计算机与人工智能学院

电子信息（计算机技术）(085404) 硕士留学研究生培养方案

Training Program for International Graduate Students Master of Electronic Information (Computer Technology) (085404)

授予学位类别：电子信息

专业学位类别代码及名称：0854 电子信息

专业学位领域代码及名称：085404 计算机技术

制订单位：计算机与人工智能学院

一、培养目标

培养从事计算机应用、数据分析、数据科学、软件工程、大型软件开发和设计等方面工作的高级专业人才。

（一）学习和了解中国文化及其国家特色；遵守中国、国际法律法规，树立科学发展观；有高尚的科学道德和良好的合作精神；热爱科学，遵纪守法，品行端正，能积极为国际现代化建设事业服务。熟悉中国历史、地理、社会、经济等中国国情和文化基本知识，了解中国政治制度和外交政策，理解中国社会主流价值观和公共道德观念，形成良好的法治观念和道德意识。

（二）具有计算机科学、信息处理、人工智能等领域坚实的基础理论和系统的专门知识，熟练掌握计算机科学的基本理论和方法、计算机应用技术和系统设计方法，具备大型软件与信息、控制系统的研究和设计能力，在计算机工程领域内具有独立从事计算机应用系统设计、实施、开发、工程管理等能力。

（三）具有团队合作精神和诚信意识，有较强的创新精神和创新能力。

I. TRAINING OBJECTIVES

The objective of the program is to train professionals in computer application, data analysis, data science, software engineering, and large-scale software development and design. During this process, students will:

1. Understand China's national conditions such as Chinese culture, history, society, and economy, and understand China's political system and foreign policy; Establish a scientific outlook on development and serve the cause of international modernization; Understand the mainstream values and public morals of Chinese society, have the concept of the rule of law and moral awareness and abide by the law.

2. Master the knowledge of fundamental theories and systems in the fields of computer science, information processing, artificial intelligence, etc.; Understand the fundamental theories and methodologies of computer science, computer application technology and system design; Have the research and design capability for large-scale software and information and control systems; Have the independent capability in computer application system design, implementation, development, project management, etc., in the field of

computer engineering.

3. Have teamwork spirit and credit awareness, and have a strong creative spirit and innovative ability.

二、类别领域简介与研究方向

学科包括以下研究方向：

（一）大数据可视分析

本研究方向以食品、金融和商业领域中的大数据为主要研究对象，综合运用统计学习、数据挖掘、可视化、人机交互、并行计算理论，重点研究多维数据、关系数据、时间序列数据、空间数据、文本数据等大规模数据的存储、表示和可视分析模型，并行处理算法，以及可视分析平台和工具的构建方法，解决食品安全、金融分析、商业运营中大数据的可视表示、交互分析和辅助决策问题。

（二）商业物联网

本研究方向以构建面向食品、金融、商业领域的物联网系统为目标，将领域信息传感设备及系统接入互联网，形成统一的平台，不但实现各种设备的无缝连接，以及人与环境之间的感知、沟通和对话，还要在人机与环境之间建立一种协调统一的关系，并在掌握领域数据基础上，开展相关应用。本方向涉及多个学术研究领域，包括传感器网络、无线移动计算、系统软件、嵌入式系统、环境感知计算、人机交互、数据信息处理、可信性和安全性等。

（三）数据挖掘与社会计算

本研究方向面向食品安全、金融、互联网及社会网络等领域，以海量数据为对象，以探索和发现数据中潜在的规律和知识为核心，以预测未来事件为目标，采用大数据、统计学习、多维分析、社会网络、自然语言处理等理论，重点研究大数据处理、精准推荐模型与算法、热点事件传播与预测、群体行为分析以及金融预测等核心科学问题。研究成果可以帮助政府、企业将海量数据转化为知识，服务于政府网络舆情管理；服务于企业提升关键绩效，增强综合竞争力的智慧和能力；服务于人类理解自身行为规律。主要包括：面向商业与金融领域的大数据分析与挖掘、面向食品安全信息的网络信息分析与挖掘、面向公共安全和舆情的社会计算。

（四）移动计算与云服务

移动计算与云服务是随着移动互联网、分布式计算等技术发展而兴起的新方向，主要研究计算机或其它智能终端设备在无线环境下的计算模式及资源共享问题。研究目标是将有用、准确、及时的信息以服务的方式按需提供给任何时间、任何地点的任何客户。本方向重点开展基于云的资源整合和业务协作模型、方法、技术以及软件平台和实际系统的研究，通过建立无线环境下领域信息化基础设施，实现资源无缝共享和应用即时协同。本方向是软件工程与分布式计算、移动通信的融合与延伸。

II. DISCIPLINE INTRODUCTION AND RESEARCH DIRECTION

The research directions of the program include:

1. Big Data and Visual Analysis

The research on big data in the field of food, business and finance as the main research objects, using the methods of statistical learning, data mining, visualization, human-computer interaction, parallel computing theory, focuses on the research of large-scale data storage, representation and visual analysis model the parallel processing algorithm, construction method and visual analysis platform and tools about

multidimensional data, relational data, time series data, spatial data, text data. The research solves the problem of the visual representation, interaction analysis and assistant decision making in the field of food safety, financial analysis, and business operation.

2. Commercial Internet of Things

The research goal is to construct Internet of Things system for the fields of food, finance and business, embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data, not only to achieve the seamless connection of various equipment, and between people and the environment perception, communication and dialogue, but also set up a kind of harmonious relationship between human and environment. This is the inter-discipline of wireless sensor networks, mobile computing, system software, embedded system, environment aware computing, human-computer interaction, data processing, information credibility and network safety etc.

3. Data Mining and Social Computing

This research area focuses on data mining of food security, financial, Internet, and social networks. In order to explorer data patterns and predict future events, statistical learning, multi-dimensional analysis theory, natural language processing and other large data processing methods are widely used.

4. Mobile Computing and Cloud Service

Mobile computing and cloud service is a new direction arising with the development of mobile internet and distributed computing technology. Research is focused on the computing models and resource sharing problems of computer or other intelligent terminal devices in a wireless environment. The ultimate goal is to be able to provide the useful, accurate and timely information as a service on demand of any customer at anytime and anywhere. The direction of research focuses on cloud resource integration and collaborative business models, methods, techniques and software platform and system. It is to achieve seamless sharing and instant collaboration application by establishing a wireless environment in the field of information technology infrastructure and resources. This direction is an integration and extension of software engineering, distributed computing and mobile communications.

三、学制和学习年限

学制为 3 年，学习年限最长不得超过 5 年。

III. LENGTH OF STUDY

This is a three-year degree. If necessary, the duration of the study could be extended to no more than five years.

四、课程设置与学分要求

课程类别	学分要求	课程类别	学分要求
公共课	14	基础课	6
专业课	6	选修课	≥4
必修环节	2	总学分	≥32

学分说明	1．必修环节为具体要求见六、必修环节。 2．攻读本专业学位的留学研究生总学分不得少于 32 学分。

留学研究生课程设置及学分要求

类别	课程编码	课程名称	学分	学时	开课学期	是否必修
公共课	085404IMG2001	中国概况	2	32	1	必修
	085404IMG2002	汉语（一级）	4	64	1	必修
	085404IMG2003	汉语（二级）	4	64	2	必修
	085404IMG2004	汉语（三级）	4	64	3	必修
	应修		14 学分			
基础课	085404IMJ2001	高级计算机图形学	2	32	3	必修
	085406IMJ2002	高级计算机网络	2	32	1	必修
	085404IMJ2002	机器学习	2	32	2	必修
	应修		6 学分			
专业课	085404IMZ2001	大数据处理技术	2	32	2	必修
	085406IMZ2001	物联网技术与信息融合	2	32	2	必修
	085404IMZ2002	数据科学与工程	2	32	3	必修
	应修		6 学分			
选修课	085404IMX2001	数据库与数据挖掘	2	32	1	选修
	085406IMX2001	Python 编程训练	2	32	1	选修
	085404IMX2002	深度学习	2	32	2	选修
	085404IMX2005	计算机科学前沿	2	32	3	必选
	085404IMX2003	信息可视化技术	2	32	3	选修
	085404IMX1004	科技论文写作	1	16	4	选修
	应修		≥4 学分			
课程总学分要求			≥30 学分			

IV. THE CURRICULUM AND CREDITS REQUIREMENT

Course Classification	Credits Requirement	Course Classification	Credits Requirement
Public Course	14	Basic Courses	6
Discipline Core Course	6	Electives	≥4
Required Components	2	Total Credits	≥32
Credit description	1. For the Required Components, please see “5.Required Components” for more details. 2. The total number of credits shall not be less than 32 credits.		

Course Classification	Course Code	Course Title	Credits	Course Hours	Semester	Compulsory /Elective

Public Courses	085404IMG2001	Chinese Culture	2	32	1	Compulsory
	085404IMG2002	HSK (Level I)	4	64	1	Compulsory
	085404IMG2003	HSK (Level II)	4	64	2	Compulsory
	085404IMG2004	HSK (Level III)	4	64	3	Compulsory
	Credits Requirement		14 Credits			
Basic Courses	085404IMJ2001	Advanced Computer Graphics	2	32	3	Compulsory
	085406IMJ2002	Advanced Computer Networks	2	32	1	Compulsory
	085404IMJ2002	Machine Learning	2	32	2	Compulsory
	Credits Requirement		6 Credits			
Discipline Core Course	085404IMZ2001	Big Data Processing	2	32	2	Compulsory
	085406IMZ2001	Internet of Things and information fusion	2	32	2	Compulsory
	085404IMZ2002	Data Science and Engineering	2	32	3	Compulsory
	Credits Requirement		6 Credits			
Major Elective Courses	085404IMX2001	Database and Data Mining	2	32	1	Elective
	085406IMX2001	Python Programming Training	2	32	1	Elective
	085404IMX2002	Deep Learning	2	32	2	Elective
	085404IMX2005	Computer Science Frontier	2	32	3	Elective
	085404IMX2003	Information Visualization	2	32	3	Elective
	085404IMX1004	Academic Writing	1	16	4	Elective
	Credits Requirement		≥4 Credits			
Total Credits			≥30 Credits			

五、必修环节

（一）学术活动（1 学分）

学生应在学习期间积极参加国际国内学术会议、学术论坛、学术报告，以及在国际学术会议上做口头报告等。学生需提交至少一次学术活动报告。

（二）专业实践（1 学分）

安排在第 6 学期，由实践导师指导调研，根据本专业的前沿研究方向进行选题，完成学时不少于 6 个月 144 学时的研究专题实践。学生需要上交实践报告，考核合格后获得学分。

V. REQUIRED COMPONENTS

1. Academic activities (1 credit)

Students should actively participate in academic activities including international or domestic academic conferences, seminars, academic reports, presentation in academic conferences, etc. Students are required to submit at least one academic activity report.

2. Professional practice (1 credit)

This professional practice is arranged in the sixth semester guided by a supervisor. The topic selection is to be aligned with cutting-edge research directions. The duration of this practice should be no less than 6 months and 144 hours. The student is required to submit a report for this practice, and the credit points will be granted if the report passes the assessment.

六、培养环节及学位论文

专业学位硕士研究生培养过程中相关环节及学位论文工作包括开题答辩、中期检查、科研成果审核，论文文字重复率检测、匿名评审、答辩。具体要求详见《北京工商大学专业学位硕士研究生学位论文管理办法》、《北京工商大学研究生学位论文文字重复率检测管理办法》、《北京工商大学博士、硕士学位授予办法》。

VI. TRAINING COMPONENTS AND REQUIREMENTS FOR THE DISSERTATION

The relevant procedures and thesis work involved in the training process for professional master's degree students include: proposal defense, mid-term examination, verification of research achievements, duplicate text similarity detection, double-blind review, and the final thesis defense. For specific requirements, please refer to the “Management Measures for Professional Master's Degree Theses of Beijing Technology and Business University”, “the Management Measures for Duplicate Text Detection in Graduate Theses of Beijing Technology and Business University”, “and the Regulations on the Conferment of Doctoral and Master's Degrees of Beijing Technology and Business University”

七、教学大纲

课程教学大纲内容包括课程编码、课程名称、学时、学分、教学目标、教学方式、考核方式、适用学科专业、先修课程、主要教学内容和学时分配、参考文献等。

VII. PROGRAM SYLLABUS

The content of the program syllabus includes the course code, course name, class hours, credits, teaching objectives, teaching methods, assessment methods, applicable disciplines, prerequisite courses, main teaching content and class hours allocation, references, etc.

八、授课语言

英文

VIII. LANGUAGE OF INSTRUCTION

English

电子信息（控制工程）(085406) 硕士留学研究生培养方案

Training Program for International Graduate Students Master of Electronic Information (Control Engineering) (085406)

授予学位类别：电子信息

专业学位类别代码及名称：0854 电子信息

专业学位领域代码及名称：085406 控制工程

制订单位：计算机与人工智能学院

一、培养目标

专业硕士研究生的培养必须坚持德、智、体全面发展的方针，在整个培养过程中应该强调基础理论和专业知识的学习，同时，强调工程能力的培养，重视综合素质、创新能力和创业精神的培养，提高分析问题和解决问题的能力。

（一）了解中国文化、历史、社会、经济等中国国情，了解中国政治制度和外交政策。树立科学发展观，为国际现代化建设事业服务。理解中国社会主流价值观和公共道德观念，具有法治观念和道德意识、遵纪守法。

（二）培养从事电子信息领域的基于计算机技术的自动控制系统设计与开发、智能信息处理等方面的高层次工程技术和工程管理人才。掌握控制工程、信息处理、人工智能等领域基础理论和专门知识；具有开发和应用物联网、信息处理系统、计算机网络的能力；能够胜任本学科相关领域的专题研究、工程项目开发设计和实施工作。

（三）具有团队合作精神和诚信意识，具有创新精神和创新能力。

I. TRAINING OBJECTIVES

Cultivation of professional graduate students adhere to the overall development of morality, intelligence, and sports. Throughout the training process, focus on fundamental theories and professional knowledge. At the same time, we emphasize the cultivation of engineering ability, comprehensive quality, innovation ability, and entrepreneurial spirit, and improve the ability to analyze and solve problems. During this process, students will:

1. Understand China's national conditions such as Chinese culture, history, society, and economy, and understand China's political system and foreign policy; Establish a scientific outlook on development and serve the cause of international modernization; Understand the mainstream values and public morals of Chinese society, have the concept of the rule of law and moral awareness and abide by the law.

2. Cultivate high-level engineering technology and engineering management talents engaged in the design and development of automatic control systems based on computer technology and intelligent

information processing in the field of electronic information. Master the knowledge of basic theories and systems in the fields of control science and technology, information processing, artificial intelligence, etc.; Have the knowledge ability to develop the Internet of Things technology, information processing system, and computer network; Be capable of special subject research and engineering implementation in related fields, and can be engaged in scientific research and actual engineering project development.

3. Healthy and positive, teamwork spirit and credit awareness, and have a strong creative spirit and innovative ability.

二、类别领域简介与研究方向

控制工程领域以控制论、信息论和系统论为基础，以工程、经济、社会等系统为对象，综合运用现代数学方法及计算机、网络、通信、检测等技术，研究系统的建模、分析、控制、设计和实现的理论、方法和技术，是面向现代工业、农业及其他社会经济等领域自动化、智能化、信息化需求的重要工程领域。北京工商大学电子信息（控制工程领域）专业是伴随着本校控制科学与工程学科的发展而建立的。近年来，本专业硕士领域逐渐形成以下三个主要培养方向：

（一）复杂系统建模与控制

本方向围绕工业生产、环境安全、物流系统中的复杂系统控制问题，综合运用智能控制、预测控制与优化控制等理论和方法，重点研究复杂系统建模、智能测控与预测预警技术，致力于实现面向管控一体的智能优化决策。主要研究内容包括数据驱动建模与系统辨识、先进控制策略及其工程实现、复杂系统优化调度与协同控制等。目前在轻工业生产过程智能控制、水环境智能建模与分析、食品安全预警应急防控等方面形成了特色与优势。

（二）现代测控技术与装置

本方向围绕基于物联网的检测仪表与智能化装置，综合运用信息技术、测控技术与光电检测等理论和方法，重点研究网络化测控融合、远程监测与软测量、食品与农产品品质快速无损检测等关键技术，致力于构建面向不同领域的智能测控系统。主要研究内容包括多传感器融合与传感器网络、工业过程参数软测量与在线预报、光谱/色谱分析、电子鼻/舌智能感知、嵌入式智能测控装置开发等。目前在工业互联网测控集成、水环境安全在线监测、轻工业生产过程智能测控、食品及农副产品品质无损判别等方面形成了特色与优势。

（三）智能感知与自主系统

本方向围绕跨领域的智能感知、分类与预测问题，综合运用综合运用模式识别、机器学习与多源信息融合等理论和方法，重点研究计算机视觉、光电无损检测信息处理、机器人感知与控制等技术，致力于提升智能系统在复杂场景中的自主感知与决策能力。主要研究内容包括图像与视频的获取处理与理解、机器学习与深度学习算法、多源异构数据融合与知识发现、机器人视觉 SLAM 与自主导航等。目前在食品安全无损检测信息处理、轻工业产品与农副产品品质特征识别、移动机器人运动感知与导航等方面形成了特色与优势。

II. DISCIPLINE INTRODUCTION AND RESEARCH DIRECTION

Control Engineering is an important engineering discipline that is based on control theory, information theory, and systems theory. Taking engineering, economic, social, and other complex systems as research

objects, it integrates modern mathematical methods with advanced technologies in computing, networking, communication, sensing, and measurement to investigate the theories, methodologies, and technologies related to system modeling, analysis, control, design, and implementation. It serves as a key engineering field supporting the development of automation, intelligence, and informatization in modern industries, agriculture, and other social and economic sectors.

The Electronic Information (Control Engineering) program at Beijing Technology and Business University (BTBU) was established alongside the development of the university's discipline of Control Science and Engineering. In recent years, the master's program in this field has gradually developed three major research directions as follows:

1. Complex System Modeling and Control

This research direction focuses on control problems of complex systems in industrial production, environmental safety, and logistics systems. By comprehensively applying theories and methodologies including intelligent control, predictive control, and optimal control, it mainly investigates technologies related to complex system modeling, intelligent measurement and control, and predictive warning and risk prevention, aiming to achieve intelligent optimization decision-making through integrated management and control.

The main research topics include:

Data-driven modeling and system identification;

Advanced control strategies and their engineering implementation;

Optimal scheduling and coordinated control of complex systems.

Currently, this research direction has developed distinctive strengths and advantages in areas such as:

Intelligent control of light industry production processes;

Intelligent modeling and analysis of water environmental systems;

Early warning, emergency response, and risk prevention technologies for food safety.

2. Modern Measurement, Control Technologies and Intelligent Devices

This research direction focuses on IoT-based measurement instruments and intelligent devices. By integrating theories and methodologies in information technology, measurement and control technology, and optoelectronic sensing, it mainly investigates key technologies including networked measurement and control integration, remote monitoring and soft sensing, and rapid non-destructive quality inspection of food and agricultural products, aiming to develop intelligent measurement and control systems for various application fields.

The main research topics include:

Multi-sensor fusion and sensor networks;

Soft sensing and online prediction of industrial process parameters;

Spectroscopic and chromatographic analysis technologies;

Intelligent sensing technologies based on electronic noses and electronic tongues;

Development of embedded intelligent measurement and control devices.

Currently, this research direction has developed distinctive strengths and advantages in areas such as:

Measurement and control integration for industrial Internet applications;

Online monitoring of water environmental safety;

Intelligent measurement and control of light industry production processes;

Non-destructive quality evaluation of food and agricultural products.

3. Intelligent Perception and Autonomous Systems

This research direction focuses on intelligent perception, classification, and prediction problems in interdisciplinary fields. By comprehensively applying theories and methods including pattern recognition, machine learning, and multi-source information fusion, it mainly investigates technologies such as computer vision, information processing for optoelectronic non-destructive inspection, and robotic perception and control, aiming to enhance the autonomous perception and decision-making capabilities of intelligent systems in complex environments.

The main research topics include:

Image and video acquisition, processing, and understanding;

Machine learning and deep learning algorithms;

Multi-source heterogeneous data fusion and knowledge discovery;

Robot visual SLAM and autonomous navigation.

Currently, this research direction has developed distinctive strengths and advantages in areas such as:

Information processing for non-destructive food safety inspection;

Quality feature recognition of light industrial products and agricultural products;

Motion perception and navigation of mobile robots.

三、学制和学习年限

本专业学位研究生学制 3 年，最长修业年限 5 年。

III. LENGTH OF STUDY

The normal study duration for this program is three years. And the maximum length is five years.

四、课程设置与学分要求

表 1 留学研究生课程总学分说明

课程类别	学分要求	课程类别	学分要求
公共课	14	基础课	≥4
专业课	6	选修课	≥6
必修环节	2	总学分	≥32

表 2 留学研究生课程设置及学分要求

类别	课程编码	课程名称	学分	学时	开课学期	是否必修
公共课	085406IMG2001	中国概况	2	32	1	必修
	085406IMG4002	汉语（一级）	4	64	1	必修

	085406IMG4003	汉语（二级）	4	64	2	必修
	085406IMG4004	汉语（三级）	4	64	3	必修
	应修		14 学分			
基础课	085406IMJ2001	控制系统仿真及应用	2	32	1	3 选 2
	085406IMJ2002	高级计算机网络	2	32	1	
	085406IMJ2003	线性控制系统	2	32	2	
	应修		≥4 学分			
专业课	085404IMJ2002	机器学习	2	32	2	必修
	085406IMZ2001	物联网技术与信息融合	2	32	2	必修
	085406IMZ2002	智能控制技术	2	32	2	必修
	应修		6 学分			
选修课	085404IMX2001	数据库与数据挖掘	2	32	1	6 选 3
	085406IMX2001	python 编程训练	2	32	1	
	085404IMX1004	科技论文写作	1	16	3	
	085404IMZ2001	大数据处理技术	2	32	2	
	085406IMX2002	深度学习	2	32	2	
	085406IMX2003	图像工程	2	32	2	
	应修		≥6 学分			
课程总学分要求			≥30 学分			

IV. THE CURRICULUM AND CREDITS REQUIREMENT

Table 1 Description of total credits

Course Classification	Credits Requirement	Course Classification	Credits Requirement
Public Course	14	Basic Courses	≥4
Discipline Core Course	6	Major Elective Courses	≥6
Required Components	2	Total Credits	≥32

Table 2 Curriculum and credit requirements

Course Classification	Course Code	Course Title	Credits	Course Hours	Semester	Compulsory /Elective
Public Courses	085406IMG2001	Chinese Culture	2	32	1	Compulsory
	085406IMG4002	HSK（Level I）	4	64	1	Compulsory
	085406IMG4003	HSK（Level II）	4	64	2	Compulsory
	085406IMG4004	HSK（Level III）	4	64	3	Compulsory
	Credits Requirement		14 Credits			
Basic Courses	085406IMJ2001	Simulation and Application of Control	2	32	1	Select 2 courses from

		System				3 courses
	085406IMJ2002	Advanced Computer Networks	2	32	1	
	085406IMJ2003	Linear Control System	2	32	2	
	Credits Requirement		≥4 Credits			
Discipline Core Courses	085404IMJ2002	Machine Learning	2	32	2	Compulsory
	085406IMZ2001	Internet of Things and information fusion	2	32	2	Compulsory
	085406IMZ2002	Intelligent Control Technology	2	32	2	Compulsory
	Credits Requirement		6 Credits			
Major Elective Courses	085404IMX2001	Database and Data Mining	2	32	1	Select 3 courses from 6 courses
	085406IMX2001	Python Programming Training	2	32	1	
	085404IMX1004	Science and Technology Essay Writing	1	16	3	
	085404IMZ2001	Big data processing	2	32	2	
	085406IMX2002	Deep Learning	2	32	2	
	085406IMX2003	Image Engineering	2	32	2	
	Credits Requirement		≥6 Credits			
Total Credits			≥30 Credits			

五、必修环节

（一）学术活动（1 学分）

包括参加国际国内学术会议、学术论坛、学术报告，以及在国际学术会议上做口头报告等。

（二）专业实践（1 学分）

留学生的实践教学应当在满足专业要求的同时，与留学生的职业规划相结合，适应国际化人才培养的需要。针对具体控制工程应用领域与任务选择专业实践内容，通过专业实习、开发应用系统、完成软、硬件设计等形式，完成智能系统控制技术、计算机应用技术的创新实践训练，提升专业硕士学生的工程实践能力。

V. REQUIRED COMPONENTS

1. Academic activities (1 credit)

Including participation in international and domestic academic conferences, academic forums, academic reports, and oral presentations at international academic conferences, etc.

2. Professional practice (1 credit)

The practical teaching of international students in China should meet the professional requirements and

be combined with the career planning of the international students to meet the needs of international talent training. Students should select professional practice content for control engineering application fields and complete innovative, practical training using intelligent system control and computer application technology. Professional engineering practice is improved through professional practice, developing application systems, and completing the software and hardware design.

六、培养环节及学位论文

留学研究生培养过程中相关环节及学位论文工作包括开题答辩、中期检查、科研成果审核，论文文字重复率检测、匿名评审、答辩。具体要求详见《北京工商大学博士研究生学位论文管理办法》、《北京工商大学来华留学研究生博士、硕士学位授予工作细则》。

VI. TRAINING COMPONENTS AND REQUIREMENTS FOR THE DISSERTATION

Related links and dissertation work in the training process of overseas graduate students include topic-opening defense, mid-term inspection, review of scientific research results, test of the repetition rate of thesis text, anonymous review and defense. For specific requirements, please refer to the "Administrative Measures for Doctoral Dissertations of Beijing Technology and Business University" and "Working Rules for Granting Doctorate and Master Degrees for Postgraduates of Beijing Technology and Business University (Trial).

七、教学大纲

课程教学大纲内容包括课程编码、课程名称、学时、学分、教学目标、教学方式、考核方式、适用学科专业、先修课程、主要教学内容和学时分配、参考文献等。

VII. PROGRAM SYLLABUS

The content of the program syllabus includes the course code, course name, class hours, credits, teaching objectives, teaching methods, assessment methods, applicable disciplines, prerequisite courses, main teaching content and class hours allocation, references, etc.

八、授课语言

英文

VIII. LANGUAGE OF INSTRUCTION

English

电子信息（人工智能）(085410) 硕士留学研究生培养方案

Training Program for International Graduate Students Master of Electronic Information (Artificial Intelligence) (085410)

授予学位类别：电子信息

专业学位类别代码及名称：0854 电子信息

专业学位领域代码及名称：085410 人工智能

制订单位：计算机与人工智能学院

一、培养目标

专业硕士研究生的培养必须坚持德、智、体全面发展的方针，在整个培养过程中强调基础理论和专业知识的学习同时，强调工程能力的培养，重视综合素质、创新能力和创业精神的培养，提高分析问题和解决问题的能力。

（一）了解中国文化、历史、社会、法律、中国政治制度和外交政策等中国国情，具备较好的中文书写、听说能力。树立科学发展观，为国际现代化建设事业服务。理解中国社会主流价值观和公共道德观念，具有法治观念和道德意识，遵纪守法。

（二）培养从事电子信息领域的人工智能技术、智能信息处理技术及其应用系统的设计、开发的高层次工程技术人才。掌握人工智能、控制工程、信息处理、计算机科学等领域基础理论和专门知识；具有开发和应用智能系统、物联网、信息处理系统的能力；能够胜任本学科相关领域的专题研究、工程项目开发设计和实施工作。

（三）身心健康，具有团队合作精神和诚信意识，具有国际视野，能进行跨文化交流，拥有自主终身学习能力。

I. TRAINING OBJECTIVES

Cultivation of professional graduate students must adhere to the overall development of morality, intelligence, and sports. Throughout the training process, focus on fundamental theories and professional knowledge. At the same time, we emphasize the cultivation of engineering ability, comprehensive quality, innovation ability, and entrepreneurial spirit, and improve the ability to analyze and solve problems. During this process, students will:

1. Understand China's national conditions such as Chinese culture, history, society, and economy, have good Chinese writing and communication skills, and understand China's political system and foreign policy; Establish a scientific outlook on development and serve the cause of international modernization; Understand the mainstream values and public morals of Chinese society, have the concept of the rule of law and moral awareness and abide by the law.

2. Cultivate high-level engineering and technical personnel engaged in the design and development of artificial intelligence technology, intelligent information processing technology, and their application systems in the field of electronic information. Master the basic theory and expertise in artificial intelligence, control engineering, information processing, and computer science etc.; Have the ability to develop and apply intelligent systems, Internet of Things, and information processing systems; Be competent in special research, engineering project development, design, and implementation in related fields of this discipline.

3. Physical and mental health, teamwork spirit and integrity awareness, international vision, cross-cultural communication, and independent lifelong learning ability.

二、类别领域简介与研究方向

人工智能领域以控制科学、计算机科学、脑科学与认知科学等为理论基础，致力于模拟、延伸和扩展人类智能，综合运用数学方法及机器学习、计算机视觉、自然语言处理等技术，研究智能信息的获取、处理、理解、决策与生成的理论、方法和技术，是面向各行业智能化转型升级需求的重要工程领域。北京工商大学电子信息（人工智能领域）专业依托控制科学与工程学科的发展而建设，近年来，本专业硕士领域逐渐形成以下三个主要培养方向：

（一）智能感知与机器视觉

本方向围绕多模态感知与计算机视觉，综合运用深度学习、图像处理与传感器融合等理论和方法，重点研究多模态数据协同感知、图像/视频的获取分析与识别技术，实现面向复杂场景的高精度智能感知。主要研究内容包括多传感器融合感知、图像与视频特征提取与理解、三维重建与视觉测量、细粒度视觉分类与异常检测等。目前在多传感器融合感知、大型场景与显微图像三维重建、细粒度纹理分类与缺陷检测、医学影像可视化分析等方面形成了特色与优势。

（二）数据智能与可信计算

本方向围绕多源异构数据的可信流通与智能处理，综合运用区块链、分布式计算、密码学与机器学习等理论和方法，结合标识解析与智能合约技术，重点研究数据的可信采集、安全存储、隐私保护与智能共享机制。主要研究内容包括区块链共识机制与智能合约、隐私计算与联邦学习、多源数据融合与知识发现等。目前在工业互联网数据可信流通、食品安全全链条追溯、智能金融风控与隐私计算等方面形成了特色与优势。

（三）边缘计算与智能系统

本方向围绕边缘计算与智能无人系统，综合运用边缘智能、状态估计、深度学习与信息融合等理论和方法，重点研究端边云协同的高效计算架构、复杂环境下无人系统的环境感知与自主决策技术，以及智能化装备的系统集成。主要研究内容包括边缘计算架构与端边云协同计算、无人系统智能感知与建模、路径规划与任务决策、健康评估与容错控制等。目前在端边云协同智能计算、无人系统智能感知与建模、智能化装备集成等方面形成了特色与优势。

II. DISCIPLINE INTRODUCTION AND RESEARCH DIRECTION

Artificial Intelligence (AI) is an important engineering field that is grounded in control science, computer science, brain science, and cognitive science. It aims to simulate, augment, and extend human intelligence by integrating mathematical methods with advanced technologies such as machine learning,

computer vision, and natural language processing. AI investigates the theories, methodologies, and technologies for the acquisition, processing, understanding, decision-making, and generation of intelligent information, and serves as a key engineering discipline supporting intelligent transformation and upgrading across various industries.

The Electronic Information (Artificial Intelligence) program at Beijing Technology and Business University (BTBU) is developed based on the advancement of the university's discipline of Control Science and Engineering. In recent years, the master's program in this field has gradually developed three major research directions as follows:

1. Intelligent Perception and Machine Vision

This research direction focuses on multimodal perception and computer vision. By comprehensively applying theories and methodologies including deep learning, image processing, and sensor fusion, it mainly investigates technologies for collaborative perception of multimodal data, image/video acquisition, analysis, and recognition, aiming to achieve high-precision intelligent perception in complex environments.

The main research topics include:

Multi-sensor fusion-based perception;

Image and video feature extraction and semantic understanding;

Three-dimensional reconstruction and visual measurement;

Fine-grained visual classification and anomaly detection.

Currently, this research direction has developed distinctive strengths and advantages in areas such as:

Multi-sensor fusion perception;

Three-dimensional reconstruction of large-scale scenes and microscopic images;

Fine-grained texture classification and defect detection;

Medical image visualization and intelligent analysis.

2. Data Intelligence and Trusted Computing

This research direction focuses on trusted circulation and intelligent processing of multi-source heterogeneous data. By comprehensively applying theories and methodologies including blockchain, distributed computing, cryptography, and machine learning, together with technologies such as identification and resolution systems and smart contracts, it mainly investigates mechanisms for trusted data acquisition, secure storage, privacy protection, and intelligent data sharing.

The main research topics include:

Blockchain consensus mechanisms and smart contracts;

Privacy-preserving computing and federated learning;

Multi-source data fusion and knowledge discovery.

Currently, this research direction has developed distinctive strengths and advantages in areas such as:

Trusted data circulation in industrial Internet environments;

Full-chain traceability and intelligent supervision of food safety;

Intelligent financial risk control and privacy-preserving computation.

3. Edge Computing and Intelligent Systems

This research direction focuses on edge computing and intelligent unmanned systems. By comprehensively applying theories and methodologies including edge intelligence, state estimation, deep learning, and information fusion, it mainly investigates efficient computing architectures based on end-edge-cloud collaboration, environmental perception and autonomous decision-making technologies for unmanned systems in complex environments, and system integration of intelligent equipment.

The main research topics include:

Edge computing architectures and end-edge-cloud collaborative computing;

Intelligent perception and modeling of unmanned systems;

Path planning and task decision-making;

Health assessment and fault-tolerant control.

Currently, this research direction has developed distinctive strengths and advantages in areas such as:

Intelligent computing based on end-edge-cloud collaboration;

Intelligent perception and modeling of unmanned systems;

Integration and application of intelligent equipment.

三、学制和学习年限

本专业学位研究生学制 3 年，最长修业年限 5 年。

III. LENGTH OF STUDY

The normal study duration for this program is three years. And the maximum length is five years.

四、课程设置与学分要求

表 1 留学研究生课程总学分说明

课程类别	学分要求	课程类别	学分要求
公共课	14	基础课	≥4
专业课	6	选修课	≥6
必修环节	2	总学分	≥32

表 2 留学研究生课程设置及学分要求

类别	课程编码	课程名称	学分	学时	开课学期	是否必修
公共课	085410IMG2001	中国概况	2	32	1	必修
	085410IMG4002	汉语（一级）	4	64	1	必修
	085410IMG4003	汉语（二级）	4	64	2	必修
	085410IMG4004	汉语（三级）	4	64	3	必修
	应修		14 学分			
基础课	085410IMJ2001	模式识别与神经网络	2	32	1	必修
	085404IMJ2002	机器学习	2	32	2	必修
	应修		4 学分			

专业课	085404IMX2002	深度学习	2	32	2	必修
	085406IMZ2001	物联网技术与信息融合	2	32	2	必修
	085406IMJ2002	高级计算机网络	2	32	1	必修
	应修		6 学分			
选修课	085404IMX2001	数据库与数据挖掘	2	32	1	6 选 3
	085406IMX2001	python 编程训练	2	32	1	
	085406IMJ2001	控制系统仿真及应用	2	32	1	
	085404IMZ2001	大数据处理技术	2	32	2	
	085406IMZ2002	智能控制技术	2	32	2	
	085406IMX2003	图像工程	2	32	2	
	应修		≥6 学分			
课程总学分要求			≥30 学分			

IV. THE CURRICULUM AND CREDITS REQUIREMENT

Table 1 Description of total credits

Course Classification	Credits Requirement	Course Classification	Credits Requirement
Public Course	14	Basic Courses	4
Discipline Core Course	6	Major Elective Course	≥6
Required Components	2	Total Credits	≥32

Table 2 Curriculum and credit requirements

Course Classification	Course Code	Course Title	Credits	Course Hours	Semester	Compulsory/ Elective
Public Courses	085410IMG2001	Chinese Culture	2	32	1	Compulsory
	085410IMG4002	HSK（Level I）	4	64	1	Compulsory
	085410IMG4003	HSK（Level II）	4	64	2	Compulsory
	085410IMG4004	HSK（Level III）	4	64	3	Compulsory
	Credits Requirement		14 Credits			
Basic Courses	085410IMJ2001	Pattern Recognition and Neural Networks	2	32	1	Compulsory
	085404IMJ2002	Machine Learning	2	32	2	Compulsory
	Credits Requirement		4 Credits			
Discipline Core Courses	085404IMX2002	Deep Learning	2	32	2	Compulsory
	085406IMZ2001	Internet of Things and information fusion	2	32	2	Compulsory
	085406IMJ2002	Advanced Computer Networks	2	32	1	Compulsory

	Credits Requirement		6 Credits			
Major Elective Courses	085404IMX2001	Database and Data Mining	2	32	1	Select 3 courses from 6 courses
	085406IMX2001	Python Programming Training	2	32	1	
	085406IMJ2001	Simulation and Application of Control System	2	32	1	
	085404IMZ2001	Big data processing	2	32	2	
	085406IMZ2002	Intelligent Control Technology	2	32	2	
	085406IMX2003	Image Engineering	2	32	2	
	Credits Requirement		≥6 Credits			
Total Credits			≥30 Credits			

五、必修环节

（一）学术活动（1 学分）

包括参加国际国内学术会议、学术论坛、学术报告，以及在国际学术会议上做口头报告等。

（二）专业实践（1 学分）

留学生的实践教学由导师负责，应当在满足专业要求的同时，与留学生的职业规划相结合，适应国际化人才培养的需要。针对具体应用领域与任务选择专业实践内容，通过专业实习、开发应用系统、完成软、硬件设计等形式，完成人工智能技术的创新实践训练，提升专业硕士学生的工程实践能力。

V. REQUIRED COMPONENTS

1. Academic activities (1 credit)

Including participation in international and domestic academic conferences, academic forums, academic reports, and oral presentations at international academic conferences, etc.

2. Professional practice (1 credit)

The practical teaching of international students is under the tutor's responsibility, which should be combined with the career planning of international students while meeting the professional requirements to meet the needs of international talent training. Students can select professional practice content based on application fields and tasks. The engineering practice ability of professional master students is improved by completing the innovative practice training through professional practice, developing application systems, completing the software, hardware design, etc.

六、培养环节及学位论文

留学研究生培养过程中相关环节及学位论文工作包括开题答辩、中期检查、科研成果审核，论文文字重复率检测、匿名评审、答辩。具体要求详见《北京工商大学博士研究生学位论文管理办法》、《北京工商大学来华留学研究生博士、硕士学位授予工作细则》。

VI. TRAINING COMPONENTS AND REQUIREMENTS FOR THE DISSERTATION

Related links and dissertation work in the training process of overseas graduate students include topic-opening defense, mid-term inspection, review of scientific research results, test of the repetition rate of thesis text, anonymous review and defense. For specific requirements, please refer to the "Administrative Measures for Doctoral Dissertations of Beijing Technology and Business University" and "Working Rules for Granting Doctorate and Master Degrees for Postgraduates of Beijing Technology and Business University (Trial).

七、教学大纲

课程教学大纲内容包括课程编码、课程名称、学时、学分、教学目标、教学方式、考核方式、适用学科专业、先修课程、主要教学内容和学时分配、参考文献等。

VII. PROGRAM SYLLABUS

The content of the program syllabus includes the course code, course name, class hours, credits, teaching objectives, teaching methods, assessment methods, applicable disciplines, prerequisite courses, main teaching content and class hours allocation, references, etc.

八、授课语言

英文

VIII. LANGUAGE OF INSTRUCTION

English

机械（机械工程）(085501) 硕士留学研究生培养方案
Training Program for International Graduate Students
Master of Mechanical Engineering (085501)

授予学位类别：机械
专业学位类别代码及名称：0855 机械
专业学位领域代码及名称：085501 机械工程
制订单位：计算机与人工智能学院

一、培养目标

本专业培养的留学生应当熟悉中国历史、地理、社会、经济等中国国情和文化基本知识，热爱中国，了解中国政治制度和外交政策，理解中国社会主流价值观和公共道德观念，形成良好的法治观念和道德意识。能从事机械工程领域的研究、开发和设计等方面工作的高级专业人才。能扎实地掌握机械工程领域的基础知识和宽口径的专业知识，掌握现代机械设计理论和方法、现代制造技术及相关的试验、分析和维修理论及技术；具有较高的综合素质和创新能力，具有独立从事新产品开发设计、生产工艺设计、生产设备管理及使用维修能力，能为中外文化交流做出贡献。

I. TRAINING OBJECTIVES

International students trained in this major should be familiar with China's history, geography, society, economy and other basic knowledge of China's national conditions and culture, love China, understand China's political system and foreign policy, understand China's mainstream values and public morality, and form a good sense of rule of law and morality. Our objective is to train senior professionals for design, research and development in mechanical engineering. The professionals should be able to grasp the fundamental knowledge and broad professional knowledge in mechanical engineering, and modern theory and method of mechanical design, and modern technology of production, and related theory and technology for testing, analyzing and repairing. They should have higher comprehensive quality and innovative spirit, and also have the ability to perform research and development of new product, and work out production process, and manage and operate and repair equipment independently.

二、学科简介与研究方向

北京工商大学机械工程学科源于 1958 年的北京轻工业学院机械系，1981 年开始招收硕士研究生，2010 年开始招收培养全日制工程硕士专业学位研究生。本学科是国内较早培养轻工机械领域硕士研究生的高校之一，多年来培养了大批优秀的轻工机械领域的优秀人才，在轻工及食品加工及食品机械领域发挥着重要的作用，部分毕业生已经在啤酒灌装机械、缝制机械等领域成为领军学者。

本学科现有专任教师 50 人，其中教授 9 人，副教授 35 人，硕士生导师 36 人，45 名教师具有博士学位，占比 90%，25 名教师具有海外经历，占比 50%，是一支具有丰富的科研实践能力和高素质

的研究生导师队伍。

本专业领域针对机械工程的基础理论、基本方法、机械工程设计、制造及应用等方面进行科学研究和人才培养工作。主要包括以下 6 个研究方向。

（一）计算机辅助工程

主要研究领域为计算机技术的工程技术研究，机械创新设计与有限元计算分析，机械振动与噪声测试与分析，计算机辅助设计与制造、图像处理技术。重点研究机械工程各个生产环节的性能与安全可靠性分析，为机械产品的未来工作状态和运行行为进行模拟仿真与预测。

（二）食品加工与食品机械

主要研究领域为食品加工的原理和方法，基于现代设计理论和方法的食品机械设计。重点研究食品加工机理与方法、食品机械的设计原则、组成原理、结构特征，并采用先进的分析手段，通过计算机建模对机械系统进行仿真分析和研究，为食品机械的加工制作提供依据。

（三）轻工机械自动化设计及理论

主要研究领域为轻工机械自动化现代设计理论及轻工机械自动化先进传动技术。重点研究新型传动机构、轻工机械动力传动的节能与环保、轻工业机器人开发与应用研究、机器人新机型、仿生机械研究等。

（四）智能制造技术

主要研究领域为先进制造的理论和方法以及轻工机械和产品设计和制造的先进技术。重点研究包括加工制造中的逆向工程、3D 打印技术、轻工产品异型零件精确加工、动态检测、集成 CAD/CAM 系统、加工检测数据处理和网络控制、先进复合材料在轻工和食品机械及产品中的加工方法和应用等。

（五）轻工机械设备检测与控制

主要研究领域为轻工机电系统检测与控制的理论和方法以及声、光、电与轻工机械相互结合的机电一体化系统。重点研究传感器原理及测试技术、信号处理、计算机辅助检测与控制、视频检测及图像处理技术、轻工机械噪声测量与控制、计算机接口技术、智能控制理论与技术、数字控制技术和数控设备、PLC 控制及其总线技术等。

（六）汽车电子

主要研究领域为基于汽车结构的汽车电子控制技术及交通控制方法。重点研究汽车驱动理论和控制技术、汽车制动力分配控制理论和控制技术、汽车 ABS 控制系统性能检测原理和方法、汽车动力学特征建模、系统仿真和检测、汽车 ECU 模拟检测原理和方法、智能交通系统控制理论和技术等。

II. DISCIPLINE INTRODUCTION AND RESEARCH DIRECTION

The Department of Mechanical Engineering of Beijing Technology and Business University originated from the Mechanical Department of Beijing Institute of Light Industry in 1958. It began to enroll graduate students in 1981, and began to enroll and train full-time engineering master degree graduates in 2010. This subject is one of the earliest domestic universities to train postgraduates in the field of light industry machinery. Over the years, it has trained a large number of outstanding talents in the field of light industry machinery. It has played an important role in the field of light industry and food processing and food machinery. Graduates have become leading scholars in beer filling machinery, sewing machinery and other

fields.

There are 53 full-time teachers in this discipline, including 9 professors,33 associate professors, 34 master tutors, and 47 teachers with doctorate degrees, accounting for 90.6%.

The research is involved with basic theory and engineering application of mechanical design, and production, and process control of machine in mechanical engineering. It mainly includes six research areas described as follows.

2.1 Computer-aided engineering

The computer technology is applied to analyze and study the mechanical system in this area. It mainly includes engineering technology research of computer technology, mechanical innovative design and Finite Element Analysis, and mechanical vibration and noise testing & analyzing, and computer-aided design and manufacturing, and graphic processing technology. It focuses on the performance and safety reliability analysis of each production link of mechanical engineering to simulate and predict the future working state and operation behavior of mechanical products.

2.2 Food processing and food machinery

The main research areas are the principle and method of food processing, food machinery design based on modern design theory and method. It mainly includes food processing technology and principle and application, and design principle and composition and structural character of food machine, and simulating analysis of food machinery system.

2.3 Design & theory of automatic machine for light industry

The main research areas are modern design theory of light industry automatic machinery and advanced transmission technology of light industry automatic machinery. Focus on the research of new transmission mechanism, energy saving and environmental protection of light industrial machinery power transmission, development and application research of light industrial robots, new robot models, bionic machinery research, etc.

2.4 Intelligent manufacturing technology

The main research areas are the theory and methods of advanced manufacturing, as well as advanced technologies in the design and manufacture of light industrial machinery and products. Key research includes reverse seeking in processing and manufacturing, 3D printing technology, precise processing of special-shaped parts of light industrial products, dynamic inspection, integrated CAD/CAM system, data processing and network control of processing inspection, advanced composite materials in light industry and food machinery and products processing methods and applications, etc.

2.5 Testing and control of light machinery and equipment

The main research areas are the theory and method of light industry electromechanical system detection and control, and the electromechanical integration system combining sound, light, electricity and light industry machinery. Focus on the research of sensor principle and test technology, signal processing, computer-aided detection and control, video detection and image processing technology, light industrial machinery noise measurement and control, computer interface technology, intelligent control theory and

technology, digital control technology and numerical control equipment, PLC Control and its bus technology, etc.

2.6 Vehicle electronics

Composition and control and application of vehicle electronic system are studied in this area. It mainly includes driving theory and control technology of environmental protecting and energy saving vehicle, and control theory and technology of braking force distribution of vehicle, and principle and method of performance testing of vehicle ABS control system, and modeling of vehicle dynamics characteristics, and system simulating and testing, and testing principle and method of vehicle ECU simulation, and theory and technology of intelligent traffic system control.

三、学制和学习年限

本专业学位研究生学制 3 年，最长修业年限 5 年。

III. LENGTH OF STUDY

The normal study duration for this program is three years. And the maximum length is five years.

四、课程设置与学分要求

课程类别	学分要求	课程类别	学分要求
公共课	14	基础课	≥4
专业课	≥4	选修课	≥6
必修环节	2	总学分	≥30

类别	课程编码	课程名称	学分	学时	开课学期	是否必修
公共课	085501IMG2001	中国概况	2	32	1	必修
	085501IMG2002	汉语（一级）	4	64	1	必修
	085501IMG2003	汉语（二级）	4	64	2	选修
	085501IMG2004	汉语（三级）	4	64	3	必修
	应修		14 学分			
基础课	085501IMJ2001	弹性力学	2	32	1	3 选 2
	085501IMJ2002	精密测量与测试技术	2	32	1	
	085501IMJ2003	机电控制技术	2	32	1	
	应修		≥4 学分			
专业课	085501IMZ2001	有限元分析	2	32	2	4 选 2
	085501IMZ2002	机器人机构学	2	32	2	
	085501IMZ2003	嵌入式计算机控制技术	2	32	2	
	085501IMZ2004	机械工程信号处理	2	32	2	
	应修		≥4 学分			
选修课	085501IMX2001	食品机械与工程	2	32	1	6 选 3

	085501IMX2002	食品装备与过程控制	2	32	1	
	085501IMX2003	计算机辅助设计与制造	2	32	2	
	085501IMX2004	现代制造工程	2	32	2	
	085501IMX2005	智能机器人技术	2	32	2	
	085501IMX2006	振动与模态分析	2	32	2	
	应修		≥6 学分			
课程总学分要求			≥28 学分			

说明：同学历留学生需从材料力学、理论力学、机械原理、机械设计 4 门课中补修 2 门课程，不计入学分。

IV. THE CURRICULUM AND CREDITS REQUIREMENT

Course Classification	Credit Requirement	Course Classification	Credit requirement
Public Courses	14	Basic Courses	≥4
Discipline Core Courses	≥4	Major Elective Courses	≥6
Required Components	2	Total Credits	≥30

Course Classification	Course Code	Course Title	Credits	Course Hours	Semester	Compulsory/ Elective
Public Courses	085501IMG2001	Chinese Culture	2	32	1	Compulsory
	085501IMG4002	HSK(Level I)	4	64	1	Compulsory
	085501IMG4003	HSK(Level II)	4	64	2	Compulsory
	085501IMG4004	HSK(Level III)	4	64	3	Compulsory
	Credits Requirement		14 Credits			
Basic Courses	085501IMJ2001	Elastic Mechanics	2	32	1	Select two courses from three courses
	085501IMJ2002	Technology of Precise Measurement & Testing	2	32	1	
	085501IMJ2003	Technology of Electromechanical Control	2	32	1	
	Credits Requirement		≥4 Credits			
Discipline Core Courses	085501IMZ2001	Finite Element Analysis	2	32	2	Select two courses from four courses
	085501IMZ2002	Mechanism of Robot	2	32	2	
	085501IMZ2003	Control Technology of Embedded Computer	2	32	2	
	085501IMZ2004	Signal Processing in Mechanical Engineering	2	32	2	
	Credits Requirement		≥4 Credits			

Major Elective Courses	085501IMX2001	Food Machinery & Engineering	2	32	1	Select three courses from six courses
	085501IMX2002	Food Equipment & Process Control	2	32	1	
	085501IMX2003	CAD&CAM	2	32	2	
	085501IMX2004	Modern Manufacturing Engineering	2	32	2	
	085501IMX2005	Technology of Intelligent Robot	2	32	2	
	085501IMX2006	Vibration and Modal Analysis	2	32	2	
	Credits Requirement		≥6 Credits			
Total Credits			≥28 Credits			

五、必修环节

（一）学术活动（1 学分）

包括参加国际国内学术会议、学术论坛、学术报告，以及在国际学术会议上做口头报告，或在学科内做学术演讲等。

（二）专业实践（1 学分）

“来华留学生的实践教学应当在满足专业要求的同时，与来华留学生的职业规划相结合，适应国际化人才培养的需要”，留学生在读期间，应参加实验室建设等相关工作，并参加学科或实验室内的学术交流活动。

V. REQUIRED COMPONENTS

1.Academic activities（1 Credit）

It includes participating in international and domestic academic conferences, academic forums, academic reports, and making oral reports at international academic conferences, etc. Each discipline should formulate assessment standards according to the actual situation.

2.Professional practice（1 Credit）

"The practical teaching of foreign students in China should meet the professional requirements, and be combined with the career planning of foreign students in China to meet the needs of international talent training." During their studies, foreign students should participate in laboratory construction and other related work, and participate in disciplines or academic exchange activities in the laboratory.

六、培养环节及学位论文

留学研究生培养过程中相关环节及学位论文工作包括开题答辩、中期检查、科研成果审核，论文文字重复率检测、匿名评审、答辩。具体要求详见《北京工商大学来华留学研究生博士、硕士学位授予工作细则》等学校相关文件。

VI. TRAINING COMPONENTS AND REQUIREMENTS FOR THE DISSERTATION

The relevant links and the thesis work in the process of cultivating overseas graduate students include thesis defense, mid-term inspection, scientific research results review, thesis text repetition rate detection, anonymous review, and defense. For specific requirements, please refer to "Working Rules for the Awarding of Doctoral and Master Degrees of Beijing International Business University for Studying in China (Trial)" and other relevant documents.

七、教学大纲

课程教学大纲内容包括课程编码、课程名称、学时、学分、教学目标、教学方式、考核方式、适用学科专业、先修课程、主要教学内容和学时分配、参考文献等。

VII. PROGRAM SYLLABUS

The content of the program syllabus includes the course code, course name, class hours, credits, teaching objectives, teaching methods, assessment methods, applicable disciplines, prerequisite courses, main teaching content and class hours allocation, references, etc.

八、授课语言

英文

VIII. LANGUAGE OF INSTRUCTION

English