

PhD Program in Management Science and Engineering

Discipline Classification: Management Science

First Class Discipline Code: 1201

First Class Discipline Name: Management Science and Engineering

1. Introduction to the Discipline

The major of management science and engineering is a discipline that comprehensively uses system science, management science, mathematics, economic and behavioral science and engineering methods, and combines information technology to study and solve management problems in social, economic, engineering and other aspects. Its study directions include information management and information system, logistics supply chain management, manufacturing engineering management, climate and environmental system management etc.

2. Objectives

The purpose of this program is to help doctoral candidates to obtain the solid theories and fundamental knowledge in the field of management science. The doctoral candidates in this program can independently engage in academic research and produce creative results in specific research areas.

Students shall be proficient in Chinese, and have sufficient ability to listen, read, write, and translate some Chinese materials relevant to the program. In addition, students have appropriate ability to read professional materials in the program with second language.

International doctoral candidates in this program should have friendly feelings toward China and be healthy both mentally and physically. They will be capable of teaching and academic research in universities, academic institutions or enterprises all over the worlds after graduation.

3. Study Directions

(1) Manufacturing Management Engineering

1.1 Innovation Management in Manufacturing Industry

1.2 Intelligent Theory of Manufacturing Industry

1.3 Green Manufacturing Theory

1.4 Industry Aggregation Theory

(2) Theoretical Methods and Applications of Decision Making

2.1 Decision Analysis

2.2 Disaster Emergency Decision-Making

2.3 Theory and Method of Intelligent Prediction

2.4 Big Data Decision Making

2.5 Complex System Modeling and Data Mining

2.6 Grey System Theory and Method

(3) Financial Engineering

3.1 Financial Risk Management

3.2 Quantitative Investment and Decision-Making

3.3 Big Data in Finance

3.4 Meteorological Finance

3.5 Blockchain in Finance

(4) Climate and Environmental Systems Management

4.1 Meteorological Disaster Management

4.2 Impacts and Adaptation of Climate Change

4.3 Energy Strategy and Management;

4.4 Energy and Environmental System Modeling

4.5 Climate Change and Public Policy

(5) Information Management and Logistics Engineering

5.1 Information Resource Management

5.2 Scientometrics and Evaluation of Science & Technology

5.3 Data Intelligence and Information System

5.4 Logistics System Optimization

5.5 Supply Chain Management

5.6 Production Operation Management

5.7 Education Management Science

4. Educational System and Length of Study

The length of education for PhD students is four (4) years.

If due to special circumstances a PhD student is unable to complete their studies, research objectives or take part in thesis defense on time, the student must apply in person, following the writing of the supervisor's opinion and signature, the approval of the school affiliated. The application should be submitted to the Graduate School for approval and College of International Students for archiving. The maximum length of time that student can study at the University is six (6) years and during this extension period international students shall pay for the study and accommodation fees as required.

5. Course Introduction & Course Requirement

5.1. Course Introduction

The Frontier of Management and Economics: This course mainly focuses on some frontier hotspots, key points and difficult research issues in the current management science field. It takes the form of inviting professors and experts in the field to give lectures. The course content is mainly divided into three parts, which are China's Achievements in Economic Development, the

economic relationship between China and U.S., global climate change and energy policies and the logistics and supply chain management sections.

Optimization Theory and Method: This lecture intends to provide the details of recent advances of optimization sciences and promote the applications of optimization methods in application. This lecture also provides a forum for students to review and disseminate quality research work on optimization approaches and their applications in the context of application and to identify critical issues for further developments.

Game Theory and Information Economics: This course provides a brief introduction to the basis of decision theory, the key concepts and models in game theory and information economics. This course will be devoted to explore the structure of the game by introducing different forms and styles of them and their solution concepts. Also, this course will turn its focus on modeling and several popular applications of game theory.

Operations Research: The course primarily studies the principles of operational activities and scientific management approaches for improving the efficiency and effectiveness of operations processes, and enhancing the competitiveness of the organization. By learning this course, students can become qualified in modern business management. Topics addressed include operation strategy, process design, location planning, facility layout, production scheduling, inventory management and so on. The course focuses on theoretical aspects of the operational system as well as its activities, such as strategy formulation, process selection, location and facility layout strategies and methods, production scheduling strategies and method, inventory control models and so on.

Supply Chain Management: Supply chain management plays a crucial role in the successful implementation of engineering projects. It integrates the material procurement, production planning, inventory control, and product distribution of engineering projects to ensure efficient resource utilization and timely completion of projects. By optimizing the supply chain, engineering managers can effectively reduce costs, improve quality and response speed, thereby enhancing overall project performance and enterprise competitiveness.

5.2. Course Requirement

5.2.1 Degree Course (15 Credits)

A — General Basic Courses (11 credits)

B — Professional Basic Courses (4 credits)

5.2. 2. Non-Degree Courses (6 credits)

C — Limited Elective Courses (1 credits)

D — Professional Elective Courses (4 credits)

E — Practical Components / Practice Modules (1 credits)

6. Training Style and Methods

The training of doctoral students is based on scientific research, combined with the scientific

research projects of their supervisors so that doctoral research and paper writing can be pursued. Doctoral supervisors should concern themselves with the healthy growth of their PhD students and should require those students to earnestly learn Chinese language and Chinese culture, understand current affairs and policies, and participate in activities such as working for the public good.

According to the requirements of the training objectives, PhD students should study a particular set of courses and achieve the required credits to broaden their knowledge, deepen their professional theoretical foundations, grasp the frontiers, development trends, and latest achievements, and experimental methods of the discipline.

The training of PhD students is implemented by the supervisor tutorial system. In this way, supervision is carried out under the supervisor and with a group of three to five (3-5) experts that the supervisor leads. In this way, the supervisor, research group, and PhD student can bring the initiative of each component into full play. Moreover, individualized instruction will be implemented according to a student's ability using a variety of methods, promote and encourage interlinkages between related discipline, and to promote the development of emerging and marginal disciplines.

7. Thesis Procedure

(1) Topic Selection and PhD Proposal

The PhD proposal should be completed in the second semester and at least one year after the proposal approved, can the student apply to participate in the pre-defense. Those who need to postpone the submission of the proposal due to special circumstances, a written application should be submitted to the Graduate School in advance and the time limit for delay shall not exceed six (6) months. After the proposal is accepted, changes in principle are not permitted. If there are, however, major changes in topic selection, the proposal should be rewritten.

(2) Midterm Evaluation

The doctoral thesis work is to be carried out to the midterm and at that time, PhD students shall submit a midterm report to an expert review team in the form of an on-campus public academic report on the thesis progress, periodic results, plans and measures for the next phase, and to submit a written report for expert deliberation.

At the end of a midterm evaluation of PhD students, the classifications of “passed”, “postponed re-evaluation”, and “failed” are possible. For those students whose evaluation is classified as “postponed re-evaluation”, a half-year inspection period will be given, and assessment will be conducted at the end of that half-year. PhD students who have received a classification of “failed”, or who have not passed the midterm evaluation one year before the end of the maximum length of study, shall be dismissed from the University in accordance with the relevant regulations. The expert review team shall report results to the Graduate School in the School the student resides. Following deliberation, the results shall be reported to the school for approval and a decision shall be made.

(3) Thesis Writing Requirements

This is conducted according to university's thesis writing requirements. The doctoral thesis should have a precisely chosen topic, be based on accurate data so that correct conclusions can be drawn. The format should also be standard and written concisely.

(4) Thesis Pre-defense and Defense

PhD graduates must complete all required courses, pass all the courses, and complete all required procedures before they are allowed to apply for thesis pre-defense. Only those students who have passed the pre-defense and blind review can apply for the final defense and the time interval between the thesis pre-defense and final defense shall be no less than three (3) months.

(5) Degree Applications

According to the specific implementation methods outlined in the *Nanjing University of Information Science & Technology Masters and Doctorate Degree Conferment Regulations* and *Nanjing University of Information Science & Technology Regulations on the Program and Qualifications of International Doctoral Candidates (Trial)*, the content of the thesis and research results must conform to the standards of this specific discipline.

Students must complete sufficient coursework in the program to earn no fewer than twenty-one (21) credits, including at least fifteen (15) credits from degree courses, achieve the required academic results, pass HSK Level 3 (or above), and successfully complete the thesis defense.

8. Practice

The Academic Report is compulsory and is worth one (1) credit.

During the period of doctoral thesis work and excluding the PhD Proposal, a public academic report lasting for no less than one (1) hour should be held at least once. The student's supervisor and the school affiliated are responsible for assessing the quality of the academic report. PhD students should also participate in no less than eight (8) academic activities including but not limited to academic reports, conferences, teaching and technology competitions both on and off the University campus.

Schedule 1: Curriculum for International PhD Students in Management Science and Engineering

Type	Course		Class Hours	Credits	Opening Semester	Teaching Method	Form of Evaluation	Note
A	入学教育	Orientation	16	1	1	In-Person Instruction	Exam	11 credits
	中国概况 I	China Overview I	32	1	1	In-Person Instruction	Exam	
	中国概况 II	China Overview II	32	1	2	In-Person Instruction	Exam	
	综合汉语 I	Comprehensive Chinese I	96	3	1	In-Person Instruction	Exam	
	综合汉语 II	Comprehensive Chinese II	96	3	2	In-Person Instruction	Exam	
	国际汉语能力强化	Chinese Language Proficiency Enhancement	64	2	3	In-Person Instruction	Exam	Electives
	中国文化与气象	Chinese Culture and Meteorology	32	1	1	In-Person Instruction	Evaluation	
	中华文化与传播	Chinese Culture and Communication	32	1	1	In-Person Instruction	Exam	
	跨文化交际	Cross-cultural Communication	32	1	2	In-Person Instruction	Exam	
B	管理学与经济学前沿	The Frontier of Management and Economics	32	2	1	In-Person Instruction	Evaluation	4 credits
	最优化理论与方法	Optimization Theory and Methods	32	2	1	In-Person Instruction	Evaluation	
C	学术英语	English for Academic Purpose	16	1	1	In-Person Instruction	Exam	1 credit
D	博弈论与信息经济学	Game Theory and Information Economics	32	2	2	In-Person Instruction	Evaluation	4 credits
	运筹学	Operations Research	32	2	2	In-Person Instruction	Exam	
	供应链管理	Supply Chain Management	32	2	2	In-Person Instruction	Exam	
E	学术报告	Academic Seminars	16	1		Others	Evaluation	1 credit

Note: A) General Courses; B) Major Compulsory Course; C) Limited-Elective Course; D) Major Elective Course; E) practice

Schedule 2: Contents and Requirements of Each Stage in the Doctoral Degree (Academic Degree) Program

Stage	Arrangements and Requirements	Time Point
1. Formulating the Individualized Study Plan	Based on the curriculum and in light of the student's actual situation, conducted under the guidance of the supervisor.	Within 1 week after enrollment
2. Coursework Stage	Arranged according to the course settings shown in Schedule 1.	
3. Academic Activities	During the period of study, the student shall participate in no fewer than 8 academic activities (including at least 2 activities outside the student's own secondary discipline).	Before the end of the third semester
4. Thesis Proposal	Write the thesis proposal and organize a proposal defense.	Completed by the end of the third semester
5. Mid-term Assessment	Each training unit shall organize an assessment panel to conduct a comprehensive review of the student's thesis progress. Students who fail the assessment will trigger an early warning mechanism. If a student fails the mid-term assessment a second time and is deemed unsuitable for continued training, they will be given a certificate of completion rather than a degree.	Completed by the end of the fifth semester
6. Pre-defense	Each training unit shall organize a pre-defense expert panel to rigorously review the student's degree thesis or practical achievements, focusing on academic/research quality and innovation, workload, research outcomes, key conclusions or results, academic norms, etc., and provide specific suggestions for revision. Only after passing the pre-defense may the student submit the degree thesis or practical achievements for external review.	At least one year between thesis proposal completion and the pre-defense
7. Final Thesis Defense	After passing the college's defense qualification review, the student shall undergo degree thesis review and defense in accordance with the university's relevant regulations on thesis evaluation and defense.	At least 90 days between the pre-defense and the final defense