



Course Syllabus (Academic Year 2021)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

- Course No. and Title** : KAFT 320 Food Chemistry 1
Credit (study hours) : 3(2-3-5)
- Program Name** : Bachelor of Science in Food Technology
- Course Module** : Specialized/Specific core
Pre/co-requisite : KAID 220 Basic Organic Chemistry
- Class Semester** : 1st Semester 2nd Semester Academic Year 2021
- Class Schedule & Venue** : Lecture every Thursday at 10:00 – 12:00 by Webex
Lab every Thursday at 13:00 – 16:00
- Class Coordinator** : Dr. Chutikarn Kapcum
Contact No. : 099-2914694, Email : Kapcum.chu@gmail.com

7. Course Description

Physical and chemical change in food components, water, colloid system in foods, protein, lipid, carbohydrate, vitamin and mineral, enzyme, pigment, browning reaction, rancidity in food.

8. Course Objectives / Course Learning Outcomes (CLOs)

No.	Objectives / CLOs	Expected Skills / Knowledge			PLOs
		Specific	Generic	Knowledge	
8.1	Students will be able to explain the changes in physicochemical properties of foods based on their components and relate them to the food quality นักศึกษาสามารถอธิบายการเปลี่ยนแปลงทางเคมีกายภาพของอาหารจากองค์ประกอบต่างๆ และสามารถเชื่อมโยงการเปลี่ยนแปลงที่เกิดขึ้นกับคุณภาพของอาหารได้	S5: Skill in identify important characteristics of food	G4: Associating skill	K2: Food Chemistry	1
8.2	Students will be able to perform basic food chemistry experiments based on the laboratory instructions with ethics and time management นักศึกษาสามารถทำการทดลองทางเคมีอาหารพื้นฐานโดยทำตามคู่มือปฏิบัติการได้อย่างมีจริยธรรมและบริหารจัดการเวลาได้	S11: Skill in conducting experiment	G3: Ethics G7: Time management	K2: Food Chemistry	2

No.	Objectives / CLOs	Expected Skills / Knowledge			PLOs
		Specific	Generic	Knowledge	
8.3	Students will be able to write understandable laboratory reports after performing experiments นักศึกษาสามารถเขียนรายงานผลการทดลองทางวิทยาศาสตร์ภายหลังจากทำการทดลองได้อย่างเข้าใจ	S13: Skill in report writing and presentation of research project	G13: Writing skill	K23: Writing scientific report	4
8.4	Students will be able to work as a team with ethics นักศึกษาสามารถทำงานเป็นทีมอย่างมีจริยธรรม		G3: Ethics G15: Interpersonal skill G16: Teamwork		5

9. Class Instructor List

9.1	Associate Professor Dr. Rungtiwa Wongsagornsup	(RW)	Email: kookple@hotmail.com
9.2	Dr. Amnart Jarerat	(AJ)	Email : amnart.jar@mahidol.ac.th
9.3	Dr. Jarupat Luecha	(JL)	Email: jarupat.lue@mahidol.edu
9.4	Dr. Natteewan Udomsilp	(NU)	Email: paeng888@hotmail.com
9.5	Dr. Chutikarn Kapcum	(CK)	Email: kapcum.chu@gmail.com
9.6	Mrs. Ampha Eakkachit	(AE)	Email: ampha.yao@mahidol.ac.th

10. Course Outline Lecture and lab

Week	Date	Time	Contents	CLOs	Instructor
1*	12 Aug 21	10.00-12.00	Introduction to course		CK
		13.00-15.00	Lecture: Water and water activity 1	8.1	RW
2**	19 Aug 21	10.00-12.00**	Lecture: Water and water activity 2	8.1	RW
		13.00-16.00	Lab: Water activity, hydrometer, hand refractometer	8.2,8.3, 8.4	RW, CK, AE
3	26 Aug 21	10.00-12.00	Lecture: Mono- and oligo-saccharides	8.1	RW
		13.00-16.00	Lab: Total CHO and reducing sugar	8.2,8.3, 8.4	RW, AE
4	2 Sep 21	10.00-12.00	Lecture: Polysaccharides and starch	8.1	RW
		13.00-16.00	Lab: Amylose content	8.2,8.3, 8.4	RW, AE
5	9 Sep 21	10.00-12.00	Lecture: Pigment	8.1	JL
		13.00-16.00	Lab: Pigment in foods	8.2,8.3, 8.4	CK, AE
6	16 Sep 21	10.00-12.00	Lecture: Enzyme 1	8.1	AJ
		13.00-16.00	Lab: Clarity test of starch	8.2,8.3, 8.4	RW, AE

Week	Date	Time	Contents	CLOs	Instructor
Wed 22 Sep 21		Mid Term Exam 13.00-15.00 (week 1-5)			
7	23 Sep 21	10.00-12.00	Lecture: Enzyme 2	8.1	AJ
		13.00-16.00	Lab: Polyphenol Oxidase	8.2,8.3, 8.4	AJ, AE
8	30 Sep 21	10.00-12.00	Lecture: Fat and lipid 1	8.1	CK
		13.00-16.00	Lab: Acid value and free fatty acid		CK, AE
9	7 Oct 21	10.00-12.00	Lecture: Fat and lipid 2	8.1	CK
		13.00-16.00	Lab: Peroxide value in food	8.2,8.3, 8.4	JL, AE
10	14 Oct 21	10.00-12.00	Lecture: Protein 1	8.1	JL
		13.00-16.00	Lab: Egg Foam	8.2,8.3, 8.4	CK, AE
	21 Oct 21	วันหยุดราชการ			
11	28 Oct 21	10.00-12.00	Extra Exam 10.00-12.00 (Week 6-9)		
		13.00-15.00	Lecture: Protein 2	8.1	JL
12	4 Nov 21	10.00-12.00	Lecture: Vitamin and mineral	8.1	CK
		13.00-16.00	Lab: Vitamin C in Foods	8.2,8.3, 8.4	RW, AE
13	11 Nov 21	10.00-12.00	Lecture: Maillard Browning	8.1	NU
		13.00-16.00	Lab: Maillard Browning	8.2,8.3, 8.4	CK, AE
14	18 Nov 21	10.00-12.00	Lecture: Dispersed system 1	8.1	CK
		13.00-16.00	Lab: Properties of emulsions	8.2,8.3, 8.4	CK, AE
15	25 Nov 21	10.00-12.00	Lecture: Dispersed system 2	8.1	CK
Thu 9 Dec 21		Final Exam 13.00-15.00 (week 10-16)			

For laboratory study, 4 students per group will be working together throughout the semester.

There will be 9 groups in total.

* : Mother's Day

** : The Teachers' Day Observation

: The experiments will be done at home.

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Mid-term close book examination	2 hours	8.1	1-5	20
11.2	Extra close book examination	2 hours	8.1	6-9	16
11.3	Final close book examination	2 hours	8.1	10-16	24
11.4	6 Lab reports using rubrics and 6 assignments/discussions	After class	8.3	1-15	20
11.5	12 Lab quizzes	In class	8.2	1-15	10
11.6	Affective score	In class	8.2, 8.4	1-16	3
11.7	Lecture class attendant*	In class	8.2	1-16	3
11.8	12 Lab plans	Before class	8.3	1-15	4
				Total	100

*Students who have less than 80% class attention, will not be allowed to take final examination.

12. Grading System

Criterion-referenced evaluation

Grade	Score	Grade	Score	Grade	Score	Grade	Score
A	≥ 80 %	B	70 – 74.99%	C	60 – 64.99%	D	50 – 54.99%
B+	75 – 79.99%	C+	65 – 69.99%	D+	55 – 59.99%	F	< 50 %

Norm-referenced evaluation

*If use both criterion and norm-referenced evaluation, please tick two boxes.

13. References

- 13.1 นิธิยา รัตนานพนนท์. 2549. เคมีอาหาร. พิมพ์ครั้งที่ 2. สำนักพิมพ์โอเดียนสโตร์, กรุงเทพฯ.
- 13.2 Belitz, H.-D., W.Grosch and P.Schieberle. 2004. Food Chemistry. 3rd revised ed. Springer, Berlin.
- 13.3 Damadaran, S., K.L. Parkin and O.R. Fennema. 2008. Fennema's Food Chemistry. 4th ed. CRC Press/Taylor & Francis, Boca Raton.
- 13.4 Hui, Y.H. 2006. Food Biochemistry & Food Processing. Blackwell Publishing, Iowa.