**Course Syllabus (Academic Year 2020)**

**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 2020
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 18 | Course introduction<br>Trend in food microbiology | 8.1 | Lecturing and discussion | RY |
| 2 | Jan 25<br>10.00-12.00 | Microorganisms related to food safety and stability | 8.1 | | RY |
| 3 | Jan 25<br>13.00-15.00 | Food protection by heat treatment | 8.1 | | RY |
| 4 | Feb 1<br>10.00-12.00 | Food protection by low temperature | 8.1 | | RY |
| 5 | Feb 1<br>13.00-15.00 | Food protection by chemical agents | 8.1 | | AJ |
| 6 | Feb 8<br>10.00-12.00 | Industrial disinfection and sanitization | 8.1 | | NU |
| 7 | Feb 8<br>13.00-15.00 | Food protection by radiation | 8.1 | | NU |
| 8 | Feb 15<br>10.00-12.00 | Food protection by acidified and related method | 8.1 | | PB |
| 9 | (To be announced) Mid-term examination | | | | |
| 10 | Feb 15<br>13.00-15.00 | Microbial growth parameters in food | 8.1 | | AJ |
| 11 | Feb 22<br>10.00-12.00 | Utilization of microorganism in food industry | 8.1 | | AJ |

| | | | | | |
|---|---|---|---|---|---|
| 12 | Feb 22<br>13.00-15.00 | Microorganism metabolite I | 8.1 | | NU |
| 13 | Mar 1<br>10.00-12.00 | Microorganisms metabolite II | 8.1 | | NU |
| 14 | Mar 8<br>10.00-12.00 | Food fermentation products and beneficial microbes | 8.1 | | AJ |
| 15 | Mar 15<br>10.00-12.00 | Report & presentation I | 8.1,8.3 | | RY |
| 16 | Mar 22<br>10.00-12.00 | Report & Presentation II | | | RY |
| 17 | (May 13-25) Final examination | | | | |

Note: -

**10.2 Laboratory section**

| Week | Date | Contents | CLOs | Teaching & Learning | Instructor's Names |
|---|---|---|---|---|---|
| 1 | Mar 1<br>13.00-16.00 | Food microbiology laboratory safety | 8.2 | Laboratory Experiment | RY |
| 2 | Mar 8<br>13.00-16.00 | Detection of antibiotic by microbial assay | 8.2 | | RY |
| 3 | Mar 15<br>13.00-16.00 | Application of heat treatment | 8.2 | | RY |
| 4 | Mar 22<br>13.00-16.00 | Application of low temperature and modified atmosphere | 8.2 | | RY |
| 5 | Mar 29<br>9.00-12.00 | Application of chemical agents<br>: Effect of acidity on the inhibitory of preservatives | 8.2 | | AJ |
| 6 | Mar 29<br>13.00-16.00 | Application of disinfectant and sanitizing agent | 8.2 | | NU |
| 7 | April 5<br>9.00-12.00 | Application of radiation | 8.2 | | NU |
| 8 | April 5<br>13.00-16.00 | Application of innovative technology | 8.2 | | RY |
| 9 | (To be announced) Mid-term examination | | | | |
| 10 | April 19<br>9.00-12.00 | Food fermentation I | 8.2 | Laboratory Experiment | RY |
| 11 | April 19<br>9.00-16.00 | Food fermentation II | 8.2 | | RY |

| | | | | | |
|---|---|---|---|---|---|
| 12 | Apr 26<br>9.00-12.00 | Screening of useful microorganism | 8.2 | | NU |
| 13 | Apr 26<br>13.00-16.00 | Identification of useful microorganism I | 8.2 | | RY |
| 14 | May 3<br>9.00-12.00 | Identification of useful microorganism II | 8.2 | | RY |
| 15 | May 3<br>13.00-16.00 | Laboratory examination | 8.1-8.3 | | RY |
| 16 | May 10<br>9.00-16.00 | Laboratory examination (cont.) | 8.1-8.3 | | RY |
| 17 | (To be announced) 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*.