Course Syllabus (Academic Year 2021)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title** : KAFT343 Food Microbiology 2
   Credit (study hours) : 3(2-3-5)
2. **Program Name** : Bachelor of Science in Food Technology
3. **Course Module** : Specific Core Course, Required Subject
   Pre/co-requisite : KAFT 342
4. **Class Semester** : ☑ 2nd Semester Academic Year 2021
5. **Class Schedule & Venue** : Lecture: Monday 10.00-12.00, Lab: Monday 13.00-16.00
6. **Class Coordinator** : Ronnachai Yoddumnern Tel. 0818899867
   e-mail: ronnachai_y@hotmail.com
7. **Course Description**

Controlling and killing of microorganisms by moist-heat and dry-heat for food processing, bacterial destroying by UV, food preservative and industrial sanitizer; checking of sterilization of canned food; detection of antibiotic residue in food by microbiological method as well as isolation of enzyme-producing microorganisms and effect of microbial activity product on food; moral of food technologist and management of resource efficiency

8. Course Objectives / Course Learning Outcomes (CLOs)

No.	Objectives / CLOs	Expected Skills / Knowledge*			PLOs
		Specific	Generic	Knowledge	
8.1	Explain controlling and killing of microorganisms by various methods, and utilizing of microorganisms for antibiotic, enzyme production and other microbial activities that effect on food product	S2,3,6	G1,4,10	K7,8,9	1
8.2	Demonstrate microbiological technique skill and practical proficiency in a food microbiology laboratory	S2,3,6,8	G1,4,7,10, 13,16	K7,8,9,25	2
8.3	Demonstrate the use of communication skill and show cooperative teams	-	G10, G14	K8, 25	5

9. Class Instructor List

9.1 Ronnachai Yoddumnern (RY) e-mail: ronnachai_y@hotmail.com

9.2 Dr. Amnat Jarerat (AJ) e-mail: amnat.jar@mahidol.edu

9.3 Dr. Natteewan Udomsil (NU) e-mail: paeng888@hotmail.com

9.4 Dr. Patnarin Benjathiar (PB) e-mail: ohnarin@gmail.com

10. Course Outline

10.1 Lecture section

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
1	Jan 10	Course introduction Trend in food microbiology	8.1	Lecturing and discussion	RY
2	Jan 17	Microorganisms related to food safety and stability	8.1		RY
3	Jan 24	Food protection by heat treatment	8.1		RY
4	Jan 31	Food protection by low temperature	8.1		RY
5	Feb 7	Food protection by chemical agents	8.1		AJ
6	Feb 14	Industrial disinfection and sanitization	8.1		NU
7	Feb 21	Food protection by radiation	8.1		NU
8	(Feb 28 – Mar 4) Midterm examination				
9	Mar 7	Food protection by acidified and related method	8.1	Lecturing and discussion	PB
10	Mar 14	Microbial growth parameters in food	8.1		AJ
11	Mar 21	Utilization of microorganism in food industry	8.1		AJ
12	Mar 28	Microorganism metabolite I	8.1		NU
13	Apr 4	Microorganisms metabolite II	8.1		NU
14	Apr 11	Food fermentation products and beneficial microbes	8.1		AJ
15	Apr 18	Report & presentation I	8.1,8.3		RY
16	Apr 25	Report & Presentation II	8.1,8.3		RY
17	(May 2 - 13) Final examination				

Note: -

10.2 Laboratory section

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
1	Jan 10	Food microbiology laboratory safety	8.2	Laboratory Experiment	RY
2	Jan 17	Detection of antibiotic by microbial assay	8.2		RY
3	Jan 24	Application of heat treatment	8.2		RY
4	Jan 31	Application of low temperature and modified atmosphere	8.2		RY
5	Feb 7	Application of chemical agents : Effect of acidity on the inhibitory of preservatives	8.2		AJ
6	Feb 14	Application of disinfectant and sanitizing agent	8.2		NU
7	Feb 21	Application of radiation	8.2		NU
8	(Feb 28 – Mar 4) Mid-term examination				
9	Mar 7	Application of innovative technology	8.2	Laboratory Experiment	RY
10	Mar 14	Food fermentation I	8.2		RY
11	Mar 21	Food fermentation II	8.2		RY
12	Mar 28	Screening of useful microorganism	8.2		NU
13	Apr 4	Identification of useful microorganism I	8.2		RY
14	Apr 11	Identification of useful microorganism II	8.2		RY
15	Apr 18	Laboratory examination	8.1-8.3		RY
16	Apr 25	Laboratory examination (cont.)	8.1-8.3		RY
17	(May 2 - 13) Final examination				

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Mid-term exam	Writing exam	8.1	9	25
11.2	Final exam	Writing exam	8.1	17	25
11.3	Lab reports	Rubric	8.1	9, 17	10
11.4	Term paper	Rubric	8.1	15, 16	10
11.5	Laboratory exam	Select and practice the proper protection or preservation method for the defined food product	8.2	15, 16	20
11.6	Class participation	Instruction observation in class and lab		Every week	10
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

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

13. References

13.1 Hindman, D. (1997). Food microbiology. In *Delaware medical journal* (Vol. 69, Issue 3).

13.2 Hui, Y. H., Hansen, A. S., Stanfield, P. S., & Told, F. (2004). Handbook of Food and Beverage Fermentation Technology. In *Handbook of Food and Beverage Fermentation Technology*

13.3 Jay, J. M. (1992). Modern Food Microbiology. In *Modern Food Microbiology*.