



Course Syllabus (Academic Year 2018)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title** : KAFT349 Food Microbiology
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 347 General Microbiology
4. **Class Semester** : 1st Semester 2nd Semester Academic Year 2018
5. **Class Schedule & Venue** : Lecture every Tuesday at 10:00 – 12:00, Room L-218, Laboratory building
 Laboratory every Tuesday at 13:00-16:00, Room L103, Laboratory building
6. **Class Coordinator** : 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	Select appropriate methods and techniques for detection of pathogenic bacteria in food.	S2,3,5,6,8	G1,2,4,7,10, 13	K5,7,8,9,25	2,5,6

Note: * S1: Skill in selecting appropriate raw material for food production; S2: Skill in controlling food production process; S3: Skill in identifying problem occurred during food process; S4: Skill in providing alternative solution in food production process; S5: Skill in identify important characteristics of food; S6: Skill in selecting appropriate analytical techniques; S8: Skill in judging food quality based on provided data

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 Instructor List

9.1 Name : Dr. Natteewan Udomsil (NU) Contact No. :-..... Email : paeng888@hotmail.com

9.2 Name : Dr. Amnat Jarerat (AJ) Contact No. :-..... Email : amnat.jar@mahidol.ac.th

9.3 Name : Dr. Supatra Chunchob (SC) Contact No. :-..... Email : supatra191@yahoo.com

9.4 Name : Ampa Eakajit (AE) Contact No. :- Email : namleab3@hotmail.com

10. Course Outline

10.1 Lecture section

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
1	15/1/19	Course Introduction Basic Microbiology	1	Lecture and discussion	NU
2	22/1/19	Factors influence microorganisms in food	1		NU
3	29/1/19	Indicator organisms	1		NU
4	5/2/19	Microbial spoilage	1		NU
5	12/2/19	Foodborne pathogenic bacteria - <i>Staphylococcus aureus</i> - <i>Listeria monocytogenes</i>	1,2		AJ
6	19/2/19*	Foodborne pathogenic bacteria - <i>Bacillus</i> sp.	1,2		AJ

		- <i>Clostridium</i> sp.			
7	26/2/19	Foodborne pathogenic bacteria - <i>Campylobacter</i> sp. - <i>Aeromonas hydrophila</i> - <i>Plesimonas shigelloides</i>	1,2		AJ
8	5/3/19	Foodborne pathogenic bacteria -Coliforms - <i>Enterobacteriaceae</i>	1,2		NU
9	Mid-term Examination				
10	19/3/19	Foodborne pathogenic bacteria - <i>Shigella</i> sp. - <i>Salmonella</i> sp. - <i>Vibrio</i> sp.	1	Lecture and discussion	NU
11	26/3/19	Foodborne fungi, virus and mycotoxin	1		NU
12	2/4/19*	Foodborne and waterborne parasite	1,2		SC
13	9/4/19	Microorganisms for food fermentations	1,2		NU
14	16/4/18*	Advance techniques for detection of foodborne pathogen	1		NU
15	30/4/19	Commercial advance technique	1,2	Lecture	3M company
16	Final Examination				
17					

Note: * Make-up class will be announced later.

10.2 Laboratory section

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
1	15/1/19	Safety and principle practice in microbiology lab	2	Laboratory experimentation	NU, AE
2	22/1/19	Sample preparation, Media preparation, Microscopic techniques	2		NU, AE
3	29/1/19	Standard plate count, Yeast and Mold count	2		NU, AE

		Pour plate and Spread plate techniques			
4	5/2/19	Microbiological standard technique test	2	Laboratory test	NU,AJ, AE
5	12/2/19	Detection of <i>Staphylococcus aureus</i> in food sample	2	Laboratory experimentation	AJ, AE
6	19/2/19**	Detection of <i>Listeria monocytogenes</i> in food sample	2		AJ, AE
7	26/2/19	Detection of <i>Bacillus cereus</i> in food sample	2		AJ, AE
8	5/3/19	Detection of <i>E.coli</i> and <i>Coliforms</i> in food sample	2		NU, AE
9	Mid-term Examination				
10	19/3/19	Detection <i>Salmonella</i> sp. in food sample	1	Laboratory experimentation	AJ, AE
11	26/3/19	Detection of <i>Vibrio parahaemolyticus</i> in food sample	2		NU, AE
12	2/4/19**	Foodborne and waterborne parasite	2		SC, AE
13	9/4/19	Bacterial cellulose production by <i>Acetobacter xylinum</i>	2		NU, AE
14	16/4/19**	Identification and detection of unknown pathogen in food	2	Pathogen identification and detection test	NU, AE
15	30/4/19	<i>E.coli</i> coliform or pathogen detection by 3M petri-film	2	Laboratory experimentation	3M company
16-17	Final Examination				

Note: **Confirmation date will be announced later.

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Mid-term exam	Writing exam	1,2	9	30
11.2	Final exam	Writing exam	1,2	17	30
11.3	Pathogen identification	Correct methods and results	2	4,16	15
11.4	Microbiological technique	Correct aseptic technique	2	16	20

11.5	Class participation	Instruction observation in class and lab	1,2	16	5
				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.

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