《食品保藏原理》课程教学大纲

<table>
<tr><td colspan="6">课程基本信息（Course Information）</td></tr>
<tr><td>课程代码
（Course Code）</td><td>FS415</td><td>*学时
（Credit Hours）</td><td>32</td><td>*学分
（Credits）</td><td>2</td></tr>
<tr><td rowspan="2">*课程名称
（Course Name）</td><td colspan="5">食品保藏原理</td></tr>
<tr><td colspan="5">Principles of Food Preservation</td></tr>
<tr><td>课程性质
(Course Type)</td><td colspan="5">专业选修课 Major elective course</td></tr>
<tr><td>授课对象
（Target Audience）</td><td colspan="5">食品专业大三或大四本科生 Senior undergraduate students</td></tr>
<tr><td>授课语言
(Language of Instruction)</td><td colspan="5">全英文 English</td></tr>
<tr><td>*开课院系
（School）</td><td colspan="5">农业与生物学院 College of Agriculture and Biology</td></tr>
<tr><td>先修课程
（Prerequisite）</td><td colspan="5">Food Chemistry, Microorganisms, Food Nutrition and hygiene, Principles of Food Engineering, Food Analysis</td></tr>
<tr><td>授课教师
（Instructor）</td><td colspan="2">岳进，焦顺山
Yue, Jin; Jiao, Shunshan</td><td>课程网址
(Course Webpage)</td><td colspan="2"></td></tr>
<tr><td>*课程简介
（Description）</td><td colspan="5">食品保藏技术的进步与发展是食品工业发展的重要保障。本课程讲授食品的物理、化学和生物性腐败的一般规律，以及传统的和现代的食品保藏原理。重点讲解的食品加工和保藏技术包括：冷藏、冷冻、热加工、干燥、发酵、超高压、化学保藏、辐照，包装技术，以及各种相应的技术装备。并讲解各种加工技术对食品的理化特性、微生物等的影响，从理论上剖析食品保藏的原理。通过案例分析、工厂参观等形式，让学生灵活掌握各种保藏原理在现代食品加工中的应用。食品保藏原理是食品化学、食品微生物、食品工程原理、食品工艺学等课程的融会贯通，通过本课程的学习，为学生今后从事食品和相关领域的研究、技术管理等工作打下基础。</td></tr>
<tr><td>*课程简介
（Description）</td><td colspan="5">The progress and development of food preservation technology is an important guarantee for the development of food industry. This course provides a basic understanding of physical, chemical and biological deterioration of food and principles of preservation using traditional and novel methods. It provides an overview of the principles of different food processing and preservation techniques, including refrigeration, freezing, heat processing, dehydration, fermentation, high pressure, chemical preservatives, irradiation, and packaging. It gives insight into how quality is changed during different processes. It helps students develop the concept of unit operations as building blocks for food process and preservation. To aquatint the students with the basic steps involved in commercially food processing.</td></tr>
<tr><td colspan="6">课程教学大纲（Course Syllabus）</td></tr>
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*学习目标(Learning Outcomes)	1. 了解食品保藏原理的基础知识和前沿技术，以及在食品加工工程中的应用。（A3） To learn the basic principle and the advanced technology of food preservation of food preservation, as well as its application in food processing industry; (A3) 2. 帮助学生将食品化学、食品微生物、食品工程原理、食品工艺学等课程内容融会贯通，理解和掌握食品保藏技术，从而对食品科学的知识体系有一进步的认识。（A5.2.1） To comprehensively apply the basic knowledge of food chemistry, food microbiology, and food engineering into food preservation, and to get systematic understanding of food science and technology. （A5.2.1） 3. 通过全英文的课堂讲授、讨论以及学生口头汇报和书面报告、ppt 等多种形式，让学生提高英语的学习和应用能力（B6），培养学生独立思考、发现问题、解决问题能力（B1，B2，B3，C2），以及查阅专业文献及各种资料的能力。（B9） Through the English lecture, class discussion, oral and written report, the students will develop their ability of study in English (B6), discovery, and solve the problem,(B1， B2， B3， C2）and searching references (B9). .....

*教学内容

进度安排及要求

(Class Schedule & Requirements)

教学内容	学时	教学方式	作业及要求	基本要求	考查方式
Quality deterioration of food and principles of food preservation	2	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Learn the major issues in food quality and safety	Questions and discussions in the class; final term
Refrigeration preservation	2	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Learn the principles of refrigeration storage (temperature, relative humidity, gas composition), MAP, CAS	Questions and discussions in the class; final term
Freezing preservation	2	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Principles of freezing process – water and ice, freezing points, crystal growth, recrystallization	Questions and discussions in the class; final term
Heat Processing and Preservation	3	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Principles of thermal process and preservation –cooking, blanching, pasteurization, sterilization	Questions and discussions in the class; final term
Dehydration	3	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Principles of food preservation by removing water	Questions and discussions in the class; final term
Fermentation	2	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed	Principles of fermentation for food preservation	Questions and discussions in the class; final

				within recent 5 years		term
	Chemical preservatives and other functional food substances	2	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Definition and regulation of chemical food preservatives; Different types of chemical preservatives, their functions and applications	Questions and discussions in the class; final term
	Food irradiation	2	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Properties of ionizing radiation Effects of irradiation on living organisms	Questions and discussions in the class; final term
	High hydrostatic pressure (HHP) processing	2	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Biological, chemical and physical effects of HHP	Questions and discussions in the class; final term
	Microwave, and ohmic heating	2	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Learn the principles of microwave and ohmic heating. Biological, chemical and physical effects	Questions and discussions in the class; final term
	Radio frequency (RF) heating	2	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Learn the principles of radio frequency, its instrument, and application.	Questions and discussions in the class; final term
	Visit factory	4	Visiting and practice	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Learn food manufacturing in the factory	Questions and discussions in the class; final term
	Food packaging	2	Lecture	Market survey and literature search on the advanced/novel food preservation methods developed within recent 5 years	Function of food packaging Packaging technologies for different food	Questions and discussions in the class; final term
	Course review	2	Lecture	Review the course and prepare for the final exam.	Have a comprehensive understanding of the principles of food preservation.	Final term

*考核方式 (Grading)	总分 100 分：出勤及课堂表现 10%，口头报告 15%，书面报告 15%，期末考试 60%。 Total 100 points：class participation 10%, presentation 15%, report 15%, final exam 60%.
*教材或参考资料 (Textbooks & Other Materials)	不指定教材，下列为参考书。 No textbook is required, but the following ones are used as references. Students are strongly recommended to review these books.

	• Zeuthen, P. and Bogh-Sorensen, L. 2000. Food preservation Techniques. Woodhead Publishing Lt., Cambridge, England. Second Edition, ISBN 2042-8049 • 曾庆孝主编，食品加工与保藏原理，化学工业出版社，2014，第三版，ISBN 978-7-122-21892-6
其它（More）	
备注（Notes）	

备注说明：

1．带*内容为必填项。

2．课程简介字数为 300-500 字；课程大纲以表述清楚教学安排为宜，字数不限。