Course Syllabus (Academic Year 2020)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title** : KAFT 242 General Microbiology

   Credit (study hours) : 3 (3-0-6)

2. **Program Name** : Bachelor of Science in Food Technology

3. **Course Module** : Specific Requirement Course

   Pre/co-requisite : KAFT 244 General Microbiology Laboratory

4. **Class Semester** : ☐ 1st Semester ☑ 2nd Semester Academic Year 2020

5. **Class Schedule & Venue** : 09:00 – 12:00 and 13.30-16.30 **(Webex online learning)**

6. **Class Coordinator** : Dr. Amnat Jarerat; amnat.jar@mahidol.edu

7. **Course Description**

Basic knowledge of microorganisms, particularly bacteria and fungi, regarding shape, structure and functions, physiology and genetics, microbial classification and taxonomy; host-microorganism interaction, control and immunity; sterilization and disinfection; importance and application of major microorganisms in agriculture, industry, environment and public health

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

No.	Objectives / CLOs	Expected Skills / Knowledge			PLOs
		Specific	Generic	Knowledge	
8.1	Describe the following: shape, structure and functions, physiology and genetics, microbial classification and taxonomy; host-microorganism interaction, control and immunity; sterilization and disinfection of microorganisms	S9: Skill in literature reviewing in food science and technology	G2: Information acquisition	K2: Food chemistry K4: Food biochemistry	PLO1
8.2	Describe and distinguish between the major macromolecules and cellular structures in bacteria and eukaryotic cells, and explain how these structures function in their cells	S9: Skill in literature reviewing in food science and technology	G4: Associating skill	K2, K4, K8: Food microbiology	PLO1
8.3	Compare and contrast the major classes of microbes and their relationships to human and/or environment, agriculture, industry and medicine	S3: Skill in identifying problem occurred during food process	G2, G3: Ethics G4	K5: Food laws/std. regulations K14: Global& national trend & policy	PLO3

9. Class Instructor List

9.1 Amnat Jarerat (AJ) Contact No. : 086-038-1084 Email : amnat.jar@mahidol.ac.th

9.2 Nattewan Udomsil (NU) Contact No. : 081-724-9641 Email : natteewan.udo@mahidol.ac.th

9.3 Ronnachai Yoddamnern (RY) Contact No. 034-585-060 ext. 2517 Email: ronnachai.yod@mahidol.ac.th

9.4 Supatra Chunchob (SC) Contact No.: 085-098-9419 Email : supatra.ch@mahidol.ac.th

9.5 Sanae Jitklang (SJ) Contact No.: 085-142-7395 Email: sanae.jit@mahidol.ac.th

10. Course Outline

Week	Date/Time	Contents	CLOs	Teaching & Learning	Instructor's Names
1	19 JAN 2021 9.00-12.00 am	-Course introduction - Introduction to Microbiology	8.1-8.2	Lecture	AJ
	19 JAN 2021 13.30-16.30 pm	- Bacteria I: Classification (Archaea bacteria) and Characterization	8.1-8.2	Lecture	SJ
2	26 JAN 2021 9.00-12.00 am	- Bacteria II: Classification (Eubacteria), Characterization and their application	8.1-8.2	Lecture	SJ
	26 JAN 2021 13.30-16.30 pm	Fungi: Classification, Characterization, and their utilization	8.1-8.2	Lecture	SJ
3	2 FEB 2021 9.00-12.00 am	- Protozoa, algae, cyanobacteria	8.1-8.3	Lecture	SJ
	2 FEB 2021 13.30-16.30 pm	- Viruses and immunology	8.1, 8.3	Lecture	SJ
4	Mid-term Exam 9 FEB 2021 (9.00-12.00 am)				
5	16 FEB 2021 9.00-12.00 am	- Microbial genetics	8.2	Lecture	RY
	16 FEB 2021 13.30-16.30 pm	- Microbial growth	8.1-8.3	Lecture	AJ
6	23 FEB 2021 9.00-12.00 am	- Bacteria-host interaction in human, animal, plant and controlling of bacteria	8.1, 8.3	Lecture	NU
	23 FEB 2021 13.30-16.30 pm	- Preservation and culture collection of microorganisms	8.3	Lecture	AJ
7	2 MAR 2021 9.00-12.00 am	Utilization and application of bacteria and fungi related to food industry, environment, and medicine	8.3	Lecture	NU
	2 MAR 2021 13.30-16.30 pm	- Parasite	8.1, 8.3	Lecture	SC
8	Final Exam 9 MAR (9.00-12.00 am)				

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Mid-term exam	- Closed book - Calculator is not allowed	8.1-8.3	4	35
11.2	Final exam	- Closed book - Calculator is not allowed	8.1-8.3	8	35
11.3	Assignments	Group assignment	8.1-8.3	5, 7	20
11.4	Class participation	Instructor evaluation of class participation and accountability	8.1-8.3	1-3, 5-7	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 Madigan, MT, Martinko, JM, Parker J. Brock Biology of Microorganisms, 10th edition, New Jersey: Prentice-Hall International Inc.; 2003.

13.2 Nester, EW, Anderson, DG, Roberts, Jr., CE, Pearsall, NN, Nester, MT. Microbiology: A Human Perspective. 4th edition, New York: McGraw Hill; 2005.

13.3 Hurst, C.J, Crawford, RL, Knudsen GR, McInerney, MJ, Stetzenbach, LD. Manual of Environmental Microbiology. 2nd edition, Washington D.C: ASM Press; 2002.

13.4 Gross, T, Faull, J, Ketteridge S, Springham, D. Introductory Microbiology, London: Chapman & Hall; 1995.