

Southwest University

Graduate Course Syllabus

Course Unit: School of Food Science

Course No.	1108320012	Course Name	Advanced Food Chemistry								
Course category (√)	Compulsory courses (√) Elective courses ()	Credit hour	3	Total class hour	60	Lectures hours	47	Discussion hours	4	Experiment hours	9
Lecturer	Jianquan Kan	Job title degree	Professor Doctor degree		Specialties			Food science			
Range of application by majors: primary discipline of doctoral program in food science and engineering (food science: agricultural products processing and storage engineering; food, grease and protein engineering; aquatic products processing and storage engineering)											
Prerequisite courses: <i>Food and Chemistry</i> or <i>Advanced Food Biochemistry</i> for postgraduates											
Teaching objectives and requirements: The purpose of this course is to introduce the latest developments of food chemistry and its application prospects and approaches in the food industry. Students are required to master the latest research profiles and trends in water, protein, grease, carbohydrates, food color, aroma and flavor chemistry and food nutrient, and master the operation methods and skills of some experiments.											
Teaching and testing methods (it's need to be conducive to cultivating the innovative thinking and ability of graduate students) Teaching methods: course teaching is the main method, and student discussion is the supplementary method. There will also be experimental class to consolidate and deepen the content of the course. Testing methods: 1. written test; 2. students need to submit a course report with more than 2500 words. The score of the report will be one of the usual test score according to the adequacy of data collection, the incisiveness of analysis and the innovation of academic point of view.											

Course contents and course hours allocation

Theory teaching 47 hours, discussion 4 hours, experiment 9 hours

Theory teaching including:

The first subject Introduction (2 course hours)

- ① content of food chemistry research;
- ② category of food chemistry research;
- ③ research methods of food chemistry ;
- ④ hot spot field of food chemistry research.

The second subject Latest research progress of moisture in food (5 course hours)

- ① related concepts;
- ② BET and WLF equations;
- ③ the phase change and glassy state of food with water; ④ molecular mobility

The third subject Latest research progress of protein (9 course hours)

- ① the effect of protein on food quality;
- ② the structure and stability of protein;
- ③ the degeneration of protein;
- ④ the functional properties of protein in food;
- ⑤ the modification of protein and functional properties of modified protein;
- ⑥ protein new resources;
- ⑦ the allergy of protein food

The fourth subject Latest research progress of carbohydrate (8 course hours)

- ① the latest classification of carbohydrates;
- ② functional oligosaccharide;
- ③ resistant starch;
- ④ active polysaccharides;
- ⑤ carbon water compounds modification

The fifth subject Latest research progress of grease (7 course hours)

- ① non-triacylglycerol component in grease;
- ② functional properties and application of grease;
- ③ grease new resource;
- ④ grease modification;
- ⑤ special grease

The sixth subject Non-nutrients in food (5 course hours)

- ① the terpenoids;

- ② organic sulfur compounds;
- ③ phenol and polyphenol compounds;
- ④ coenzyme;
- ⑤ inositol;
- ⑥ nucleotide etc.

The seventh subject Food color, aroma and flavor chemistry

- ① the forming way of food color, aroma and flavor;
- ② special flavored substances;
- ③ special aromatic substances;
- ④ methods and techniques of color, aroma and flavor.

The eighth subject Food dispersal system

- ① overview;
- ② emulsion;
- ③ suspension;
- ④ gel.

The ninth subject Comprehensive evaluation of food (3 course hours)

- ① overview;
- ② the main factors affecting food quality;
- ③ food shelf life prediction dynamics;
- ④ design of food shelf life prediction test.

The tenth subject Discussion (4 course hours)

The eleventh subject Experiments (9 course hours)

(Please add more pages if this page is insufficient)

The Catalog for main reference book (periodicals):

S.N.	Author	Books and Periodicals' name	Press
1	Owen R.Fennema.	Food Chemistry.	Third Edition,1998
2	Belitz. Grosch	Food Chemisty.	Third Edition,2004
3	Naike Ding	Food Flavor Chemistry	China Light Industry Press, 1996
4	O.R.Fennema. Wangzhang translate	Food Chemistry (the third edtion)	China Light Industry Press, 2003
5	Zongdao Chen		Southwest Normal University

	and Jianquan Kan	Practical Grease Chemistry	Press, 1997
6		Food Chemistry[J]	
7		Journal Agricultural and Food Chemistry[J]	
Review Comments of School (Institute, Center):			
		Signature	(Date)
Review Comments of Student Committee:			
		Signature	(Date)
Review Comments of Graduate School			
		Signature	(Date)