

华北电力大学（留学生）英语授课
North China Electric Power University (International Student)
Taught in English
控制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
Control Science and Engineering

（学科代码：0811 授予工学博士学位）

(Discipline Code: 0811, Degree: Doctoral Degree of Engineering)

一、学科简介

I. Brief Introduction to the Discipline

华北电力大学自动化学科始建于1958年，是国内最早建立的热工量测及其自动化专业，为我国培养电厂热工检测与自动化领域的专门人才。本学科紧密联系我国电力工业发展的需求，在人才培养、科学研究、科技成果转化等方面取得了显著的成绩，经过半个多世纪的发展，具备了完善的控制科学与工程人才培养体系。拥有“控制科学与工程”一级学科博士授权点、“控制科学与工程”博士后流动站，是北京市一级重点学科。

The Automation discipline of North China Electric Power University, founded in 1958, is the earliest major of thermal measurement and automation in China, cultivating professionals of thermal detection and automation of power plants in China. The discipline is closely related to the needs of the development of China's electric power industry, and has made remarkable achievements in personnel training, scientific research and the transformation of scientific and technological achievements. After more than half a century of development, it has formed a sophisticated personnel training system of Control Science and Engineering. As a Beijing Municipal Primary Key Discipline, it has been authorized to award doctoral degrees of the first-level discipline of Control Science and Engineering, and has a post-doctoral research program of Control Science and Engineering.

二、培养目标

II. Training Objectives

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. 在控制科学与工程学科领域内掌握坚实宽广的基础理论和系统深入的专门知识，了解本学科专业的前沿动态，具有独立从事科学研究工作的能力，并要初步具有主持较大型科研、技术开发项目，或解决和探索经济、社会发展问题的能力，在科学或专门技术上做出创造性的成果，能够胜任本学科或相近学科的科研、教学和管理工作的。本学科博士学位获得者应具备如下能力：

2. Cultivate students to master solid and broad basic theories along with in-depth and systematic knowledge of Control Science and Engineering, to understand the professional and cutting-edge trends of this discipline; to equip students with the capacity of doing independent research and having a preliminary ability of conducting the relatively large-scale scientific research and technology development projects or the ability to solve and explore economics and social development issues, to make creative achievements in science or expertise, and to be qualified to undertake the scientific research, teaching and management of this discipline or related areas. Doctoral degree holders in this discipline shall have the following abilities:

(1) 具备良好的理工基础与人文素养，具有健全的人格和正确的价值观；

(1) Have a good foundation of science and technology and humanity attainment, and a sound personality and correct values;

(2) 掌握坚实宽广的基础理论和系统深入的专门知识，具有独立从事相关学科理论研究和解决复杂工程问题的能力；

(2) Master solid and broad basic theories along with in-depth and systematic knowledge, and have the ability to independently engage in theoretical research in related disciplines and solve complex engineering problems;

(3) 具有良好的团队合作精神与管理协调能力，具备社会责任感，遵守学术规范和工程职业道德；

(3) Have good team spirit and management coordination ability, have a sense of social responsibility, and abide by academic norms and engineering professional ethics;

(4) 能够跟踪本领域的前沿技术和能源电力相关行业国内外发展趋势，具备良好的主动发展意识、创新精神与自主终身学习能力；

(4) Be able to track the cutting-edge technology in this field and the development trend of industries related to energy and power at home and abroad, and have a good sense of active development, spirit of innovation and independent lifelong learning ability;

(5) 具有国际视野，具备良好的表达能力，能够熟练运用一门外国语进行学术论文写作和交

流。

(5) Have an international vision, have good expression skills, and be proficient in using a foreign language for academic paper writing and communication.

三、研究方向

III. Research Direction

华北电力大学控制科学与工程学科一级学科博士点下设六个二级学科：控制理论与控制工程，检测技术与自动化装置，模式识别与智能系统，网络信息安全，系统分析、运筹与控制，人工智能（交叉学科）。本学科按一级学科培养，主要研究方向如下：

There are six second-level disciplines under the first-level doctoral program of Control Science and Engineering in North China Electric Power University: Control Theory and Control Engineering, Detection Technology and Automation Devices, Pattern Recognition and Intelligent System, Network Information Security, System Analysis, Operations Research and Control, Artificial Intelligence (interdisciplinary training). The candidates of this discipline are all cultivated in the first-level discipline, and the main research directions are as follows:

1. 先进控制理论与应用
1. Theory and Application of Advanced Control
2. 发电过程检测、建模、仿真与控制
2. Detection, Modeling, Simulation and Control of Power Generation Process
3. 智能发电理论与系统
3. Theory and System of Intelligent Power Generation
4. 模式识别与机器学习
4. Pattern Recognition and Machine Learning
5. 故障诊断与智能运维
5. Fault Diagnosis and Intelligent Operation and Maintenance
6. 多智能体与网络化系统
6. Multi-Agent and Networked System
7. 泛在感知与智能检测
7. Ubiquitous Perception and Intelligent Detection
8. 智能机器人与无人系统
8. Intelligent Robot and Unmanned System
9. 网络信息安全
9. Network Information Security
10. 数据科学与技术

10. Data Science and Technology

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。导师是研究生培养第一责任人，要了解掌握研究生的思想状况，将专业教育与思想政治教育有机融合，既作学业导师，又作人生导师，严格要求学生遵守科学道德和学术规范。

1. The training of doctoral students implements supervisor responsibility system, if necessary, a secondary-supervisor or a steering group may be introduced. The supervisor is the person of primary responsibility for postgraduate training. The supervisor shall understand and master the ideological situation of postgraduates and organically integrate professional education with ideological and political education both as academic mentors and life mentors. The supervisor shall also strictly require students to abide by scientific ethics and academic norms.

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；并根据研究需要继续深入学习一些课程，在拓宽基础、加深专业、掌握学科发展前沿的基础上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 on scientific research work, with emphasis on cultivating the ability to independently engage in scientific research work and creative research work. Doctoral students should continue to study some courses in depth according to the needs of the research; moreover, they should learn the methods of creative research work and cultivate a rigorous scientific style on the basis of broadening the foundation, deepening the specialty and grasping the forefront of discipline development.

3. 博士生的培养可在校内进行，也可由国内、国际的高校以及科研院所联合培养。

3. 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

1. 留学生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。副导师及指导小组成员一般应具有博士学位或高级职称。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。

1. The training of international doctoral students implements supervisor responsibility system, if necessary, a secondary-supervisor or a steering group may be introduced. Generally, the secondary-supervisor and members of the steering group shall have doctoral degrees or senior

professional titles. When it comes to interdisciplinary training of doctoral students, a secondary-supervisor from relevant disciplines is required to assist in guiding the students.

2. 留学生博士生的培养以科学研究工作为主，重点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 international 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 thesis and the actual situation of the individual; learning how to carry out creative research work and cultivating rigorous scientific attitudes.

3. 留学生博士研究生培养可采取全日制培养方式。

3. The international doctoral students shall conduct their training program in full-time manner.

4. 留学生博士生可在校内攻读，也可由国内、国际上进行校际间的联合培养。

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

5. 留学生博士研究生学习年限一般为 3-4 年，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、报研究生院（筹）批准、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。

5. The duration of program of international doctoral students is generally 3-4 years. 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, and submitted to the Graduate School (in preparation) for approval and 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、课程设置与学分要求

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 19 学分，其中学位课 14 学分，必修环节 5 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 19 credits, including 14 credits for degree courses and 5 credits for required links. The specific requirements are as follows:

1. 学位课（不少于 14 学分），其中：

1. Degree courses (no less than 14 credits), of which:

(1) 公共课：10 学分。

(1) Public courses: 10 credits.

汉语综合（一）：4 学分（64 学时）

Chinese Comprehension (1): 4 credits (64 class hours)

汉语综合（二）：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)

(2) 基础理论课：2 学分；

(2) Basic theoretical courses: 2 credits;

(3) 专业核心课：2 学分。

(3) 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（5 学分），其中：

2. Required links (5 credits), including:

研读专业经典名著 1 学分。要求博士生在学习期间，须在导师的要求与指导下，研读各自专业的经典名著 1 至 2 本，完成后记 1 学分；

Professional Classics Studying: 1 credit. During their school period, doctoral students shall read and study 1-2 professional classic books of their majors as required and guided by their supervisor. They shall get 1 credit upon completion;

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，要求博士生在学习期间，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. Attending cutting-edge lectures and seminars is important for doctoral students to develop their comprehensive abilities and follow the frontier of their disciplines. During their school period, doctoral students shall attend at least 8 cutting-edge lectures and seminars in related research area determined by their supervisors. They shall 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，其中至少在本学科相关国际会议报告 1 次，完成后记 1 学分。

Doctor Forum: 1 credit. Doctoral students are required to give at least 2 academic reports, including giving at least 1 report at the relevant international conference of their disciplines. They shall get 1 credit upon completion.

3. 任选课:

3. Optional courses:

硕士阶段非本专业的博士生，应由导师指定补修若干本学科硕士阶段主干课程。补修课程不计入总学分。

Doctoral students who do not have related academic background in the major of their doctoral study shall study some core courses in the master training program of this discipline required by the supervisor. Supplementary courses are not included in the total credit.

具体课程设置见附表 1。

See Schedule 1 for the specific curriculum setting.

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 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，本学科的相关具体安排与要求如下：

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. Doctoral students usually take 2 years to complete their dissertations during the period of study. The doctoral dissertation is important supporting evidence which measures the quality of the cultivation outcomes and academic levels of the research. The thesis proposal, mid-term review, pre-defense of dissertation, examination of the qualification of thesis defense, etc. are important parts for the doctoral students training. The specific arrangements and requirements of this discipline are as follows:

1. 文献综述与选题报告

1. Literature review and thesis proposal

博士生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博士学位论文题目，选题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，博士开题时间一般最迟不超过博士入学后第 3 学期，开题时间距离申请答辩日期不少于 18 个月。

Doctoral students should determine the title of doctoral dissertation on the basis of understanding the current situation and development trends in this research field at home and

abroad, and the topic selection should reflect the frontier and advanced nature of the discipline field. The time for submitting the thesis proposal shall be determined by the supervisor according to doctoral students' progress. Generally, it shall be no later than the 3rd semester after admission and no less than 18 months 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。博士生在论文开题时须针对论文选题单独提交一份全面的文献综述报告（不少于 1 万字）。选题报告在二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进行评审。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，以保证课题的前沿性和创新性。

The doctoral dissertation topic selection report shall include literature review, topic selection and its significance, main research content, technical route, expected results and possible innovative points, etc. At the beginning of the thesis proposal, doctoral students are required to submit a comprehensive and detailed literature review report (no less than 10,000 words) for the selected topic of the dissertation. The topic selection report is carried out in a relatively intensive and open manner within the scope of the second-level discipline, and reviewed by the assessment team composed of 3-5 doctoral students' supervisors as the main body. The topic selection 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 topic of the degree thesis, the topic selection report should be carried out once again to ensure the frontier and innovation of the topic.

博士生进行论文开题报告之前，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，以保证博士学位论文选题的创新性。

Before carrying out the thesis proposal, doctoral students should, under the guidance of their supervisors, conduct the thesis novelty search work at the scientific and technological novelty search station recognized by the Ministry of Education, so as to ensure the innovation of doctoral dissertation topic.

2. 论文中期检查

2. Mid-term review of the thesis

学位论文实行中期检查制度。中期考核是检查研究生学位论文进展状况、帮助学生把握学位论文方向、提高学位论文质量的必要环节。学位论文中期检查应在开题一年后进行，考查小组应由 3-5 名教授（或具备副高职称的博导）组成，对研究生的综合能力、论文进展情况等进行全面考查。

A mid-term review system is adopted for degree thesis. The mid-term review is a necessary process to check the progress of master dissertation, keep students in the right direction and improve the quality of their dissertation. The mid-term review shall be conducted one year after the report of the thesis proposal. The review team shall be composed of three to five professors (or doctoral supervisors with the deputy senior title), and examine the comprehensive abilities of the postgraduates and the progress of the paper work comprehensively.

3. 科研成果的要求

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）、国际重要期刊（被 SCI 或 EI 收录，会议转期刊的除外）、CCF C 类及以上期刊/会议上发表 4 篇及以上学术论文（其中开源期刊文章不能超过 1 篇）；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），或被 SCI 收录的非开源期刊，或 CCF B 类及以上期刊/会议上。

① Before applying for thesis defense, doctoral students shall, 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 their dissertation work according

to the following requirements: the first publication affiliation shall be North China Electric Power University; at least 4 academic papers (no more than 1 open access journal paper is allowed) 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) / CCF Category C and above journals/conferences of the discipline; at least 2 of them shall be published in domestic authoritative academic journals (see the attached catalogs of authoritative journals) or non-open access journals included in SCI, or CCF Category B and above journals/conferences of this discipline.

② 博士生在申请学位论文答辩前以第一作者身份（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 SCI 1 区、IEEE 会刊、CCF A 类期刊/会议上发表 2 篇及以上高水平学术论文（非开源）。

② Before applying for thesis defense, doctoral students shall, 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 their thesis work according to the following requirements: the first publication affiliation shall be North China Electric Power University; at least 2 (non-open access) high-level academic papers shall be published in SCI Zone 1 journals, IEEE conference journals, or CCF Category A journals/conferences of this discipline.

注：为鼓励博士生发表高水平学术论文，发表在本学科 SCI 1 区、IEEE 会刊、CCF A 类期刊/会议的学术论文（非开源）如答辩前尚未检索，提供论文的 DOI 号即可；其他论文在答辩前必须正式发表，检索类论文还需提供相应的检索报告。

Note: To encourage doctoral students to publish high-level academic papers, if (non-open access) academic papers published in journals in SCI Zone 1, IEEE conference journals, CCF Category A journals/conferences of the discipline are not searchable before thesis defense, students can just provide the DOI numbers of the papers; other papers must be formally published before thesis defense, and searchable papers shall be provided with corresponding search reports.

(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账额不低于 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.

(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 dissertation, 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 dissertation

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。预答辩的目的在于进一步修改、完善博士学位论文，预答辩时间和方式自定。学位论文预答辩通过者，方可申请论文送审的资格审查。

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. The purpose of pre-defense is to further revise and improve the doctoral dissertation, and the time and method of pre-defense are self-determined. The students who pass the pre-defense can apply for the formal defense of dissertation.

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与论文选题报告;

(3) To complete the reports on novelty search and the topic selection;

(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 thesis publication and scientific research achievements;

(6) 通过学位论文的预答辩;

(6) To pass the pre-defense of the dissertation;

(7) 完成学位论文的撰写并通过学位论文撰写规范审查。

(7) To complete the dissertation and pass the review of the dissertation.

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实施细则》等相关规定执行。

Doctoral students can submit their degree theses for examination and make the theses 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*.

附表:

Schedule:

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	公共课	汉语综合 (1) Chinese Comprehension (1)	64	4.0	考试 Exam	1	

Degree courses (≥14 学分) (≥14 credits)	Public courses 10 学分 10 credits	中国概况 Introduction to China	32	2.0	考试 Exam	1	
		汉语综合 (2) Chinese Comprehension (2)	64	4.0	考试 Exam	2	
	基础理论课 Basic theoretical courses (≥2 学分) (≥ 2 credits)	现代数学基础与方法 Fundamentals and Methods of Modern Mathematics	48	3.0	考试 Exam	1	
		高等泛函分析 Advanced Functional Analysis	48	3.0	考试 Exam	1	
		高等数值分析 Advanced Numerical Analysis	48	3.0	考试 Exam	1	
	专业核心课 Specialized core courses (≥2 学分) (≥ 2 credits)	现代工程控制理论 Modern Engineering Control Theory	32	2.0	考试 Exam	1	
		非线性系统理论 Nonlinear System Theory	32	2.0	考试 Exam	1	
		智能控制理论及应用 Theory and Application of Intelligent Control	32	2.0	考试 Exam	1	
		现代检测技术 Modern Detection Technology	32	2.0	考试 Exam	1	后半学期 The second half of the semester
		模式识别方法论 Pattern Recognition Methodology	32	2.0	考试 Exam	1	
		信息安全原理及应用 Principle and Application of Information Security	32	2.0	考试 Exam	1	
		最优化计算方法及其应用 Optimization Calculation Method and Its Application	32	2.0	考试 Exam	1	后半学期 The second half of the semester
		大数据与智能计算 Big Data and Intelligent Computing	32	2	考试 Exam	1	
		智能机器人与无人系统 Intelligent Robot and Unmanned System	32	2	考试 Exam	1	
	智能发电概论 Introduction to Intelligent Power Generation	32	2	考试 Exam	1		
必修环节 Required links (5 学分) (5 credits)	研读专业经典名著 Professional Classics Studying		1.0	考查 Review of performance			
	文献综述与选题报告 Literature review and thesis proposal		2.0	考查 Review of performance			
	前沿讲座与专题讨论 Cutting-edge Lectures and Seminars	8 次 8 times	1.0	考查 Review of performance			
	博士论坛 Doctoral Forum	2 次 2 times	1.0	考查 Review of performance			

补修课程 Supplementary courses					附注一 Note 1
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附注一：对非本专业入学的博士生，应补学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 major when enrolled, he/she should make up for the main courses of this discipline in master stage designated by the supervisor.

学院学位评定分委员会审批意见（盖章）：

Approval Comments of the Academic Degree Evaluation Subcommittee of the School (seal):

签字：

Signature:

日期：

Date:

控制科学与工程一级学科博士研究生发表学术论文指定权威期刊目录
Catalogue of Authoritative Journals for Publishing Academic Papers by Doctoral Students
in the First-level Discipline of Control Science and Engineering

序号 S/N	刊物名称 Journal Name	期刊主管/ 主办单位 Departments in charge of journals/organizers
1	自动化学报 Acta Automatica Sinica	中国自动化学会 Chinese Association of Automation
2	中国电机工程学报 Proceedings of the Chinese Society for Electrical Engineering	中国电机工程学会 Chinese Society for Electrical Engineering
3	控制理论与应用 Control Theory and Applications	华南理工大学、中国科学院系统科学研究所 South China University of Technology, Institute of Systems Science of Chinese Academy of Sciences
4	控制与决策 Control and Decision	东北大学 Northeastern University
5	信息与控制 Information and Control	中国自动化学会、中国科学院沈阳自动化研究所 Chinese Association of Automation, Shenyang Institute of Automation of Chinese Academy of Sciences
6	仪器仪表学报 Chinese Journal of Scientific Instrument	中国仪器仪表学会 China Instrument and Control Society
7	计量学报 Acta Metrologica Sinica	中国计量测试学会 Chinese Society for Measurement
8	太阳能学报 Acta Energiae Solaris Sinica	中国太阳能学会 China Solar Energy Society
9	系统工程学报 Journal of Systems Engineering	中国系统工程学会 Systems Engineering Society of China
10	系统仿真学报	中国系统仿真学会、中国航天科工集团 706 所

	Journal of System Simulation	Chinese Association for System Simulation, Institute 706, the Second Academy of China Aerospace Science & Industry Corp.
11	模式识别与人工智能 Pattern Recognition and Artificial Intelligence	中国自动化学会会刊 Journal of Chinese Association of Automation
12	计算机学报 Chinese Journal of Computers	中国计算机学会 China Computer Federation
13	软件学报 Journal of Software	中国科学院软件研究所、中国计算机学会 Institute of Software of Chinese Academy of Sciences, China Computer Federation
14	计算机辅助设计与图形学学报 Journal of Computer-Aided Design and Computer Graphics	中国计算机学会 China Computer Federation
15	计算机研究与发展 Journal of Computer Research and Development	中国计算机学会 China Computer Federation
16	智能系统学报 CAAI Transactions on Intelligent Systems	中国人工智能学会、哈尔滨工程大学联合主办 Co-sponsored by Chinese Association for Artificial Intelligence and Harbin Engineering University
17	通信学报 Journal on Communications	中国通信学会 China Institute of Communications
18	电子学报 Acta Electronica Sinica	中国电子学会 Chinese Institute of Electronics
19	智能系统学报 CAAI Transactions on Intelligent Systems	中国人工智能学会和哈尔滨工程大学联合主办 Co-sponsored by Chinese Association for Artificial Intelligence and Harbin Engineering University
20	数学学报 Acta Mathematica Sinica	中国科学院数学与系统科学院数学所、中国数学会 Academy of Mathematics and Systems Science of Chinese Academy of Sciences, Chinese Mathematical Society
21	计算数学 Mathematica Numerica Sinica	中国科学院数学与系统科学院 Academy of Mathematics and Systems Science of Chinese Academy of Sciences
22	应用数学学报 Acta Mathematicae Applicatae Sinica	中国数学会、中国科学院数学与系统科学研究院主办 Co-sponsored by Chinese Mathematical Society and Academy of Mathematics and Systems Science of Chinese Academy of Sciences
23	中国科学 Science China	中国科学院 Chinese Academy of Sciences
24	中国工程科学 Strategic Study of CAE	中国工程院、高等教育出版社 Chinese Academy of Engineering, Higher Education Press
25	物理学报 Acta Physica Sinica	中国物理学会 China Physical Society
26	动力工程学报 Journal of Chinese Society of Power Engineering	中国动力工程学会 China Society of Power Engineering
27	工程热物理学报 Journal of Engineering Thermophysics	中国工程热物理学会、中国科学院工程热物理研究所 Chinese Society of Engineering Thermophysics, Institute of Engineering Thermophysics of Chinese Academy of Sciences
28	力学学报 Chinese Journal of Theoretical and Applied Mechanics	中国科学院、中国力学学会、中国科学院力学研究所 Chinese Academy of Sciences, Chinese Society of Theoretical and Applied Mechanics, Institute of Mechanics of Chinese Academy of Sciences
29	机械工程学报 Journal of Mechanical Engineering	中国机械工程学会 Chinese Mechanical Engineering Society
30	化工学报	中国化工学会和化学工业出版社

	CIESC Journal	Chemical Industry and Engineering Society of China, Chemical Industry Press
31	科学通报 Chinese Science Bulletin	中国科学院、国家自然科学基金委员会 Chinese Academy of Sciences, National Natural Science Foundation of China