《食品化学》课程教学大纲

FS300	*学时 (Credit Hours)	32		*学分 (Credits)	2		
(中文) 食品化学							
(英文)FC	(英文) FOOD CHEMISTRY						
Professional core course							
_	Required for undergraduate major in Food science and engineering, and also open						
to students 1	to students in other majors						
English	English						
School of Ag	School of Agriculture and Biology						
Chemistry, E	Chemistry, Biochemistry, introduction to food science						
Jing, Pu		(Cou	rse	http://ecc.sjtu.edu.cn/html/course_98.htm			
本课程适用于食品科学的基本科学原理以及实际应用。针对于食品的质量和安全性,学习、讨论食品组分如碳水化合物、脂质、蛋白质和其它成分在贮藏和加工中的化学/生物化学变化、反应。强调影响颜色、风味、质地、营养和食品安全性的因素和反应条件。学生通过学习典型案例,了解相关食品行业和食品消费相关的现实问题。							
The course applies basic scientific principles to food systems and practical applications. Food constituents, and chemical/biochemical reactions of carbohydrates, lipids, proteins, and other constituents in fresh and processed foods are discussed with respect to food quality and safety. Reaction conditions and processes that affect color, flavor, texture, nutrition, and safety of food are emphasized. Students are given a role in the learning experience through independent projects related to real world problems associated with the food industry or food consumption.							
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applications. lipids, protei respect to fo	Food constituens, and other cod quality and	ents, and onstituen safety. R	chemic ts in fre eaction	cal/biochemical re esh and processed conditions and pr	actions of carbohydrates, foods are discussed with rocesses that affect color,		
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associated with the food industry or food consumption (A5.2.1, B1, B2, B9).

This course is designed to evaluate the chemical, physical and functional properties of food constituents and the effects of processing on those constituents. The course objectives are shown as followings:

- 1. To learn the basic chemical structure, nomenclature, physiochemical properties of food components (A5.1.1, A5.2.1).
- 2. To understand the basic chemical reactions related to food processing, food formulation, food quality and stability, and food nutrition (A5.2.1).
- 3. To understand the interactions of food components in food formulation, food processing, food safety, and food nutrition (A5.2.1, C7).

	processing, food	l safety,	, and food nutri	ition (A5.2.1, 0	C7).	
	教学内容	学	教学方式	作业及要	基本要求	考查
		时		求		方式
					Understanding	
	Introduction	2	Lecture		generally the course	
					of Food Chemistry	
	Water	2	Lecture		Water properties,	
					water activity and	
					food spoilage, water	
					immigration, glass	
					transition	
		6	Lecture	Describe the		
				mechanisms		
	carbohydrate			of Maillard reaction and		
*教学内容、进度安排				find out		
				where it		
				happens in	Sugar structure,	
及要求(Class				your daily	Non-enzymatic	
及安水(Class				life. The	reaction, reducing	
Schedule&Requirements)				paper should	sugar, disaccharides,	
				be typed,	oligosaccharides,	
				with font	polysaccharides,	
				type Times	starch, gelatinization,	
				New Roman	retrogradation.	
				and size 12,		
				and double		
				spaced. The		
				length		
				should be 3 -		
				5 pages.		
	Peptide and protein				Properties and	
		8	Lecture		classification of	
					amino acids,	
					structural properties	
					of peptides and	

					proteins, protein	
					denaturation	
					(foaming, dough	
					development, etc.),	
			Lecture		Fatty acids, lipid	
	Lipids	4			structure, lipid	
					reaction, lipid	
					oxidation,	
					antioxidants	
				Write a		
			Lecture	report about		
				mechanisms		
				of enzymatic		
				browning		
		4		and how to		
				protect from		
				it with a		
				daily		
	Food Enzyme			example.	Enzymatic reaction,	
				The paper	enzymatic browning	
				should be	(polyphenoloxidase	
				typed, with	reaction)	
				font type		
				Times New		
				Roman and		
				size 12, and		
				double		
				spaced. The		
				length		
				should be 3 -		
				5 pages.	Colon the same1-	
					Color theory, color	
	Colors	2	Lecture		space, synthetic	
					colorants, natural	
					colorants	
	Vitamins and				Classifications, loss	
		2	Lecture		in processing and	
Discussion		Lecture		storage, Vc browning		
					reaction	
	Discussion				Students will select a	
		2	Oral		topic and give a	
			presentation		scientific	
			and		presentation based	
			discussion		on understanding of	
					the interactions of	
			I	<u>I</u>	ı	

	Final			food components in food formulation, food processing, food safety, and food nutrition.			
*考核方式(Grading)	Class meetings are lectures, occasional discussions or oral presentations. Outside activities may include homework problems. The course grade is derived from attendance (10%), two reports and discussion (20%) and final exam (70%).						
*教材或参考资料 (Textbooks & Other Materials)	Textbook: Fennema's Food Chemistry, Fourth Edition (Food Science and Technology), CRC Press; 4th Edition (September 13, 2007) ISBN-10: 0849392721; ISBN-13: 978-0849392726 (使用 8 届,外文教材,高等院校教材) Other material: Belitz, H. D. and Grosch, W. Food Chemistry. Second Edition (English Version). New Yolk: Springer verlag, Berlin Heidelberg, 1999 ISBN-10: 354069935X; ISBN-13: 978-3540699354						
其它(More)	无						
备注(Notes)	无						

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。