Course Syllabus (Academic Year 2020)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title**	: KAFT238 Food Processing I
Credit (study hours)	: 4 (3-3-7)
2. **Program Name**	: Bachelor of Science in Food Technology
3. **Course Module**	: Specific Core Course, Major Subject
Pre/co-requisite	: KAFT 101
4. **Class Semester**	: ☐ 1st Semester ☒ 2nd Semester Academic Year 2020
5. Class Schedule & Venue	: Lecture, **Monday at 09:00 – 12:00** and 13:00-16:00 **Online only (week 1-3)** and **hybrid (Week5-8)** Laboratory, **Monday at 9:00-12:00 and 13:00 – 16:00 (Week 10-16)** **(Processing room and Food Chemistry room)**
6. Class Coordinator	: **Dr. Jarupat Luecha** **Room : L222 Email :jarupat.lue@mahidol.edu**

7. Course Description

Unit operations, properties of raw food material, postharvest handling for agricultural materials, food deterioration; principles of food preservation methods such as temperature and water activity control, and effects of preservation methods on food quality; principles of food processing techniques, such as minimal processing, heating, pasteurization and sterilization, chilling and freezing, high pressure processing, drying and evaporation, extrusion and fermentation; operation of food processing; apply mass balance in food processing; work effectively as a team

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 importance of each step in the food processing ranging from raw material preparation to final product นักศึกษาสามารถอธิบายถึงความสำคัญของแต่ละขั้นตอน การแปรรูปผลิตภัณฑ์อาหารตั้งแต่ขั้นตอนการเตรียมวัตถุดิบจนได้เป็นผลิตภัณฑ์สุดท้าย	S1: Skill in selecting appropriate raw material for food production	G1: Decision making G2: Information acquisition G4:	K1: Post harvest handling of agricultural materials K3: Food	1

		S3: Skill in identifying problem occurred during food process	Associating skill	Processing	
8.2	Students will be able to explain how the raw material is processed into food and demonstrate the main factors affecting the quality of food products นักศึกษาสามารถอธิบายหลักการในการแปรรูปอาหารด้วยกรรมวิธีต่างๆ และปัจจัยสำคัญที่มีผลต่อคุณภาพของอาหาร	S2: Skill in controlling food production process S3: Skill in identify important characteristics of food	G1: Decision making G4: Associating skill	K3: Food Processing	1
8.3	Students will be able to explain the principles of equipment used in food industry. นักศึกษาสามารถอธิบายหลักการทำงานของเครื่องมืออุปกรณ์ที่ใช้ในกระบวนการแปรรูปอาหารในระดับอุตสาหกรรม	S2: Skill in controlling Food production process S3: Skill in identify important characteristics of food	G1: Decision making G4: Associating skill	K3: Food Processing K6: Food engineering	1
8.4	Students will be able to work as a team with ethics. นักศึกษาสามารถทำงานเป็นทีมอย่างมีจริยธรรม		G3: Ethics G15: Interpersonal skill G16: Teamwork		6

9. Class Instructor List

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

9.2 Jarupat Luecha, Ph.D. (JL) E-mail: jarupat.lue@mahidol.edu

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

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

9.5 Aj.Thanakorn Thiengnoi (TT) Email: thiengnoi@hotmail.com

9.6 Mrs. Ampha Ekkajith (AE) Email: namleab3@hotmail.com

9.7 Aj. Ronnachai Yoddumnern (RY) Email: ronnachai.yod@mahidol.ac.th

9.8 Invited lecturer

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

10. Course Outline

Week	Date	Contents	CLOs	Teaching & Learning	Instructor
1	18 Jan 2021 9:00-12:00 13:00-16:00	Course introduction -Basic principle of Food Processing -Postharvest handling of agricultural crops	8.1, 8.2,8.3	Recorded videos or **Online lecture** and discussion	JL PT TT
2	25 Jan 2021 9:00-12:00 13:00-16:00	 -Postharvest handling of land and aquatic animals -Ambient temperature processing	8.1, 8.2,8.3		 PT PT
3	1 Feb 2021 9:00-12:00 13:00-16:00	 -Chemical Preservation -Chilling & Freezing	8.1, 8.2,8.3		 PT CK
4	8 Feb 2021	Midterm Examination (Online)			

Week	Date	Contents	CLOs	Teaching & Learning	Instructor
5	15 Feb 2021 9:00-12:00 13:00-16:00	- Pasteurization - Baking & Roasting & Flying & Blanching	8.1, 8.2,8.3	**Hybrid** Lecture and discussion	JL PT
6	22 Feb 2021 9:00-12:00 13:00-16:00	- Sterilization - Alternative Processing Techniques I	8.1, 8.2,8.3		JL CK
7	1 Mar 2021 9:00-12:00 13:00-16:00	- Dehydration - Fermentation	8.1, 8.2,8.3		JL AJ
8	8 Mar 2020 9:00-12:00 13:00-16:00	- Evaporation and Extrusion -Alternative Processing Techniques II	8.1, 8.2,8.3		JL CK
9	15 Mar 2021	Final Examination (**Onsite** at MUKA)			
10	22 Mar 2021 All day 2 sections	Sec1: Material Preparation Sec2: Milk pasteurization and UHT	8.1-8.4	**Laboratory Onsite** work in small group	PT,RY,AE
11	28 Mar 2021 All day 2 sections	Sec1: Postharvest handling of agricultural crops Sec2: Ice Cream	8.1-8.4		TT,RYK,AE
12	5 Apr 2021 All day 2	Sec 1: Meat and fishery quality evaluation	8.1-8.4		PT,CK,AE

Week	Date	Contents	CLOs	Teaching & Learning	Instructor
	sections	Sec2: Chilling and Freezing			
13	12 Apr 2021 All day 2 sections	Sec1: Chemical Preservation Sec2: Retort and Canning	8.1-8.4		PT,JL,AE
14	19 Apr 2021 All day 2 sections	Sec 1: Blanching Sec2: Tempe	8.1-8.4		PT,AJ,AE
15	26 Apr 2021 All day 2 sections	Sec1: Frying Sec2: Spray drying	8.1-8.4		PT,CK,AE
16	3 May 2021 All day	Extrusion	8.1-8.4		JL,AE All students
17	10 May 2021 9:00-12:00 13:00-16:00	Wrap up Lab Cleaning Day		Online/Q&A	JL All students

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Mid-term exam	- Online and Opened book - Calculator is not allowed	8.1, 8.2, 8.3	1-3	24
11.2	Final exam	- Onsite and Closed book - Calculator is not allowed	8.1, 8.2, 8.3	5-8	32
11.3	Lab Reports	Rubric	8.1, 8.2, 8.3, 8.4	10-16	26
11.4	Lab participation	Instructor evaluation of Lab participation	8.1, 8.2, 8.3, 8.4	10-16	3
11.5	Assignment (Term project)	Rubric	8.4		8
11.6	Assignment/Class participation	Instructor evaluation of class participation	8.1, 8.2, 8.3, 8.4	1-3, 5-8	7
				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

13.1 วิไลรังสาดทอง.2546. เทคโนโลยีการแปรรูปอาหาร:Food processing technology. บริษัทซีเอ็ดยูเคชั่นจำกัด,กรุงเทพฯ

13.2 คณาจารย์ภาควิชาวิทยาศาสตร์และเทคโนโลยีการอาหาร.2546. วิทยาศาสตร์และเทคโนโลยีการอาหาร:Food science and technology. คณะอุตสาหกรรมเกษตรมหาวิทยาลัยเกษตรศาสตร์,พิมพ์ครั้งที่4,สานักพิมพ์มหาวิทยาลัยเกษตรศาสตร์,กรุงเทพฯ.

13.3 Brennan, J.G. 2006. Food Processing Handbook, Wiley-VCH, Weinheim.

13.4 Ramaswamy, H and Marcotte, M. 2006. Food processing : principles and applications, Taylor & Francis, Boca Raton, FL.