

SUBJECT OUTLINE DETAILS

1. Subject: Food Fermentation Lab

- **Code:** BT404C
- **Credits:** 1
- **Hours:** 30 practice hours, 30 self-study hours

2. Management Unit:

- **Department:** Microbial Biotechnology
- **Institute:** Biotechnology Research and Development Institute

3. Prerequisites: CS113

4. Subject objectives: Students learn practical skills in manufacturing typical fermentation products, practical knowledge complementary to their theoretical lessons, and how to design an experiment.

4.1. Knowledge:

- 4.1.1. Students know how to apply theoretical knowledge to interpret the results obtained in practicing
- 4.1.2. Students get strongly understands the theoretical knowledge through practical

4.2. Skill:

- 4.2.1. Students can perform basic techniques in the laboratory; keep safely for working in lab condition (wear gloves, masks...)
- 4.2.2. Students can use equipments in laboratory (pH meter, distill system, centrifuge machines, ...)
- 4.2.3. Students can design an experiment and produce typical fermentation products.
- 4.2.4. Students can write report about experiments they carry out.

4.3. Attitude:

- 4.3.1. Students must be confident in performing experiments independently and interpreting scientifically what they observe in their experiments.
- 4.3.2. Students feel interested in food fermentation.

5. Brief description of subject content:

This course content focuses on applying the role of microbes such as mold, yeast and lactic acid bacteria in food fermentation processes. Microbial activity and the microbial, physiological and biochemical changes of fermented products are followed as carrying out some typical fermentation processes.

6. Subject content structure:

Practice

Content	Hours	Objectives
Unit 1. Purple glutinous rice fermentation	10	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2
Unit 2. Tempeh fermentation	10	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2
Unit 3. Vegetable fermentation	10	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2

7. Teaching method:

- Practice and design experiment
- Observe experiment, take note and discuss about different results between different groups

8. Duties of student:

Students have to do the following duties:

- Attend all classes
- Participate in experiment preparation, design and implementation
- Observe experiment, take note, discuss and write a report

9. Assessment of student learning outcomes:

9.1. Assessment

No.	Point components	Rules and Requirement	Weights	Objectives
1	Class attendance	Students attend all classes and participate in all class activities	40%	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.3.1, 4.3.2
2	Writing report	Students write a report about class activities with their thinking, comments, explanation and analyze the results from their experiments	60%	4.1.2, 4.1.3, 4.2.4, 4.3.1, 4.3.2

9.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

10. Materials:

Materials information	Code number
1. Công nghệ vi sinh vật; T2 Vi sinh vật học công nghiệp / Nguyễn Đức Lương.- 1st.- Tp. HCM : Trường Đại Học Bách Khoa , 1996 .- 660.62/ L561/T2	MOL.021151; MOL.021152 ; CN000124 ; NN.006445 ;
2. Công nghệ sinh học đại cương- Phần 1 / Trần Phước Đường.- Cần Thơ: Trường đại học Cần Thơ, 2004.- 146 tr., 30 cm..- 660.62/ Đ561/P.I/II	DIG.000102 ; CNSH.000163
3. Food Fermentation- Part 1 / Tjakko Abee [et. al.] ; editor: Siemen Schoustra.- Netherland: Wageningen Agricultural, 1999.- 197 tr. ; ill., 30 cm.- 664/ F686/P.1	DIG.000137; CNSH.000159

11. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1	Purple glutinous rice fermentation		10	Conduct experiment
	Tempeh fermentation		10	Conduct experiment
	Vegetable fermentation		10	Conduct experiment
2	Writing report			Write a report

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**ON BEHALF OF RECTOR
DEAN/ DIRECTOR**

HEAD OF DEPARTMENT