Course Syllabus (Academic Year 2023)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title** : KAFT342 Food Microbiology I

   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 242 and KAFT244 (general microbiology lecture and lab)

4. **Class Semester** : ☑ 1st Semester Academic Year 2023

5. **Class Schedule & Venue** : Lecture on Tuesday at 10:00 – 12:00 Lecture Room: L216

   Laboratory room : L103

   Laboratory on Tuesday at 13:00-16:00, Room L103 at laboratory building

6. **Class Coordinator** : Asst. Prof. Dr. Natteewan Udomsil Room : L217

   Contact No. 081-7249641 or 2506 Email: paeng888@hotmail.com

7. **Course Description**

The role of microorganisms in food processing and preservation; food contamination and spoilage; foodborne disease; food production using microorganism for healthy food; microbiological techniques for identification and quantification of bacterial contamination in various kind of food products; utilization of resources effectively

8. Course Objectives / Course Learning Outcomes (CLOs)

No.	Objectives / CLOs	Expected Skills / Knowledge***			PLOs
		Specific	Generic	Knowledge	
8.1	Explain roles of microorganism that associate in food fermentation, food spoilage, food pathogen and parasite in food.	S2,3	G1,4,10	K7,8,9	1
8.2	Demonstrate microbiological technique skill and select appropriate methods for pathogen detection in food.	S2,3,5,6,8	G1,2,4,7,10, 13	K5,7,8,9,25	2
8.3	Demonstrate the use of communication skill and show cooperative teams	-	G10, G14	K8, K25	5

9. Class Instructor List

9.1 Name : Asst. Prof. Dr. Natteewan Udomsil (NU) Email : paeng888@hotmail.com

9.2 Name : : Dr. Amnat Jarerat (AJ) Email : amnat.jar@mahidol.edu

9.3 Name : Dr. Supatra Chunchob (SC) Email : supatra191@yahoo.com

10. Course Outline

10.1 Lecture section

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
1	8/08/23	Course Introduction Basic Microbiology	8.1	Lecture and discussion	NU
2	15/08/23	Factors influence microorganisms in food	8.1		NU
3	22/08/23	Indicator organisms	8.1		NU
4	29/08/23	Microbial spoilage	8.1		NU
5	5/09/23	Identification of pathogenic bacteria	8.1		NU
6	12/09/23	Microorganisms for food fermentations	8.1		NU
7	19/09/23	Advance techniques for detection of foodborne	8.1		NU

		pathogen and commercial tests			
8	26/09/23	Foodborne fungi, virus and mycotoxin	8.1		NU
9	Mid-term examination (2nd -6th October 2023)				
10	10/10/23	Foodborne pathogenic bacteria -*Staphylococcus aureus* -*Listeria monocytogenes*	8.1		AJ
11	17/10/23	Foodborne pathogenic bacteria -*Bacillus* sp. -*Clostridium* sp.	8.1		AJ
12	24/10/23	Foodborne pathogenic bacteria -*Campylobacter* sp. -*Aeromonas hydrophila* -*Plesimonas shigelloides*	8.1	Lecture and discussion	AJ
13	31/10/23	Foodborne pathogenic bacteria -*Shigella* sp. -*Salmonella* sp. -*Vibrio* sp.	8.1		AJ
14	7/11/23	Foodborne and waterborne parasite	8.1		SC
15	14/11/23	Advance rapid method by 3M (online)*	8.1		3M company
16	21/11/23	Term paper	8.3	Group assignment	NU
17	Final Examination (4th – 15th December 2023)				

Note: *Online class by 3M company staff

10.2 Laboratory section

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
1	8/08/23	Safety and principal practice in microbiology lab	8.2	Laboratory experiment	NU
2	15/08/23	Sample preparation, Media preparation, Microscopic techniques	8.2		NU, KP
3	22/08/23	Standard plate count, Yeast and Mold count Pour plate and Spread plate techniques	8.2		NU, KP
4	29/08/23	**Microbiological standard technique test**	8.2	Practice examination	NU, AJ, KP
5	5/09/23	Detection of Coliforms and *E.coli* in food sample	8.2	Laboratory experiment	NU, KP
6	12/09/23	Bacterial cellulose production by *Acetobacter xylinum*	8.2		NU, KP
7	19/09/23	Bacterial detection using 3M-petrifilm	8.2		NU, KP
8	26/09/23	Detection of *Staphylococcus aureus* in food sample	8.2		AJ, KP
9	Midterm examination (2^{nd} -6^{th} October 2023)				
10	10/10/23	Detection of *Listeria monocytogenes* in food sample	8.2	Laboratory experiment	AJ, KP
11	17/10/23	Detection of *Bacillus cereus* in food sample	8.2		AJ, KP
12	24/10/23	Detection *Salmonella* sp. in food sample	8.2		AJ, KP
13	31/10/23	Detection of *Vibrio* sp. in food sample	8.2		AJ, KP
14	7/11/23	Foodborne and waterborne parasite	8.2		SC, KP
15	14/11/23	**Identification and detection of unknown pathogen in food**	8.2	Practice examination	NU, KP
16	21/11/23				
Final Examination (4^{th} – 15^{th} December 2023)					

Note: -

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Mid-term exam	Writing exam	8.1, 8.2	9	30
11.2	Final exam	Writing exam	8.1, 8.2	16	30
11.3	Microbiological technique test and pathogen identification	Aseptic technique skill, correct methods and results	8.2	4,13	15
11.4	Lab reports	Rubric	8.2, 8.3	15	10
11.5	Term paper	Scientific writting	8.3	15	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

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

13. References

13.1 Food and Drug Administration. 2001. Bacteriological Analytical Manual 9th edition.

13.2 Heyes, P. R. 1992. Food Microbiology and Hygiene 2nd edition. Elsevier Science Pub.

13.3 Mclandsborough, Lynne Ann. Food Microbiology Laboratory. CRC press. 2003