向主要是针对目前工程项目管理中在质量管理、进度管理、费用管理、环境及安全管理、范围管理、组织管理、采购管理、风险管理、项目组合管理、信息集成、资源优化与配置等理论与方法方面存在的问题与不足，进行科学的研究和探索。研究对象既可以是工程项目管理中的某一方面的问题，也可以是多个方面的综合性研究。其研究成果注重理论和方法创新，也注重创新的理论与方法的实践验证。

The research direction focuses on scientific research and exploration with respect to problems and deficiencies in theories and methods of quality management, schedule management, cost management, environment and safety management, scope management, organization management, procurement management, risk management, project portfolio management, information integration, resource optimization and allocation in the current engineering project management. The research object can be either one aspect of engineering project management, or involve many aspects. Its research results focus on the innovation of theories and methods, as well as the practical verification of innovative theories and methods.

5. 信息管理与智能决策分析

5. Information Management and Intelligent Decision-making Analysis

本研究方向为电网、发电、电力施工、工程建筑、IT 等企事业单位培养信息化管理方面的高素质、复合型人才，研究范围是综合性的，包括：智能信息系统的规划、分析、设计与开发应用；电力市场运营与智能决策分析及仿真；面向发电、输电、配变电和用电等一体化的电力市场技术支持系统；智能信息系统在工程项目管理等方面的应用；企业智能决策支持系统理论及应用；全企业的信息系统集成化理论及应用；采用新一代信息技术（云计算、大数据、物联网、移动网络、人工智能、区块链）并结合预测、决策、统筹、博弈、模拟、模糊分析等科学方法在企业信息管理与智能决策方面的理论与应用研究等。

The research direction aims at training high-quality and versatile talents in information management for enterprises and institutions of power grids, power generation, power construction, engineering construction, and IT. With comprehensive research area covering planning, analysis, design, development and application of intelligent information systems; analysis and simulation of power market operation and intelligent decision-making; power market technical support system for the integration of power generation, transmission, distribution and transformation, and consumption; application of intelligent information system in engineering project management; theory and application of the support system for enterprise intelligent decision-making; theory and application of enterprise-wide information system integration; theory and application of enterprise information management and intelligent decision-making using a new generation of information technology (cloud computing, big data, Internet of Things, mobile network, artificial intelligence and blockchain) and combining forecasting, decision-making, overall planning, gambling, simulation, fuzzy analysis and other scientific methods.

6. 风险管理与决策理论

6. Risk Management and Decision-making Theory

本研究方向针对工程项目、电力等相关领域风险管理与决策的理论与应用问题，主要研究探讨工程建筑、发电、供用电、IT 项目及管理等各类风险的产生机理、辨识、传递、估计、评价、预警与多目标决策、相互转化与协调的原理和关键技术，致力于解决工程安全、供用电安全、公共危机与应急管理等重大科学问题，减少或避免因决策失误导致的更大风险或资源浪费，实现社会经济、能源生态环境、资源利用等的最佳协调与可持续发展。

The research direction mainly studies and discusses the generation mechanism, identification, transmission, estimation, evaluation, early warning and multi-objective decision-making, principles and key technologies of mutual transformation and coordination of all kinds of risks in engineering construction, power generation, power supply and consumption, IT project and management with respect to the theory and application problems of risk management and decision-making in engineering projects, electric power and other related fields, and is committed to solving engineering safety, power supply and consumption safety,

public crisis and emergency management and other major scientific issues, reducing or avoiding greater risks or waste of resources caused by decision-making mistakes, so as to achieve the best coordination and sustainable development of social economy, energy ecological environment and resource utilization.

7. 能源经济与低碳发展

7. Energy Economy and Low Carbon Development

本研究方向以我国国民经济及社会发展的绿色低碳转型目标为出发点，对社会经济低碳化发展的相关理论及实际应用展开研究，为实现能源、经济与环境的可持续协调发展提供管理科学方法、经济决策理论与政策机制支持。主要研究范围包括：能源产业的低碳转型、新能源电力的发展模型与政策、碳排放控制制度设计及效果评估、社会经济的低碳化发展机制以及能源与经济、环境的协调发展路径等。本方向的研究成果，在注重理论方法创新的同时，也注重与能源经济管理重大工程和政策需求相结合指导我国能源电力产业的发展与实践。

The research direction takes the green and low-carbon transformation goal of national economic and social development as the starting point, studies relevant theories and practical applications of low-carbon development of social economy, and provides scientific management methods, economic decision-making theories and policy mechanism support for the sustainable and coordinated development of energy, economy and environment. Its main research areas include: The low-carbon transformation of the energy industry, the development model and policy of new energy power, the design and effect evaluation of carbon emission control system, the low-carbon development mechanism of social economy and the coordinated development path of energy, economy and environment. The research results in the direction not only pay attention to the innovation of theories and methods, but also pay attention to the integration with major projects and policy requirements of energy economy management, so as to guide the development and practice of the energy and power industries in China.

8. 金融工程

8. Financial Engineering

本研究方向可为政府、能源电力企业、以及金融部门等企事业单位培养金融风险管理方面的高素质、复合型人才。金融工程主要侧重于研究现代企业生产经营、科技、经济和社会等发展相适应的金融工程理论与方法，以及利用工程化手段解决企业在金融风险管理方面的技术开发，它包括金融产品设计、金融产品定价、精算分析、交易策略设计、金融风险管理等方面。其最终目的是通过定量化分析提出相应解决方案，以提高经济、金融运行的效率性和有效性。

The research direction aims at training high-quality and versatile talents in financial risk management for governments, energy and power enterprises, financial departments and other enterprises and institutions. The discipline of Financial Engineering mainly focuses on studying theories and methods of financial engineering adapted to the production and operation of modern enterprises, science and technology,

economic and social development, and using engineering means to solve the technical development problems of enterprises in financial risk management. It covers financial product design, financial product pricing, actuarial analysis, transaction strategy design, financial risk management and other aspects. Its ultimate goal is to put forward corresponding solutions through quantitative analysis, so as to improve the efficiency and effectiveness of economic and financial operation.

9. 供应链管理理论与方法

9. Theory and Method of Supply Chain Management

本研究方向以推进供应链创新与应用为目标，丰富和完善供应链领域的理论和方法，创新供应链新理念、新技术、新模式、新理论，以供应链为载体通过资源整合和流程优化，促进产业跨界和协同发展，高效整合能源生产销售环节的资源要素，提升行业集成和协同水平；应用互联网、物联网、人工智能、大数据、云计算、区块链等新一代信息技术构建智慧供应链体系，提升供应链的智能化水平、服务水平，推动供应链金融发展以及供应链相关标准的制定；本研究方向注重理论与实践相融合，培养掌握供应链整体运作的复合型人才。

Aiming at promoting the innovation and application of the supply chain, the research direction enriches and improves the theories and methods in the field of the supply chain, innovates the ideas, technologies, models and theories of the supply chain, takes the supply chain as a carrier to promote the cross-border and coordinated development of the industry through resource integration and process optimization, efficiently integrate the resource elements of energy production and sales, and improve the level of industry integration and coordination; use the Internet, Internet of things, artificial intelligence, big data, cloud computing, blockchain and other new generation information technologies to build an intelligent supply chain system to improve the intelligence and service level of the supply chain, and promote the financial development of supply chain and the formulation of related standards for supply chain; the research direction focuses on the integration of theory and practice to train versatile talents who master overall operation of the supply chain.

四、培养方式

IV. Training Method

1．博士生培养实行导师负责制，必要时可设副导师，或组成指导小组。跨学科或交叉学科培养博士生时，应从相关学科中聘请副导师协助指导。副导师必须具有博士学位及高级职称，指导小组成员必须具有高级职称。

1． The doctoral training implements the supervisor responsibility system, if necessary, a secondary-supervisor or a steering group may be introduced. When it comes to interdisciplinary training of doctoral students, a secondary-supervisor from relevant disciplines is required to assist in guiding the students. The secondary-supervisor must equip with a doctoral degree and a senior professional title, and members of the steering group must have senior professional titles.

2．博士生的培养以科学研究工作为主，重点是培养独立从事科学研究工作和进行创造性研究工作的能力；同时要根据本学科专业的要求、学位论文的需要及个人的实际情况学习有关课程；要学会进行创造性研究工作的方法和培养严谨的科学作风。

2．The training of doctoral students is mainly based on conducting scientific research, which focus on cultivating the abilities of doing independent and creative research work; studying relevant courses according to the requirements of the discipline, the needs of the degree thesis and the actual situation of the individual; learning how to carry out creative research work and cultivating rigorous scientific attitudes.

3．来华留学博士生的培养一般采用全日制培养方式。

3． Our university trains international doctoral students in full-time manner.

4．博士生可在校内攻读，也可由国内、国际的校际间联合培养。

4． The training of doctoral students can be carried out in the campus of the university as well as in the joint academic institutes at home or abroad.

五、学制与学习年限

V. Educational System and Duration of the Program

学制 4 年，博士学习年限 3～8 年，其中硕博连读学习年限最少 5 年（含硕士阶段）。因特殊情况需要延长学习年限的，应提前半年由博士生提出申请，经导师同意、学院领导审核、报国际教育学院批准，研究生院备案。中国政府奖学金学生如要继续享受奖学金需提前向所属国家驻华大使馆和国家留学基金管理委员会申请，获得批准后，才能继续享受奖学金待遇，否则需自费完成学业。

The educational system is 4 years. The duration of the doctoral program is 3-8 years, and the duration of the successive postgraduate and doctoral program is at least 5 years (including the postgraduate period). The doctoral students shall apply in half a year in advance if they require an extension for the study due to some special circumstances, and the application shall be approved by their supervisors, reviewed by the leaders of the school, submitted to the International Education Institute for approval and the Graduate School for the record. The students who are supported by the Chinese government scholarship need to apply for continuing scholarship from both their home country embassy in China and China Scholarship Council. Otherwise, they will have to complete their studies at their own expense.

六、课程设置及学分要求

VI. Curriculum and Credit Requirements

博士生的课程设置应以培养博士研究生创造性地从事研究工作能力为目标，以教育创新为手段，以创新教育平台建设为主线，要根据博士研究生培养的要求，拓宽、加深学科需要的基础理论，把握本学科发展或交叉学科发展前沿动态，通过课程学习，为博士论文选题与科研方法创新奠定坚实基础理论。

The curriculum of doctoral students shall aim at cultivating the students' ability to engage in research

work creatively, take educational innovation as a means, focus on the construction of innovative education platform, broaden and deepen the basic theories required by the discipline according to the requirements of cultivating doctoral students, reflect the frontier trends of the development of the discipline or interdisciplinary development, and lay a solid foundation for the students' topic selection of doctoral dissertation and the innovation of scientific research methods through course study.

博士生的课程设置分学位课、必修环节和任选课三大类。学位课分公共课、基础理论课、专业核心课。博士研究生在校期间，应修最低学分为 20 学分，其中学位课 14 学分，必修环节 6 学分。具体要求如下：

The curriculum for doctoral students consists of three categories: degree courses, required links and optional courses. Degree courses are divided into public courses, basic theoretical courses and specialized core courses. During the period of doctoral students in school, the minimum credit requirement is 20 credits, including 14 credits for degree courses and 6 credits for required links. The specific requirements are as follows:

1．学位课（14 学分），其中：

1．Degree courses (14 credits), of which:

公共课：汉语综合 (1)：4 学分 （64 学时）；

Public courses: Chinese Comprehension (1): 4 credits (64 class hours);

汉语综合 (2)：4 学分 （64 学时）；

Chinese Comprehension (2): 4 credits (64 class hours);

中国概况 (英文)：2 学分（32 学时）；

Introduction to China (English): 2 credits (32 class hours);

基础理论课：2 学分；

Basic theoretical courses: 2 credits;

专业核心课：2 学分。

Specialized core courses: 2 credits.

要求博士生在基础理论方面，应进一步掌握现代数学等高层次的宽厚的基础理论，为研究方法的创新提供坚实的理论基础；在专业核心课程的设置中以研究型的专业基础课程为基础，以加强博士研究生的学术理论训练为主，使学生把握本学科发展的前沿动态，培养学生发现问题、提出问题、分析问题的批判性思维能力和创新思维能力以及解决实际问题的能力。

Doctoral students are required to further master the high-level and broad basic theories such as Modern Mathematics, so as to provide a solid theoretical basis for the innovation of research methods. The setting of the specialized core courses is based on the research-oriented professional basic courses, focusing on strengthening the academic theory training of doctoral students, so as to enable students to grasp the frontier

trends of the development of this discipline, cultivate students' critical thinking ability and innovative thinking ability of discovering, raising and analyzing problems as well as the ability to solve practical questions.

2．必修环节（6 学分），包括：

2．Required links (6 credits), including:

研究生科学道德与学术规范 1 学分；

Scientific Ethics and Academic Norms for Postgraduates: 1 credit;

文献综述与选题报告 2 学分；

Literature Review and Thesis Proposal: 2 credits;

前沿讲座与专题研讨 1 学分：参加前沿讲座与专题研讨是培养博士生综合能力和进入学科前沿的重要环节。博士生在学习期间，应在导师确定的专题领域，至少参加 8 次前沿讲座与专题研讨，完成后记 1 学分；

Cutting-edge Lectures and Seminars (1 credit): Participating in cutting-edge lectures and seminars is an important link to cultivate the comprehensive ability of doctoral students and help them to enter the forefront of the discipline. During the period of study, doctoral students should participate in at least 8 cutting-edge lectures and seminars in the special areas determined by their supervisors, and they get 1 credit upon completion;

博士论坛 1 学分：要求博士生至少做 2 次学术报告，完成后记 1 学分。

Doctoral Forum (1 credit): Doctoral students are required to make at least 2 academic reports, and they get 1 credit upon completion;

培养研究生申请科研项目能力，完成一项省部级以上基金或项目申请书撰写，导师对申请书撰写质量把关并签署书面审核意见后提交学院，经学院审核通过后记 1 学分。

Cultivate abilities of students to apply for scientific research projects: Students shall complete the writing of an application for a fund or project at the provincial and ministerial level or above; the supervisor shall review the writing quality of the application, leave his/her review comments and signature, and then submit the application to the school. Students should obtain 1 credit after the approval of the school.

3.任选课与补修课程

3. Optional courses and supplementary courses

硕士阶段非本学科的博士生应补修由导师指定的若干本学科硕士阶段主干课程。补修课程不计入总学分。

Doctoral student who are not in their own disciplines at the postgraduate stage should take several major courses of postgraduate stage of this discipline designated by their supervisors. Supplementary courses are not included in the total credit.

具体课程设置见附表。

For the specific curriculum, please refer to the Schedule.

七、科学研究及学位论文要求

VII. Requirements for Scientific Research and Degree Thesis

进行科学研究与撰写学位论文，是对博士研究生进行科学研究训练、培养创新能力的主要途径，也是衡量研究生能否获得博士学位的重要依据之一。博士生在学期间一般要用至少 2 年的时间完成学位论文。博士学位论文是综合衡量博士生培养质量和学术水平的重要标志，博士生的资格考核、学位论文选题报告、论文中期检查、学位论文预答辩、论文答辩资格审查等，是博士生培养工作的重要环节，各学科与专业应在培养方案中做出具体安排与要求。

Conducting scientific research and writing degree thesis is the main way to train doctoral students in scientific research and innovative ability, and it is also one of the important bases to measure whether a postgraduate can obtain a doctoral degree or not. Generally, doctoral students should take at least two years to complete their dissertation. The doctoral dissertation is important supporting evidence which measures the quality of the cultivation outcomes and academic levels of the research. The doctoral qualification examination, thesis proposal, mid-term review, pre-defense of dissertation, etc., are important parts for the doctoral training. Each discipline and major shall make specific arrangements and requirements in the training program.

1.文献综述与选题报告

1. Literature review and thesis proposal

博士学位论文选题应在了解本研究领域国内外的现状、发展动态的基础上，确定论文题目，要体现学科领域的前沿性和先进性。选题报告时间由博士生导师根据博士生工作进度情况确定，一般应在博士资格审核完成即可开题，最迟距离申请答辩日期不少于 2 年。

The doctoral students shall determine the topic of doctoral dissertation based on the current status and development trends of related research field. The topics shall reflect the cutting-edge and advance of the discipline. The time for doctoral students submitting their thesis proposals shall be determined by the supervisor according to students' progress. Generally, it shall be given after the completion of the doctoral qualification examination and shall be no less than 2 years before the application of thesis defense.

博士论文选题报告内容应包含文献综述、论文选题及其意义、主要研究内容、技术路线、预期成果及可能的创新点等。选题报告在一级学科范围内相对集中、公开地进行，并由以博士生导师为主体组成的考核小组评审。选题报告会应吸收有关导师和研究生参加，跨学科的论文选题应聘请相关学科的导师参加。若学位论文课题有重大变动，应重做选题报告并重新开题，以保证课题的前沿性和创新性。评审通过的选题报告，应以书面形式交研究生院备案。

The doctoral dissertation thesis proposal shall include literature review, topic selection and its

significance, main research content, technical route, expected results and possible innovative points, etc. The time for thesis proposal submitting shall be determined in a relatively centralized and public domain in the scope of the first-level discipline, and shall be reviewed by the assessment team composed of doctoral supervisors. The thesis proposal meeting should be attended by relevant supervisors and postgraduates, and supervisors of relevant disciplines should be invited to participate in the meeting for topic selection of interdisciplinary theses. If there is a major change in the degree thesis topic, the thesis proposal shall be redone and the topic shall be re-selected to ensure the fore-front and innovation of the project. The thesis proposal after passing the review shall be submitted in writing to the Graduate School for the record.

为了保证博士学位论文选题的创新性，进一步提高博士生的培养质量，要求攻读博士学位的研究生在进行论文选题报告之前，应在指导教师的指导下，在教育部认定的科技查新工作站进行论文开题查新工作，上述工作完成后由导师组织博士生导师和教授为主的小组开题。

In order to guarantee the novelty of the topic selection of the doctoral dissertation and further improve the training quality of doctoral students, it is required that postgraduates pursuing doctoral degrees shall, under the guidance of their supervisors, conduct novelty search from the workstations recognized by the Ministry of Education before submitting their thesis proposals. After completing the above work, the supervisors shall organize a group dominated by doctoral supervisors and professors to review the thesis proposals.

2.论文中期检查

2. Mid-term review of the thesis

学位论文中期检查一般应在第四学期进行，学科应组织博士生导师和教授为主的考查小组，对研究生的综合能力、论文工作进展情况等进行全面考查。

The mid-term review of degree thesis is generally conducted in the fourth semester. The discipline shall organize a review team dominated by doctoral supervisors and professors to conduct comprehensive examination of the comprehensive ability of postgraduates and the progress of thesis work.

3.科研成果要求

3. Requirements for scientific research achievements

博士生应参与省部级及以上科技项目或企业委托重大项目的课题研究，在申请学位论文答辩前完成发表高水平学术论文、科研获奖、专利转化或成果鉴定等科研成果，科研获奖、专利转化或成果鉴定可以等同于高水平学术论文，但要求科研成果中至少有一篇本学科权威期刊论文。科研成果的具体要求如下：

A doctoral student shall participate in subject research of technological projects at provincial and ministerial level or above or of major projects entrusted by enterprises, and obtain scientific research achievements such as publishing high-level academic papers, winning awards for scientific research,

completing patent conversion or achievement identification before applying for thesis defense. Winning awards for scientific research and completing patent conversion or achievement identification can be equivalent to publishing high-level academic papers. However, it is required that at least one authoritative journal paper shall be included in the scientific research achievements. Specific requirements for scientific research achievements are as follows:

(1) 发表本学科高水平学术论文，要求满足以下任意一条：

(1) Publish a high-level academic paper of the discipline. One of the following requirements shall be met:

① 博士生在申请学位论文答辩前必须以第一作者身份（其导师必须是作者之一）或第二作者身份（其导师必须是第一作者）按下述要求公开发表反映学位论文工作成果的学术论文：以华北电力大学为第一发表单位；至少在本学科中文核心期刊（以北京大学出版的《中文核心期刊要目总览》最新版为依据）或国际重要期刊（被 SCI 或 EI 收录，会议转期刊的除外）上发表 4 篇及以上学术论文；其中至少有 2 篇发表在本学科国内权威学术期刊（附权威期刊目录）或国外被 SCI（SSCI）收录期刊上。

① Before applying for thesis defense, doctoral students must, in the name of the first author (the supervisor must be one of the authors) or the second author (the supervisor must be the first author), publish academic papers reflecting the achievements of degree thesis work according to the following requirements: the first affiliation shall be North China Electric Power University; at least 4 academic papers shall be published in the core Chinese journals (based on the latest edition of the A Guide to the Core Journals of China published by Peking University) or important international journals (included in SCI or EI, except for journals of conference articles) of the discipline; at least 2 of them shall be published in domestic authoritative academic journals (see the attached catalogs of authoritative journals) or international journals included in SCI (SSCI) of this discipline.

② 在本学科国内权威期刊（依据论文发表时基金委管理学部认可的 A 类期刊）或被 SCI/SSCI 检索的国际重要期刊（会议转期刊的、开源期刊和摘要检索除外）上发表 2 篇及以上学术论文。

② Publish at least 2 academic papers in domestic authoritative journals (based on the Class A journals recognized by NSFC Management Science Department at the time of paper publication) or important international journal searched in SCI/SSCI (excluding journals of conference articles, open access journals and journals included in abstract search) of this discipline.

(2) 博士生作为主要完成人之一，其学位论文工作成果获得省部级及以上科研奖励 1 项（以科研院认证目录为准，署名单位为华北电力大学），相当于权威期刊论文 1 篇。

(2) The doctoral student’s achievements of the degree thesis work, for which the doctoral student is one of the main contributors, have won one scientific research award at the provincial and ministerial level

(subject to the catalogue certified by the Scientific Research Institute and with North China Electric Power University as the author affiliation), which is equivalent to one authoritative journal thesis.

(3) 获得与博士论文代表性成果相关的国内外发明专利授权 1 项，发明专利要求第一署名单位为华北电力大学，学生排名第一或者学生排名第二（其导师排名第一），且累计成果转化收益到款额不低于 10 万元（以科研院核算为准），相当于权威期刊论文 1 篇。

(3) Obtain authorization for 1 patent for invention at home and abroad related to the representative achievements of the doctoral dissertation. As for the patent for invention, the first author affiliation shall be North China Electric Power University; the student shall be the first author or the second author (with the supervisor being the first author); the cumulative income from the transformation of achievements shall not be less than RMB 100,000 (subject to the accounting of the Scientific Research Institute), which is equivalent to 1 authoritative journal paper.

(4) 博士生作为主研人（排名前三）完成的科研项目获得省部级及以上科技成果鉴定 1 项，或获得国家领导人、省部级领导批示、采纳 1 项，成果第一完成单位是华北电力大学，相当于权威期刊论文 1 篇。

(4) One scientific research project completed by the doctoral student as a lead researcher (top 3), with North China Electric Power University being the first completion affiliation, has been certified as 1 scientific and technological achievement at provincial and ministerial level or above, or obtained approval and adoption of state leaders and provincial and ministerial leaders, which is equivalent to 1 authoritative journal paper.

人文社科类项目鉴定是指由项目下达单位对项目组织的鉴定，其项目仅限于国家社科基金项目、教育部人文社科项目、北京市哲学社会科学规划项目、河北省社会科学基金项目等省部级及以上纵向社科类项目。

The appraisal of projects of humanities and social sciences refers to the appraisal of the project organization by the institute that issues the project, and the projects are limited to projects of the National Social Science Fund of China, projects of humanities and social sciences of the Ministry of Education, projects of the Beijing Planning Office of Philosophy and Social Sciences, projects of the Social Science Foundation of Hebei Province and other government sponsored social science projects at provincial and ministerial level or above.

(5) 在职博士生在读期间，如有与华北电力大学合作的科研项目，并且该项目的主要内容将作为其学位论文的组成部分，对博士生本人，获奖、鉴定的署名单位可不作硬性要求，但华北电力大学作为合作方必须在科研成果中有所体现，也应当作为署名单位之一。

(5) If an on-the-job doctoral student has a scientific research project in collaboration with the North China Electric Power University, and the main contents of the project will be part of his or her degree thesis,

there's no mandatory requirement for the author affiliation in the award and appraisal of the doctoral student, but North China Electric Power University, as a collaborator, must be reflected in the scientific research achievements, and shall also be one of the author affiliations.

凡不符合上述要求的成果，在学位申请时一律不予考虑。

Any other achievements that do not meet the above requirements will not be considered in degree applications.

硕博连读学生在硕士期间取得的科研成果，按以上规定同等对待。

The scientific research achievements obtained by the MD-PhD students of continuous academic program during the master stage shall be treated equally in accordance with the above provisions.

4．学位论文要求

4．Degree thesis requirements

博士生在毕业前应提交博士学位论文。博士学位论文是博士生在导师指导下独立完成的、系统完整的学术研究工作的总结，论文应体现出博士生在所在学科领域所做出的创造性学术成果，应能反映出博士生已经掌握了坚实宽广的基础理论和系统深入的专门知识，并具备了独立从事科研工作的能力。

Doctoral students shall submit their doctoral dissertations before graduation. The doctoral dissertation is a summary of the systematic and complete academic research work completed independently by a doctoral student under the guidance of his/her supervisor. The dissertation shall reflect the creative academic achievements made by the doctoral student in his/her discipline. It shall also reflect that the doctoral student has mastered solid and broad basic theories and systematic and in-depth knowledge of the major, and had the ability to engage in scientific research independently.

博士学位论文的撰写规范参照《华北电力大学博士学位论文撰写规范及范例》。

For the writing norms of doctoral dissertation, please refer to the *Norms and Examples for the Doctoral Dissertation Writing of North China Electric Power University*.

5．学位论文预答辩

5．Pre-defense of degree thesis

预答辩的目的在于进一步修改、完善博士学位论文。博士生在完成博士学位论文初稿，经导师审核认为符合要求的，要进行博士学位论文的预答辩。学位论文预答辩通过者，方可申请正式答辩。具体要求按照《华北电力大学博士研究生必修环节实施细则》中相关规定执行。

The purpose of pre-defense is to further revise and improve the doctoral dissertation. If the doctoral student completes the first draft of the doctoral dissertation and the first draft is deemed to meet the requirements after review of the supervisor, the doctoral student will make a pre-defense for its doctoral dissertation. Only the students who pass the pre-defense can apply for the formal defense of thesis. For the

specific requirements, please refer to the *Detailed Rules for the Implementation of Required Links for Doctoral Students in North China Electric Power University*.

6. 博士研究生申请论文送审的资格审查

6. Qualification review of the submitted dissertation applied by doctoral students

博士论文资格审查由指导教师或博士生指导小组负责进行。博士研究生申请论文送审的基本条件：

The doctoral dissertation qualification review is carried out by the supervisor or the steering group. Basic application conditions of doctoral students' dissertation submission are as below:

(1) 修完所规定的学分要求；

(1) To meet the credit requirements;

(2) 通过博士资格考核；

(2) To pass the doctoral qualification examination;

(3) 完成论文开题查新报告和论文选题报告，且开题通过；

(3) To complete the reports on novelty search, and complete the thesis proposal and obtain approval;

(4) 完成论文中期检查；

(4) To complete the mid-term review of dissertation;

(5) 满足学术论文发表与科研成果要求；

(5) To meet the requirements of academic papers publication and research achievements;

(6) 通过学位论文的预答辩；

(6) To pass the pre-defense of the degree thesis;

(7) 完成毕业论文的撰写并通过学位论文撰写规范审查。

(7) To complete the writing of graduation thesis and pass the standard examination of degree thesis writing.

7．博士学位论文的评审与答辩

7．Review and defense of doctoral dissertation

博士生在通过论文送审的资格审查后即可进行学位论文的送审与答辩，具体要求按照《华北电力大学研究生学位论文评审和答辩的有关规定》《华北电力大学学位授予工作细则》等执行。毕业生的答辩时间一般安排在 6 月，延期毕业和提前毕业的研究生的答辩时间一般安排在 6 月或 12 月。

Doctoral students can submit their degree theses for examination and make the thesis defense after passing the qualification examination for their degree theses, which are required to be specifically carried out in accordance with the relevant provisions of the *Relevant Provisions on the Review and Defense of Master Dissertation of North China Electric Power University* and the *Detailed Rules for Degree Awarding of North China Electric Power University*. The defense time for graduates is generally arranged in June,

while that for graduates of postponed graduation and early graduation is generally arranged in June or December.

八、提前毕业条件

VIII. Conditions for Early Graduation

博士学位论文的主要创新成果应在国内外重要学术刊物上公开发表。博士生在申请学位论文答辩前必须以第一作者身份或第二作者身份（若是第二作者其导师必须是第一作者）按下述要求公开发表反映学位论文工作成果的学术论文：

The main innovative findings of doctoral dissertation shall be published in important academic journals at home and abroad. Before applying for thesis defense, doctoral students must, in the name of the first author or the second author (with the supervisor being the first author), publish academic papers reflecting the achievements of their degree thesis work according to the following requirements:

(1) 在本学科国内权威期刊（依据论文发表时基金委管理学部认可的 A 类期刊）或 CSSCI、CSCD（扩展版除外）收录中文期刊或被 SCI/SSCI 检索的国际重要期刊（会议转期刊的、开源期刊和摘要检索除外）上发表 4 篇及以上学术论文。

(1) Publish 4 or more academic papers in domestic authoritative journals (based on the Class A journals recognized by NSFC Management Science Department at the time of paper publication) or Chinese journals included in CSSCI and CSCD (except for the extended versions) or important international journal searched in SCI/SSCI (excluding journals of conference articles, open access journals and journals included in abstract search) of this discipline.

(2) 博士生的学位论文工作成果（华北电力大学作为署名单位之一）：获得省部级二等及以上奖励（发明奖励、自然科学奖励、科学技术进步奖励，博士生持有奖励证书）1 项，相当于国内权威期刊论文 1 篇（注：只能计及一个奖项）。

(2) One of the achievements of the doctoral dissertation work (with North China Electric Power University being one of the author affiliations) has been awarded the second prize or above at the provincial and ministerial level (with certificates of invention award, natural science award, science and technology progress award for the doctoral student), which is equivalent to 1 domestic authoritative journal paper. (Note: Only one award can be counted).

(3) 博士生所发表的学术论文必须是学位论文研究工作的重要组成部分，并以华北电力大学为第一发表单位。在职博士生在读期间，如有与华北电力大学合作的科研在获奖、鉴定或发明专利成果的署名单位时可不作硬性要求，但华北电力大学作为合作方必须在科研成果中有所体现，也应当作为署名单位之一。

(3) The academic papers published by doctoral students must be an important part of the research work of their dissertation, and the first publication affiliation shall be North China Electric Power University. If an

on-the-job doctoral student has a scientific research project in collaboration with the North China Electric Power University, there's no mandatory requirement for the author affiliation in the award, appraisal and invention patent achievements of the doctoral student, but North China Electric Power University, as a collaborator, must be reflected in the scientific research achievements, and shall also be one of the author affiliations.

附表：

Schedule:

博士研究生课程设置表

Curriculum of Doctoral Students

课程性质 Category	课程属性 Attribute	课程名称 Course name	学时 Class hour	学分 Credit	考核方式 Assessment mode	开课学期 Semester of the course	备注 Remarks
学位课 Degree courses (≥14 学分) (≥14 credits)	公共课（10 学分） Public courses (10 credits)	汉语综合(1) Chinese Comprehension (1)	64	4	考试 Exam	1	
		中国概况(英文) Introduction to China (English)	32	2	考试 Exam	1	
		汉语综合(2) Chinese Comprehension (2)	64	4	考试 Exam	2	
	基础理论课 Basic theoretical courses （≥2 学分） (≥2 credits)	管理理论前沿 Frontiers of Management Theory	32	2	考试 Exam	1	
		复杂系统理论与方法 Theory and Method of Complex System	16	1	考试 Exam	1	
		管理数学模型方法论 Methodology of Mathematical Model of Management	16	1	考试 Exam	1	
		高级金融理论与建模 Advanced Financial Theory and Modeling	16	1	考试 Exam	1	
	专业核心课 Specialized core courses （≥2 学分） (≥2 credits)	工程与项目管理方法论 Methodology of Engineering and Project Management	16	1	考试 Exam	1	
		现代项目信息管理 Modern Project Information Management	16	1	考试 Exam	1	
		工程风险管理与决策 Engineering Risk Management and Decision-making	16	1	考试 Exam	1	
		工程管理最佳实践 Best Practices in Engineering Management	16	1	考试 Exam	1	

		工程信息模型与仿真 Engineering Information Model and Simulation	16	1	考试 Exam	1	
		(项目决策与评价方法,全英文课程） (Project Decision-making and Evaluation Methods, English only)	16	1	考试 Exam	1	
必修环节(6学分) Required links (6 credits)		研究生科学道德与学术规范 Scientific Ethics and Academic Norms for Postgraduates		1	考查 Review of performance		
		研读专业经典名著 Professional Classics Studying		1	考查 Review of performance		
		文献综述与开题报告 Literature Review and Thesis Proposal		2	考查 Review of performance		
		前沿讲座 Cutting-edge Lecture	8 次 8 times	1	考查 Review of performance		
		博士论坛 Doctoral Forum	2 次 2 times	1	考查 Review of performance		
任选课 Optional courses		大数据预测与评价理论 Big Data Prediction and Evaluation Theory	32	2		1	
		新能源电力工程建设 New Energy Power Engineering Construction	16	1		1	
		工程复杂网络理论 Engineering Complex Network Theory	16	1		1	
		数据挖掘与知识发现 Data Mining and Knowledge Discovery	16	1		1	
		金融工程与资本市场分析 Financial Engineering and Capital Market Analysis	16	1		1	
		本学院或其他学院开设的相关基础或专业课程 Relevant Basic or Specialized Courses Offered by the School or Other Schools					
补修课 Supplementary courses						1	附录一 Appendix I

附注一：对非本学科入学的博士生，应补修由导师指定的本学科主干硕士课程

Note 1: For the doctoral student who was not in this discipline when enrolled, he/she should make up for the main courses of this discipline in master stage designated by the supervisor.