



北京航空航天大学
BEIHANG UNIVERSITY

Doctoral Program for International Postgraduates

Mechanical Manufacture and Automation

机械制造及其自动化专业简章

Qualification

The applicant is expected to study hard, observe the Chinese laws and the regulations of Beihang University.

The applicant should have a master's degree or have the equivalent educational background of a master's degree.

The applicant should be under the age of 40 in general.

The applicant should have a good command of English and have the ability to take courses in English or Chinese.

Training Goals

To have firm and comprehensive foundation in theories and systematic and professional knowledge in the discipline concerned.

To have the capability to complete scientific research work independently.

To conduct original research in science and/ or technology.

Research Fields

- Digital Manufacturing Technology and Equipment
- Advanced Manufacturing Theory and New Method
- Modern Mechanical Design Theory and Method
- Computer Graphics Technology
- Advanced Robot Technology

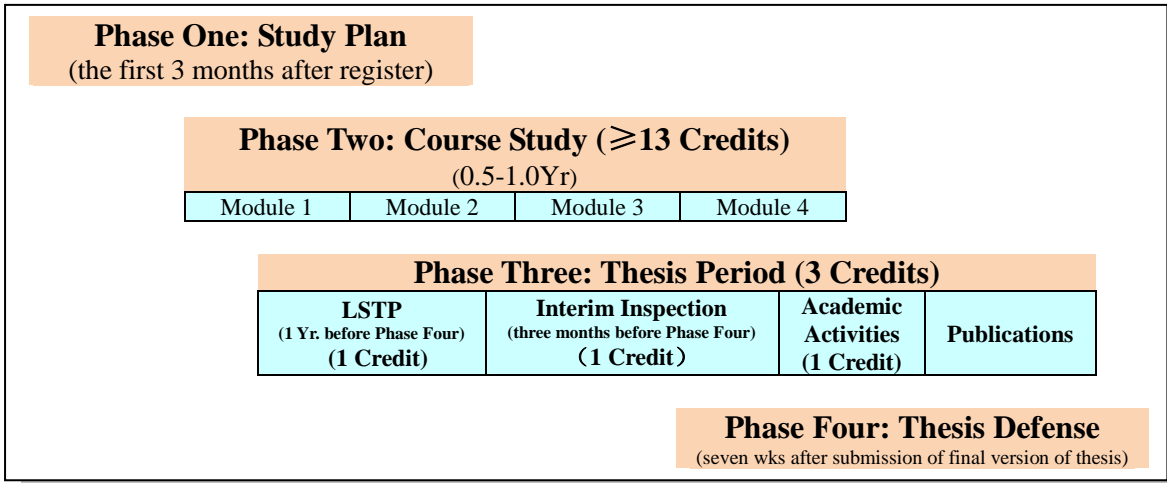
Study Periods

3-4 years.

Program Procedures

There are four Key Stages for doctoral and master programs. They are Training Plan (Stage One), Course Study (Stage Two), Thesis Period (Stage Three), and Thesis Defense (Stage Four).

To ensure the quality of study, the supervisor or the panel headed by the supervisor has the responsibility to supervise his/ her international postgraduate, including making the training plan, selecting the research project, conducting scientific research, writing thesis and organizing the final degree defense.



(LSTP: Literature Survey and Thesis Proposal)

Course Catalogue

Module 1: Language and Culture 语言和文化类课程	
	253101: Chinese 汉语 (3 Credits) 253103: Introduction to China 中国概况 (1 Credits)
Module 2: Mathematics 数学类课程	
	253201: Theory of Matrix 矩阵理论 (3 Credits) 253202: Numerical Analysis 数值分析 (3 Credits) 253203: Differential Equations and Dynamics System 微分方程与动力系统 (3 Credits) 253204: Fractals and Wavelets 分形与小波分析 (3 Credits) 253205: Probability and Statistics 概率统计 (3 Credits)
Module 3: Major Core Courses 专业核心课程	
	Module 3.1 Thesis Writing 科技论文写作
	253804: Scientific Thesis Writing (1Credit)
	Module 3.2 Major Core Courses 专业核心课
	<ul style="list-style-type: none"> ● Forum of the Development of Mechanical Engineering Science 机械工程学科前沿讲座 (1 Credit) ● Advanced Manufacturing Technology and Systems 先进制造技术与系统 (2 Credits) ● Geometrical Product Specification for Digital Manufacturing 数字化制造的产品几何定义规范 (2 Credits) ● Intelligent Optimization Computing 智能优化计算 (2 Credits) ● Modeling and Simulation for Manufacturing Systems 制造系统建模与仿真 (2 Credits) ● Mechanical system dynamics 机械系统动力学 (2 Credits) ● Modern Mechatronic Control 现代机电控制 (2 Credits) ● Modern Product Design Methodology 现代产品设计方法学 (2 Credits)

	<ul style="list-style-type: none"> ●Principles of Machining and Machined Surface Integrity 切削加工原理及表面完整性 (2 Credits) ●Elastic and Plastic Mechanics Basis 弹塑性力学基础 (2 Credits) ●Signal Processing and Mechatronic system Analysis Method 信号处理与机电系统分析方法 (2 Credits) ●System Modeling and Simulation 机电系统建模与仿真 (2 Credits) ●Fluid Power Transmission & Control 流体传动与控制 (2 Credits)
	<p style="text-align: center;">Module 3.3 Courses Specified by Supervisor and the School Concerned 导师及学院指定的课程</p> <p>Module 3.3.1 Interdiscipline Course offered by other school (s) or major(s) 跨专业课程</p> <p>Module 3.3.2 Engineering Foundational Course 校级基础课</p> <ul style="list-style-type: none"> ● 253501: C Language C 语言 ● 253502: Matlab Programming Matlab 程序设计 (3 Credits) ● 253503: Computer Networking and Applications 计算机网络及应用技术 (3 Credits) ● 253516: Space Environment, Orbit and Satellite Systems 空间环境、轨道及卫星系统 (3 Credits) ● 253517: Space Technology and Space Economy 航天技术与太空经济 (3 Credits) ● 253518: Space Materials and Processes 航空航天材料及工艺 (3 Credits) ● 253519: Introduction to Modern Manufacturing Technology 现代制造技术概论 (3 Credits) ● 253522: Finite Element Method in Engineering 有限元在工程中的应用 (3 Credits) ● 253523: Introduction to Space Flight 宇航概论 (1 Credit) ● 253527: Fatigue and Fracture of Material 材料疲劳与断裂 (2 Credits) ● 253528: Introduction to Space Law 空间法 (1 Credit) ● 253802: Scientific Literature Retrieval 科技文献检索与利用 (1 Credit)
Module 4: Elective Courses 选修课	
	<ul style="list-style-type: none"> ● Database Principle and Application 数据库系统原理与应用 (2 Credits) ● CAD/CAM CAD/CAM 技术 (2 Credits) ● Quality Engineering 质量工程 (2 Credits) ● Mechatronic System Model Distinguish and Control 机电系统建模辨识与控制 (2 Credits) ● Nano Fabrication Technology and Theory 微纳米制造技术及理论 (2 Credits) ● Intelligence Control and Application 智能控制及其应用 (2 Credits) ● Robot Theory 机器人学 (2 Credits) ● Modern Mechanical Optimization Design 现代机械优化设计 (2 Credits) ● Advanced Principle of Mechanics 高等机械原理 (2 Credits) ● Mechanical Vibration 机械振动学 (2 Credits) ● Modern Design Theory and Methodology 现代设计理论和方法 (2 Credits)

- Mechatronic servo control principle and its application 机电伺服控制原理及应用 (2 Credits)
- Fluid Power Transmission & Control 流体传动与控制 (2 Credits)
- Sensors & Testing Technology in Machining Process 加工过程监控与传感器技术 (2 Credits)
- Industrial Measurement & Control Network Technology 工业测控网络技术 (2 Credits)
- Aircraft Digital Manufacturing Engineering 飞机数字化制造工程 (2 Credits)
- Elastic and Plastic Stability Theory 弹塑性稳定理论 (2 Credits)
- Sheet Plastic Forming Theory and Engineering Analysis 板料塑性成形理论及工程解析 (2 Credits)
- Metal Plastic Forming Simulation Technology 金属塑性成形仿真技术 (2 Credits)
- Finite Element Method 有限元方法 (2 Credits)
- Tolerance Control System Reliability Technology 容错控制系统可靠性技术 (2 Credits)
- Mechatronic System non-linear Dynamics and Control 机电系统非线性动力学与控制 (2 Credits)
 - Pneumatic Hydraulicservo System 气液压伺服系统 (2 Credits)
- Human-machine Operation and Control 现代人机控制与辅助操纵 (2 Credits)
- Advanced Welding Technology 先进焊接技术 (2 Credits)
- Laser Processing 激光加工技术 (2 Credits)

Module 5: Experiment Courses 实验课

- Mono-Chip Computers System Experiment 单片机系统实验 (1 Credit)
- 3D CAD Software Molding Experiment 三维 CAD 软件建模实验 (2 Credits)
- Modern Theory of Control Experiment 现代控制理论实验 (1 Credit)
- Independent Mechanic and Electronic Experiment 机械电子控制系统自主实验 (1 Credit)
- Mechanic and Electronic Technical Comprehensive Experiment 机械电子技术综合实验 (2 Credits)
- Modern Design Comprehensive Experiment 现代设计综合实验 (2 Credits)
- Computer Graphics Experiment 计算机图形学实验 (1 Credit)
- NC and Testing Comprehensive Experiment 数控加工与测量实验 (1 Credit)
- Flexible Manufacturing Cell Experiment 柔性制造单元实验 (1 Credits)
- Board Molding Comprehensive Experiment 板料成形综合实验 (2 Credits)

Introduction of Beihang University

Beihang University is one of China's best universities in science and technology. It was founded in 1952 with the merger of the aeronautical departments of eight top Chinese universities. Since its founding, Beihang has excelled as one of the first 16 key universities in China, given priority for development. In 2017, Beihang was chosen to participate in the Double First-Class plan. At present, the university comprises more than 30 schools, covering science, technology, medicine, liberal arts, law, economy, management, philosophy, foreign languages and education. It has 2,147 full-time faculty

members. Beihang has now a total enrollment of over 30,000 full-time students, including about 2,200 international students.

While maintaining its focus at home, Beihang University is also seeking collaborations abroad. Implementation of the “university-to-university, professor-to-professor, and student-to-student” development strategy has helped to build Beihang’s network for international exchange and cooperation, significantly growing the university’s influence and competitiveness abroad. We believe that great students make a great university possible, and being a student in Beihang University means being a part of an energetic, dynamic group of people who are passionate, curious and committed to their areas of study, and more importantly, a global vision in this ever-changing business and technology world.

Beihang University is a campus where Chinese culture meets the West, science is interwoven with art, history and innovation coexist, and enthusiasm and inspiration work synergistically to spark creativity. This vibrant national key university continues to forge a path unceasingly toward its goal of achieving a world-class standard in education and research, while remaining deeply connected to its domestic roots.

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