

《食品物性学》课程教学大纲

课程基本信息 (Course Information)					
课程代码 (Course Code)	FS303	*学时 (Credit Hours)	32	*学分 (Credits)	2
*课程名称 (Course Name)	(中文) 食品物性学				
	(英文) Food Physics				
课程性质 (Course Type)	专业类选修课 (Elective course)				
授课对象 (Target Audience)	食品科学与工程专业本科生 (Undergraduate students majoring in food science and engineering)				
授课语言 (Language of Instruction)	中文 (Chinese)				
*开课院系 (School)	农业与生物学院 (School of Agriculture and Biology)				
先修课程 (Prerequisite)	物理、物理化学 (Physics, Physical Chemistry)				
授课教师 (Instructor)	方亚鹏 (Yapeng Fang)	课程网址 (Course Webpage)	无 (NO)		
*课程简介 (Description)	<p>《食品物性学》是食品科学与工程本科专业选修类课程。本课程以食品和食品原料的物理特性为主要对象，介绍食品贮藏、加工与消费过程中的力学、光、电、热性质与产品质量的关系。培养学生关于食品物性参数的测量或估算技能，使其掌握食品物性与产品研发、质量控制的关系。</p>				
*课程简介 (Description)	<p>The course Food Physics is an elective course for the undergraduate students majoring in food science and engineering. The course deals with the physical characteristics of foods and food raw materials, and systematically introduces the mechanical, optical, electrical, thermal properties of foods during storage, processing and consumption, and their relationship with food quality. The aim of the course is to provide students with the abilities to measure and estimate the physical parameters of foods and to understand the relationship between food physical properties and product development and quality control.</p>				
课程教学大纲 (Course Syllabus)					

<p>*学习目标 (Learning Outcomes)</p>	<ol style="list-style-type: none"> 1. 通过系统讲解食品和食品原料的力学、光、电、热等主要物理特性，使学生系统掌握食物性的主要参数、原理及其测量方法 (B2)。 2. 通过讲授食物性学的新问题和新进展，引导学生结合实际、勤于思考，掌握食物性与产品研发、质量控制的关系，培养学生的动手实践能力和创新精神 (A3, C3)。 3. 通过兴趣培养，引导学生深度学习、刻苦学习，树立以科技创新奉献国家食品产业的思想意识 (D2)。 <ol style="list-style-type: none"> 1. Through the introduction of the main physical characteristics of foods and food raw materials, such as mechanical, optical, electrical and thermal properties, students are conferred with the ability of mastering the main parameters, principles and measurements of food physical properties (B2). 2. Through teaching new issues and advancements in food physical properties, students are guided to think more independently and practically in order to understand the relationship between food physical properties and product development and quality control, and to foster their practical ability and innovation spirit (A3, C3). 3. Through interest cultivation, students are encouraged to study harder and more profoundly and to shape their awareness of contributing to Chinese food industry by scientific innovations (D2). 																						
<p>*教学内容 进度安排及要求 (Class Schedule & Requirements)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;">教学内容</th> <th style="width: 10%;">学时</th> <th style="width: 15%;">教学方式</th> <th style="width: 15%;">作业及要求</th> <th style="width: 15%;">基本要求</th> <th style="width: 10%;">考查方式</th> </tr> </thead> <tbody> <tr> <td>1. 绪论 (Introduction)</td> <td>1</td> <td>课题讲授 Lecture</td> <td rowspan="4" style="vertical-align: middle;">高质量完成老师布置的作业及课题汇报 Assignment + Report</td> <td rowspan="4" style="vertical-align: middle;">按时出勤、掌握各章节知识要点 Attendance + Master the knowledge of each chapter</td> <td rowspan="4" style="vertical-align: middle;">平时成绩+期末考试 Attendance + Assignment + Examination</td> </tr> <tr> <td>2. 食品的主要形态与物理性质 (Main states and physical properties of foods)</td> <td>8</td> <td>课堂讲授 Lecture</td> </tr> <tr> <td>3. 粘性食品的流变特性 (Rheological properties of viscous foods)</td> <td>4</td> <td>课堂讲授 Lecture</td> </tr> <tr> <td>4. 粘弹性食品的流变特性 (Rheological properties of viscoelastic foods)</td> <td>4</td> <td>课堂讲授 Lecture</td> </tr> </tbody> </table>	教学内容	学时	教学方式	作业及要求	基本要求	考查方式	1. 绪论 (Introduction)	1	课题讲授 Lecture	高质量完成老师布置的作业及课题汇报 Assignment + Report	按时出勤、掌握各章节知识要点 Attendance + Master the knowledge of each chapter	平时成绩+期末考试 Attendance + Assignment + Examination	2. 食品的主要形态与物理性质 (Main states and physical properties of foods)	8	课堂讲授 Lecture	3. 粘性食品的流变特性 (Rheological properties of viscous foods)	4	课堂讲授 Lecture	4. 粘弹性食品的流变特性 (Rheological properties of viscoelastic foods)	4	课堂讲授 Lecture	
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	5. 食品质构 (Textural properties)	2	课堂讲授 Lecture			
	6. 颗粒食品的物理特征与流动特性 (Physical characteristics and flow properties of granular foods)	3	课堂讲授 Lecture			
	7. 食品热物性 (Thermal properties)	2	课堂讲授 Lecture			
	8. 食品电特性 (Electrical properties)	2	课堂讲授 Lecture			
	9. 食品光学性质 (Optical properties)	2	课堂讲授 Lecture			
	10. 物性分析与微光成像技术 (Analysis of food physical properties and microscopic imaging techniques)	2	课堂讲授 Lecture			
	11. 课堂总结与汇报 (Course summary and report)	2	课堂讨论与汇报 Report and Discussion			
*考核方式 (Grading)	<p>平时成绩 (30%), 期末考试 (70%)</p> <p>平时成绩: 30%, 主要考核出勤率及作业完成质量。</p> <p>考试成绩: 70%。主要考核对食品物性学基本知识的掌握程度。</p> <p>The final result is a combination of class performance and exam results.</p> <p>Class performance: 30%. It is based on the attendance rate and the quality of assignment completion.</p> <p>Exam: 70%. It evaluates to what extent the students master the basic knowledge of food physical properties.</p>					

*教材或参考资料 (Textbooks & Other Materials)	《食物物性学》，李云飞、殷涌光、徐树来、金万镐编著，中国轻工业出版社，第二版，2017 Food Physical Properties, Yunfei Li, Yongguang Yin, Shulai Xu, Wanhao Jin, China Light Industry Press, 2 nd edition, 2017.
其它 (More)	无 (No)
备注 (Notes)	无 (No)

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。