Course Syllabus (Academic Year 2022)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title** : KAFT470 Food Packaging Technology
   Credit (study hours) : 3(3-0-6)
2. **Program Name** : Bachelor of Science in Food Technology
3. **Course Module** : Specialized/Specific core course
   Pre/co-requisite : KAFT 337 Food Processing II
4. **Class Semester** : ☑ 1st Semester ☐ 2nd Semester Academic Year 2022
5. **Class Schedule & Venue** : Tuesday 1:00 - 4.00PM, Room : R - 2212 (Hybrid class via Webex online)
6. **Class Coordinator (CC)** : Patnarin Benyathiar, Ph.D.
   Room : L220 (Laboratory Building) Email : patnarin.ben@mahidol.ac.th
7. **Course Description**

ความรู้พื้นฐานเกี่ยวกับคุณสมบัติที่สำคัญของวัสดุบรรจุภัณฑ์ ที่นำมาใช้เป็นบรรจุภัณฑ์อาหาร การทดสอบวัสดุและบรรจุภัณฑ์ การเลือกใช้และการออกแบบบรรจุภัณฑ์ บรรจุภัณฑ์เพื่อการยืดอายุการเก็บรักษาและเพิ่มความปลอดภัยแก่ผลิตภัณฑ์อาหาร ระบบการควบคุมคุณภาพและข้อกำหนดเกี่ยวกับวัสดุที่สัมผัสกับอาหาร การจัดการของเสียที่เกิดจากบรรจุภัณฑ์อาหาร บรรจุภัณฑ์อาหารแบบยั่งยืน และบรรจุภัณฑ์ชนิดใหม่ที่น่าสนใจในปัจจุบัน การสื่อสารอย่างมีประสิทธิภาพ มีการใช้ทักษะการเรียนรู้ตลอดชีวิต ทักษะในการแก้ปัญหา และทักษะการทำงานร่วมกับผู้อื่นในการพัฒนานักศึกษา

Basic knowledge on important properties of packaging materials; material and package testing; material selection and packaging design; packaging systems to improve shelf-life and products' safety; legislative issue regarding food packaging; waste management options and impacts; sustainable food packaging; and novel food packaging; communicate effectively; use of life-long learning skills, problem solving skill and interaction skills to support student development.

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

No.	Objectives / CLOs	Expected Skills / Knowledge*			PLOs**
		Specific	Generic	Knowledge	
8.1	List important properties of each packaging material and select their suitable testing methods accordingly	S6: Skill in selecting appropriate analytical techniques	G1	K2	PLO1
8.2	Explain how packaging characteristics affect shelf life of food product	S8: Skill in judging food quality based on provided data	G1, G4	K1, K7, K19	PLO1
8.3	Design packaging system for particular product	S4: Skill in providing alternative solution in food production process	G1, G4, G12	K1, K5, K7, K12, K19	PLO1
		S14: Skill in recognizing opportunities in food business	G5, G12	K5, K12, K14	PLO4,5

* 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: Communication in Thai and English effectively in food science and technology contexts with wide-range of audiences; PLO5: Demonstrate the ability to work independently, as well as the ability to work cooperatively in teams with ethical awareness

9. Class Instructor

Patnarin Benyathiar, Ph.D (PB) Email: patnarin.ben@mahidol.ac.th

Invited guess speaker

Chanatan Sinlapanantakul (CS) Email: geng.flu@gmail.com

10. Course Outline

Week	Date	Contents	CLOs	Instructor's Names
1	Aug 9, 2022	Course introduction	2, 3	PB
2	Aug 16, 2022	Packaging material: PAPER	1, 3	PB
3	Aug 23, 2022	Packaging material: GLASS	1, 3	PB
4	Aug 30, 2022	Packaging material: METAL	1, 3	PB
5	Sept 6, 2022	Packaging material: POLYMER	1, 3	PB
6	Sept 13, 2022	Packaging material: POLYMER	1, 3	PB
7	Sept 20, 2022	Packaging material testing	1,2	PB
8	Sept 27, 2022	Packaging system for foodproduct	1-3	PB
9	Oct 4, 2022	**Midterm Exam**		
10	Oct 11, 2022	Packaging for food processing and application	1-3	PB
11	Oct 18, 2022	Food packaging technology 1	1-3	PB
12	Oct 25, 2022	Food packaging technology 2	1-3	PB
13	Nov 1, 2022	Regulations and guidelines for food packaging	3	PB
14	Nov 8, 2022	Packaging design	2,3	CS, PB
15	Nov 15, 2022	Sustainable packaging	1-3	PB
16	Nov 22, 2022	Group presentation on food packaging design	3	PB
17	Nov 29, 2022	**Final examination**		

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Midterm examination	Rubric, by class instructor	1,2	8	30%
11.2	Final examination	Rubric, by class instructor	1-3	17	30%
11.4	Homework/Assignment	Rubric, by class instructor	1, 2	1-15	15%
11.6	Oral presentation	Rubric, by class instructor	2, 3	16	15%
11.7	Attendance	Instructor's observation	3	1-16	10%
				Total	100

12. Grading System

☑ Criterion-referenced evaluation

Class' average score < 75.00 %		Class' average score ≥ 75.00%	
Grade	Score	Grade	Score
A	≥ 80.00 %	A	≥ 85.00 %
B+	75.00 – 79.99%	B+	80.00 – 84.99%
B	70.00 – 74.99%	B	75.00 – 79.99%
C+	65.00 – 69.99%	C+	70.00 – 74.99%
C	60.00 – 64.99%	C	65.00 – 69.99%
D+	55.00 – 59.99%	D+	60.00 – 64.99%
D	50.00 – 54.99%	D	55.00 – 59.99%
F	< 50.00 %	F	< 55.00 %

☑ Norm-referenced evaluation

13. References

- Coles R, McDowell D, Kirwan MJ, editors. Food Packaging Technology, Boca Raton: Blackwell Publishing Ltd. 2003.
- Robertson GL, editor. Food Packaging and Shelf Life: A Practical Guide. New York: CRC Press. 2010.
- Selke SEM, Culter JD, Hernandez RJ, editors. Plastics Packaging: Properties, Processing, Applications, and Regulations. 2nd ed. Cincinnati: Hanser Gardner Publications, Inc. 2004.
- Smith JS and Hui YH, editors. Food Processing: Principles and Applications, Boston: Blackwell Publishing. 2004.