食品科学与工程

来华留学硕士研究生培养方案

Food Science and Engineering

Master's Degree Cultivation Program for Study Abroad in China

食品科学与工程学科源于 1980 年河南省首个“食品工程”专业，2000 年获得“食品科学”硕士学位授权点，2010 年获得“食品科学与工程”一级学科硕士学位授权点，2021 年获得“食品科学与工程”一级学科博士学位授权点，2023 年获得博士后科研流动站。该学科现为河南省优势特色学科（群）、河南省特色骨干学科（群）和第九批河南省重点学科，全国第五轮学科评估结果为 B-，农业科学 ESI 全球排名进入前 5‰。拥有面制品国家地方联合工程研究中心、教育部冷链食品加工与安全控制重点实验室（培育）等科研与实验平台。在冷链食品加工与安全控制、食品物理场加工、食品营养与安全、食品生物技术、速冻与肉制品加工、果蔬加工、酿酒工程、生物质与生物能源等方面具有鲜明的特色和优势。

The discipline of food science and engineering originated from the first specialty of “Food engineering” in Henan Province in 1980. In 2000, it obtained the master's degree authorization point of “Food Science”, in 2010, it obtained the master's degree authorization point of “Food Science and Engineering”, in 2021, it obtained the doctoral degree authorization point of “Food Science and Engineering”, and in 2023, it obtained the post-doctoral research station. The discipline is now the advantageous and characteristic disciplines (group) of Henan Province, the characteristic backbone disciplines (group) of Henan Province and the ninth batch of key disciplines of Henan Province, with the result of the fifth round of discipline evaluation of the country as B-, and the global ranking of agricultural science ESI in the top 5‰. It has scientific research and experimental platforms such as National & Local Joint Engineering Research Center for Cereal-Based Foods and Key Laboratory of Cold Chain Food Processing and Safety Control, Ministry of Education (Cultivation). It has distinctive features and advantages in cold chain food processing and safety control, food physical field processing, food nutrition, food biotechnology, quick-frozen and meat processing, fruit and vegetable processing, brewery engineering,

biomass and bioenergy, etc.

一、培养目标

1．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。

2．培养掌握食品科学与工程领域的发展动态，具有国际化思维与视野，具有较强的创新意识和创新能力，掌握食品科学与工程领域坚实的基础理论和技术基础，具备践行健康中国行动与大食物观，独立创新从事食品相关领域科学研究、教学、生产开发与管理的高层次专门人才。

3．身心健康，具有强健的身体素质与良好的心理素质。

I. Cultivation Objectives

1. To become familiar with China's history, geography, society, economy and other basic knowledge of China's national conditions and culture, to understand China's political system and foreign policy, to understand the basic values of Chinese society and public morality, and to form a good concept of the rule of law and moral consciousness.

2. To cultivate high-level specialists who have mastered the development of food science and technology, who have international thinking and vision, who have a strong sense of innovation and innovation ability, who have mastered the solid basic theories and technological foundations of the field of food science and technology, and who have the ability to practice the Healthy China Initiative and the concept of "Big Food Concept", and who can independently and innovatively engage in the scientific research, teaching, production, development and management of food-related fields.

3. Be physically and mentally healthy, with strong physical fitness and good psychological quality.

二、研究方向

1．食品科学

研究原料肉低温保鲜、肉制品加工与品质控制理论与技术、传统肉制品精准加工技术研发及应用、肉品非热杀菌新技术研发及应用和凝胶肉制品加工理论与产品开发等；研究各类粮食、蔬菜、油料作物中蛋白质和油脂的加工理论与和技术开发等；研究速冻

方便食品、速冻调理食品及其他速冻产品的加工技术、安全监测、储藏保鲜、冰晶变化及控制技术等。

2．食品营养

研究食品功能成分的提取分离与鉴定、食品功能因子的营养功效及分子作用机制、食品功能因子与人体健康之间的关系和新型功能性食品的加工技术与开发等。

3．食品安全

研究食品加工质量安全控制、加工中危害物产生机制以及典型危害物检测与控制方面的基础理论研究和应用基础研究；食品加工质量安全全程追溯体系研发及应用；食品质量与安全快速检测技术、包括化学安全性、生物安全性和食品风险的快速检测方法等。

4．农产品加工与储藏

果蔬非热加工理论与技术研究、果蔬生物技术加工理论与技术研究、果蔬质量安全控制理论与技术研究、农产品采后生理及贮藏技术和农产品质量检测等。

II. Research Direction

1. Food Science

Research on low-temperature preservation of raw meat, meat processing and quality control theory and technology, the development and application of traditional meat processing technology, meat non-thermal sterilization technology development and application and gel meat processing theory and product development, etc.; research on various types of grains, vegetables, oilseed crops in the processing of proteins and fats and technology development, etc.; the study of frozen convenience foods, frozen seasoned food and other frozen product processing technology, safety monitoring, storage and preservation, ice crystal change and control technology, etc.

2. Food Nutrition

Research on the extraction, separation and identification of food functional components, the nutritional efficacy and molecular mechanism of food functional factors, the relationship between food functional factors and human health and the processing technology and development of new functional foods.

3. Food Safety

Research on food processing quality and safety control, processing hazards in the mechanism and typical hazards in the detection and control of basic theoretical research and

applied basic research; food processing quality and safety of the whole traceability system research and development and application; food quality and safety of rapid detection technology, including chemical safety, biological safety and food risk of rapid detection methods.

4. Processing and Storage of Agricultural Products

Research on the theory and technology of non-thermal processing of fruits and vegetables, research on the theory and technology of biotechnological processing of fruits and vegetables, research on the theory and technology of quality and safety control of fruits and vegetables, post-harvest physiology of agricultural products and storage technology, and testing of agricultural products quality.

三、培养方式及学习年限

全日制来华留学硕士研究生的学制为 3 年，最长学习年限一般不超过 5 年，

学分：总学分要求 31 学分，其中学位课学分不低于 18 学分，非学位课学分不低于 7 学分，必修环节要求 5 学分。

III. Cultivation Mode and Study Duration

The duration of full-time master's degree programmes for students studying in China is 3 years, and the maximum study period generally does not exceed 5 years.

Credits: The total number of credits required is 31, of which not less than 18 credits are for degree courses, not less than 7 credits are for non-degree courses, and 5 credits are required for compulsory courses.

四、课程设置及学分要求

课程设置、必修环节及学时、学分分配表

课程类别	课 程 编 号	课程名称	学时	学分	开 课 学期	开课单位	备注
学位课		中国概况	32	2	2	马院	公共必修
		基础汉语（一）	32	2	1	外语	公共必修
		基础汉语（二）	32	2	2	外语	公共必修
	003005	现代食品微生物学	32	2	1	食工学院	专业必修
	003009	高级食品化学	32	2	1	食工学院	专业必修
	003010	食品安全进展	16	1	1	食工学院	专业选修
	003013	现代仪器分析	32	2	2	食工学院	专业选修
	003014	实验设计方法与数据处理	32	2	2	食工学院	专业必修

	003022	食品科学与技术进展	32	2	1	食工学院	专业必修
	003039	现代食品营养学	32	2	1	食工学院	专业必修
非学位课	991014	自然辩证法概论	16	1	1	马院	公共选修
	991016	研究生职业生涯规划与就业指导	16	1	4	研工部（处）	公共选修
	003011	食品加工新技术	16	1	1	食工学院	专业选修
	003017	果蔬加工专题	16	1	2	食工学院	专业选修
	003018	营养与功能因子专题	16	1	2	食工学院	专业选修
	003019	粮食、油脂及植物蛋白工程专题	16	1	2	食工学院	专业选修
	003020	食品安全与检测专题	16	1	2	食工学院	专业选修
	003021	速冻与肉品加工专题	16	1	2	食工学院	专业选修
	003036	天然产物分离技术	16	1	1	食工学院	专业选修
	003038	学术规范与科技论文写作	16	1	1	食工学院	专业选修
	003040	食品物性学	16	1	2	食工学院	专业选修
	003041	食品风味学	16	1	2	食工学院	专业选修
	003042	食品生物技术专题	16	1	2	食工学院	专业选修
	003043	分子生物学	16	1	2	食工学院	专业选修
必修环节	991091	开题报告		1	3	食工学院	
	991092	中期考核		1	5	食工学院	
		科研探索实践		1		食工学院	
	991093	学术报告		1	1-6	食工学院	作报告 1 次
		毕业答辩		1		食工学院	

IV. Curriculum and Credit Requirements

Curriculum, Required Sessions and Allocation of Credit Hours and Credits

Course Category	**Course No.**	**Course Title**	**Course Hours**	**Credits**	**Offering Semester**	**Offering Unit**	**Remarks**
Degree course		China Overview	32	2	2	School of Marxism	Compulsory Public
		Basic Chinese (I)	32	2	1	School of Foreign Languages	Compulsory Public
		Basic Chinese (II)	32	2	2	School of Foreign Languages	Public Compulsory
	003005	Modern Food Microbiology	32	2	1	College of Food and Bioengineering	Professional Compulsory
	003009	Advanced Food Chemistry	32	2	1	College of Food and Bioengineering	Professional Compulsory

	003010	Advances in Food Safety	16	1	1	College of Food and Bioengineering	Specialized Elective
	003013	Modern Instrumental Analysis	32	2	2	College of Food and Bioengineering	Specialized Elective
	003014	Experimental Design Methods and Data Handling	32	2	2	College of Food and Bioengineering	Professional Compulsory
	003022	Advances in Food Science and Technology	32	2	1	College of Food and Bioengineering	Professional Compulsory
	003039	Modern Food Nutrition	32	2	1	College of Food and Bioengineering	Professional Compulsory
Non-degree Programs	991014	Introduction to Natural Dialectics	16	1	1	School of Marxism	Public Elective
	991016	Career Planning and Career Guidance for Graduate Students	16	1	4	Graduate Studies Division	Public Elective
	003011	New Technology of Food Processing	16	1	1	College of Food and Bioengineering	Specialized Elective
	003017	Fruit and Vegetable Processing	16	1	2	College of Food and Bioengineering	Specialized Elective
	003018	Nutrition and Functional Factors	16	1	2	College of Food and Bioengineering	Specialized Elective
	003019	Grain, Oil and Vegetable Protein Engineering	16	1	2	College of Food and Bioengineering	Specialized Elective
	003020	Food Safety and Testing	16	1	2	College of Food and Bioengineering	Specialized Elective

	003021	Frozen and Meat Processing	16	1	2	College of Food and Bioengineering	Specialized Elective
	003036	Natural Product Separation Technology	16	1	1	College of Food and Bioengineering	Specialized Elective
	003038	Academic Standards and Scientific Paper Writing	16	1	1	College of Food and Bioengineering	Specialized Elective
	003040	Food Physical Properties	16	1	2	College of Food and Bioengineering	Specialized Elective
	003041	Food Flavor	16	1	2	College of Food and Bioengineering	Specialized Elective
	003042	Food Biotechnology	16	1	2	College of Food and Bioengineering	Specialized Elective
	003043	Molecular Biology	16	1	2	College of Food and Bioengineering	Specialized Elective
Compulsory part	991091	Opening Report		1	3	College of Food and Bioengineering	
	991092	Mid-term Examination		1	5	College of Food and Bioengineering	
		Practice of Research Exploration		1		College of Food and Bioengineering	
	991093	Academic Reports		1	1-6	College of Food and Bioengineering	One time Presentation
		Graduation Defense		1		College of Food and Bioengineering	

五、必修环节

1.开题报告

来华留学硕士研究生的培养实行导师负责与指导小组集体培养相结合的方式。硕士

生入学后应在导师与指导小组的指导下，广泛阅读和消化国内外权威中英文文献，至少阅读 60 篇研究文献（近 3 年的文献不少于 50%），其中外文文献应占 50%以上，了解学科研究现状，并撰写专业文献综述，尽早确定课题方向，在完成培养计划规定的课程学习并经考核合格后完成学位论文开题。硕士生开题在第三学期进行，通过开题报告后，计 1 学分。

2.中期考核

硕士生从学位论文开题通过到申请学位论文答辩，期间不应少于 1 年的时间。在第五学期由研究生导师组成的检查组以研究生的培养计划为依据，对研究生进行一次学位论文中期检查，检查内容包括：基础理论、专业知识的掌握和科研能力，论文工作进展情况、存在的问题、待解决的问题及与预期目标的差距等方面。论文中期检查考核通过后，计 1 学分。

3.科研探索实践（专业实践）

学术学位硕士生应完成教学（科研）实践工作。硕士生的实践环节可以包括教学实践、生产实践、社会调查及课外学术、科技竞赛活动等。实践内容、具体要求由学院确定，在学期间参加实践活动累计时间一般要求不少于 2 周，一般应在入学之后第二年完成，并提交教学（科研）实践考核表，由导师负责考核认定，合格计 1 学分。

4.学术报告

学术活动内容包括学术讲座、学术研讨会以及参加访问讲学等。硕士生应参加一定的学术活动。硕士研究生在校期间应参加 6 次以上学术活动。每次学术活动要撰写总结报告，并将有关的书面材料交指导教师签字认可。学院对硕士生的学术活动情况及其报告进行审核，成绩合格者记 1 学分。

5.毕业答辩

学位论文全部参加学校组织的盲审，盲审结果合格后方能参加答辩。答辩委员会要求由 5 名或 7 名教授、副教授或相当职称的硕导组成，成员中至少有 2 位院外或校外专家。答辩委员会以无记名投票方式进行表决，并经 2/3 以上同意，方可建议授予硕士学位，并提请学院学位评定分委员会审议，报校学位评定委员会审核、批准。如果答辩委员会认为论文没有达到硕士学位论文水平，并认为可以考虑进一步修改时，应经无记名投票，全体成员过半数通过，可做出在一年内修改论文、重新答辩的决议。如果答辩委员会未做出修改论文的决定，任何人无权同意修改论文和重新组织答辩。具体要求根据学校有关规定执行。

V. Compulsory Sessions

1. Thesis Report

The cultivation of master's students studying in China implements the combination of the responsibility of the supervisor and the collective cultivation of the supervisory group. Under the guidance of the supervisor and the supervisory group, the master students should read and comprehend the authoritative Chinese and English literature at home and abroad, read at least 60 pieces of research literature (no less than 50% of the literature in the past three years), of which more than 50% should be in foreign languages, understand the current situation of the research in the discipline, write a professional literature review, determine the direction of the subject as early as possible, and complete the proposal and confirmation seminar after completing the courses stipulated in the cultivation plan and qualifying in the examination. The dissertation topic is started in the third semester. The confirmation seminar for master students takes place in the third semester, and 1 credit is counted after passing the confirmation report.

2. Mid-term Examination

The period from passing the confirmation report to applying for the dissertation defense shall not be less than one year. In the fifth semester, an inspection team composed of the supervisors of the postgraduates shall conduct a mid-term examination of the dissertation based on the cultivation plan of the postgraduates, which includes the mastery of basic theories, professional knowledge and scientific research ability, the progress of the dissertation work, problems, problems to be solved, and gaps between the dissertation work and the expected goals, and so on. After passing the mid-term examination of the dissertation, 1 credit is counted.

3. Research Exploration and Practice (Professional Practice)

Maste's students must complete learning practice (scientific research). The practice of master's students includes teaching practice, production practice, social investigation and extracurricular academic, scientific and technological competition activities. The content and specific requirements of the practice are determined by the Faculty. The cumulative time for participation in the practice activities during the study period is generally required to be not less than 2 weeks, which should be completed in the second year after the admission, and the

teaching (scientific research) practice assessment form should be submitted, and the supervisor should be responsible for the evaluation and recognition, and the pass is counted as 1 credit.

4. Academic Reports

Academic activities include academic lectures, academic seminars and visiting lectures. Master's students should participate in certain academic activities. Master's students should participate in more than 6 academic activities during their studies. Each academic activity shall be summarized in a report, and the relevant written materials should be submitted to the supervising teacher for signature and approval. The college assesses the academic performance of master's students and their reports, and those who pass the grade are awarded 1 credit.

5. Graduation Defense

All the dissertations are subjected to a blind examination organized by the University, and the dissertation cannot be defended until the results of the blind examination are qualified. The defense committee is composed of 5 or 7 professors, associate professors or master supervisors with equivalent titles, with at least 2 experts from outside the College or University. The defense committee votes by secret, and by a majority of at least 2/3 of its members, shall recommend the award of the master's degree and submit it to the College Degree Evaluation Sub-Committee for consideration and to the University Degree Evaluation Committee for review and approval. If the defense committee is of the opinion that the dissertation has not reached the level of a Master's requirements and considers that it can be considered for further modification, it shall vote by secret ballot with the approval of the majority of all members and may decide to modify the dissertation and repeat the defense within one year. If the Defense Committee has not made a decision to revise the dissertation, no one has the right to agree to revise the dissertation and reschedule the defense. Specific requirements are set out in the relevant School Regulations.

六、学位论文

留学生学位论文经导师和学科同意，可使用英文撰写，但必须附中文摘要。学位论文参照上级及校内学位论文撰写相关办法执行。

1.选题要求

一般应来源于本学科的基础研究或应用基础研究，选择在本学科领域有重要学术价值，对国民经济建设、社会发展和国家安全等方面有重要应用价值的题目进行研究。

2.规范性要求

本学科硕士学位论文的撰写应符合国家相关学术著作出版规范。硕士学位论文应结构合理、层次清晰、语言流畅；原理阐述正确；实验方法合理、实验数据可信；引文合理、文献出处准确；公式、符号、单位和图标等均符合有关规范。

3.质量要求

对本研究方向上的关键技术问题有较深刻的认识，能建立起较完善的物理模型或经验模型；采用新技术建立起一个先进可行的技术方案，该方案应具有创新性，或具有部分创新性，或具有新意。

4.能设计搭建实验平台，并完成重要实验验证。

此外，学位论文开题报告、中期筛选、预答辩、答辩、学位申请等培养环节按照学校有关硕士研究生培养的有关规定执行。

VI. Dissertation

The dissertation of international students can be written in English with the consent of the supervisor and the discipline, but it must be accompanied by an abstract in Chinese. The dissertation mast be written with reference to the relevant instructions and standards of the supervisors and the University.

1. Requirements on Selection of Topics

The dissertation should generally be derived from the basic research or applied basic research of the discipline and select the topics that have important scientific value in the field of the discipline and important application value for the construction of national economy, social development and national security.

2. Normative Requirements

The master’s thesis of this discipline should be written in accordance with the national norms for the publication of related academic works. The master’s thesis should be well structured, clear and fluent in language; the principles should be correctly explained; the experimental methods should be reasonable, and the experimental data should be credible; the citations should be reasonable and the sources of the literature should be accurate; and the formulas, symbols, units and icons should conform to the relevant norms.

3. Quality Requirements

Have a deeper understanding of the key technical problems in this research direction, and be able to establish a better physical model or empirical model; adopt new technology to establish an advanced and feasible technical programme, which should be innovative, or partially innovative, or have novelty.

4. Be able to design and build an experimental platform and complete important experimental verification.

In addition, the dissertation opening report, mid-term examination, pre-defense, defense, degree application and other cultivation processes shall be carried out in accordance with the relevant regulations of the university on the cultivation of master's degree students.

七、毕业和学位授予

研究生在规定学习年限内完成培养方案规定的课程学习、考核成绩合格、获得规定的学分，方能申请学位（毕业）论文答辩，通过学位论文答辩者，符合毕业条件，准予毕业。达到学校研究生学位授予标准，经学生申请、学校学位评定委员会审议通过，授予相应的学位。

VII. Graduation and Degree Conferment

Master’s students can only apply for the dissertation defense if they have completed the courses stipulated in the cultivation programme, passed the examination and obtained the required credits within the stipulated study period; those who have passed the dissertation defense fulfil the requirements for graduation and are allowed to graduate. Those who meet the standard for graduation are awarded the master’s degree upon the student’s application and the deliberation and approval of the University’s Academic Degree Evaluation Committee.

八、参加编写人员

张华、相启森、赵学伟、申瑞玲、李学红、张艳艳、张丽华、闫溢哲。

VIII. Participants in the Preparation

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