Course Syllabus (Academic Year 2020)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title** : KAFT458 Shelf Life Studies of Food Product

   Credit (study hours) : 1 (0-3-1)

2. **Program Name** : Bachelor of Science in Food Technology

3. **Course Module** : Specialized/Specific core course

   Pre/co-requisite : KAFT 323, KAFT 338 and KAFT 349

4. **Class Semester** : ☑ 1st Semester ☐ 2nd Semester Academic Year 2020

5. **Class Schedule & Venue** : Wednesday, 09:00AM–12:00PM

   (Lect. Online via Webex: Jul, 1 2020 – Aug, 9 2020,

   Lab MUKA (L-111 and L101, Laboratory Building): Aug, 10 2020 – Oct, 9 2020,

   Lect. Online via Webex: Oct, 10 2020 – Oct, 31 2020)

6. **Class Coordinator (CC)** : Plengsuree Thiengnoi, Ph.D.

   Room : L222 (Laboratory Building) Email : plengsuree.thi@mahidol.ac.th

7. **Course Description**

Concept, methodology and applications of shelf life study; physical deterioration, chemical deterioration, and microbial deterioration; and factors effecting shelf life of food products (product composition, packaging, and storage and distribution)

8. **Course Objectives / Course Learning Outcomes (CLOs)**

No.	Objectives / CLOs	Expected Skills / Knowledge*			PLOs**
		Specific	Generic	Knowledge	
8.1	Explain the principle; and discuss importance of shelf life determination of food products	S8: Skill in judging food quality based on provided data	G1, G4	K5, K19	PLO2
8.2	Classify modes of deterioration of specific food; and identify factors affecting its shelf life	S5: Skill in identifying important characteristics of food	G4	K5, K19	PLO2
8.3	Design shelf life testing plan				

No.	Objectives / CLOs	Expected Skills / Knowledge*			PLOs**
		Specific	Generic	Knowledge	
	for particular food product; and execute accordingly				
	8.3.1 Design scientifically sound experimental plan on shelf life testing	S10: Skill in experimental planning	G1, G7	K5, K19, K22	**PLO3**
	8.3.2 Competently execute scientific experiment	S11: Skill in conducting experiment	G3, G7, G9	K8, K17-19	**PLO3**
			G15-17	K27	**PLO6**
	8.3.3 Interpret obtained results correctly	S8: Skill in judging food quality based on provided data	G1, G4	K5, K7, K19, K21	**PLO2**
	8.3.4 Efficiently communicate scientific findings	S13: Skill in report writing and presentation of research project	G4, G10, G13, G14	K19, K23, K24	**PLO3**

***** G1: Decision making; G2: Information acquisition; G3: Ethics; G4: Associating skill; G5: Business awareness; G6: Cultural awareness; G7: Time management; G8: Computer skill/IT; G9: Problem solving; G10: Communication skill; G11: Leadership; G12: Live-long learning; G13: Writing skill; G14: Presentation skill; G15: Interpersonal skill; G16: Teamwork; G17: Self-direction; K1: Post harvest handling of agricultural materials; K2: Food chemistry; K3: Food processing; K4: Food biochemistry; K5: Food laws/std. regulations (HACCP); K6: Food engineering; K7: Food safety; K8: Food microbiology; K9: QC&QA (Stat. for QC); K10: Food sanitation; K11: Logistic; K12: Sustainability; K13: Waste management; K14: Global & national trend & policy; K15: Business administration; K16: Physical properties of food; K17: Analysis of food properties; K18: Sensory; K19: Shelf-life estimation; K20: Stat. (sampling); K21: Stat. (data analysis); K22: Experimental design; K23: Scientific writing; K24: Scientific presentation (media preparation); K25: Thai language for communication; K26: English language for communication; K27: Psychology; K28: Human nutrition

**PLO1: Control and problem-solve food production process at industrial level using fundamentals in food science and technology with intellectual curiosity; PLO2: Apply knowledge of food science and technology at managerial level for controlling food quality; PLO3: Apply scientific principles and methods to carry out research project related to food science and technology, including planning, implementation, collecting data and drawing valid conclusions; PLO4: Express entrepreneurial mind-set in food business; PLO5: Communication in Thai and English effectively in food science and technology contexts with wide-range of audiences; PLO6: Demonstrate the ability to work independently, as well as the ability to work cooperatively in teams with ethical awareness

9. Class Instructors

9.1 Amnat Jarerat, Ph.D. (AJ) Email: amnat.jar@mahidol.ac.th

9.2 Plengsuree Thiengnoi, Ph.D. (PT) Email: plengsuree.thi@mahidol.ac.th

9.3 Renoo Yenket, Ph.D. (RYK) Email : ryenket@gmail.com

9.4 Assoc. Prof. Rungtiwa Wongsagonsup (RW) Email : rungtiwa.won@mahidol.ac.th

9.5 Natteewan Udomsil, Ph.D. (NU) Email : paeng888@hotmail.com

9.6 Jarupat Luecha, Ph.D. (JL) Email: jarupat.lue@mahidol.edu

9.7 Chutikarn Kapcum Ph.D. (CK) Email: kapcum.chu@gmail.com

9.8 Ronnachai Yoddumnern (RY) Email : ronnachai_y@hotmail.com

9.9 **Staff from scientific operation unit (SOU)**

- Kannika Pasada (KP) Email : kannika.pas@mahidol.edu

Invited lecturers

9.6 Asst. Prof. Ratchanee Charaen (RC) KMUTNB, Prachinburi Campus

10. Course Outline

Week	Date	Contents	CLOs	Instructor's Names
1	1/7/20	- Course introduction	8.1, 8.2, 8.3	PT, KP
2	8/7/20	- Deterioration of foods	8.1, 8.2	PT, KP
3	15/7/20	- Shelf life study: Concept, methodology and application	8.2, 8.3	PT, KP
4	22/7/20	Planning of shelf life testing (Proposal writing)	8.2, 8.3	PT, KP
5	29/7/20	Student's group presentation on shelf life testing plan 1	8.2, 8.3	PT, KP
6	5/8/20	Student's group presentation on shelf life testing plan 2	8.2, 8.3	PT, KP
7	19/8/20	Shelf life study term project - Packaging material selection - Physical deterioration, e.g. instrumental texture analysis, color measurement, sensory evaluation, and moisture content - Microbial deterioration - Chemical deterioration, e.g. vitamin-C content, rancidity measurement, and fat and protein contents	8.2, 8.3	All of Staffs
8	26/8/20	**Take-home examination**		
9	2/9/20	Physical deterioration: Moisture sorption isotherm	8.1, 8.2	RC, KP
10-11	9, 16/9/20	Shelf life study term project (cont.)	8.2, 8.3	All of Staffs
12	23/9/20	Shelf life estimation - Statistical analysis - Modeling	8.1, 8.3	RC, KP
13	30/8/20	Shelf life study term project (cont.)	8.2, 8.3	All of Staffs
14-15	7, 14/10/20	Shelf life study term project (cont.)	8.2, 8.3	All of Staffs
16	21/10/20	Student's group presentation on term assignment	8.1, 8.2, 8.3	All of Staffs
17	28/10/20	**Open-book examination**		

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Take-home examination	Rubric, by class instructor	8.1, 8.2	9, 12	10%
11.2	Open-book examination (calculator allowed)	Rubric, by class instructor	8.1-8.3	17	25%
11.3	Homework	Rubric, by class instructor	8.2, 8.3	1-17	15%
11.4	Project proposal	Rubric, by class instructor	8.3	5-6	10%
11.5	Project report	Rubric, by class instructor	8.2, 8.3	16	15%
11.6	Oral presentation	Rubric, by class instructor	8.2, 8.3	16	10%
11.7	Student's performance	Instructor's observation	8.3	1-17	15%
				Total	**100**

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

13. References

- Robertson GL, editor. Food Packaging and Shelf Life: A Practical Guide. New York: CRC Press. 2010.
- Smith JS and Hui YH, editors. Food Processing: Principles and Applications, Boston: Blackwell Publishing. 2004.