

SUBJECT OUTLINE DETAILS

1. Subject: Introductory Microbiology Lab (TT. Vi sinh đại cương)

- Code: MI302C
- Credits: 1
- Hours: 30 practice hours.

2. Management Unit:

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

3. Prerequisites:

4. Subject objectives: Students can observe to identify common microbial species and isolate some typical microorganisms.

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; comprehend some specific characteristics of each group of microbes.

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 (microscope, flowing cabinet, ...)
- 4.2.3. Students can identify some typical microorganisms and isolate them
- 4.2.4. Students can design an experiment and produce typical fermentation products.
- 4.2.5. Students can write a report about activities 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 studying microbes.

5. Brief description of subject content:

From this course, students can get acquainted with tools and equipment in the laboratory of Microbiology. Basic techniques necessary for a microbiologist are taught including preparation of media, identification by naked eyes and by microscope, gram staining technique, microscopic measurement, microbial enumeration, isolation,

subculturing, applying microorganisms in food fermentation (yoghurt, vinegar, wine, etc.).

6. Subject content structure:

Practice

	Content	Hours	Objectives
Unit 1.	Microscope and devices commonly used in laboratory microbiology	4	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.5, 4.3.1, 4.3.2
Unit 2.	Culture media and microbial sources	4	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.5, 4.3.1, 4.3.2
Unit 3.	Observing microorganisms	4	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.5, 4.3.1, 4.3.2
Unit 4	Microbe staining	4	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.3.1, 4.3.2
Unit 5	Microbe isolation	4	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.3.1, 4.3.2
Unit 6	Measuring and counting microorganisms	4	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.3.1, 4.3.2
Unit 7	Wine fermentation and vinegar fermentation	2	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.3.1, 4.3.2
Unit 8	Yoghurt fermentation	4	4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3,

4.2.4, 4.2.5,
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, and all class activities
- 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 Lượng.- 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	Microscope and devices commonly used in laboratory microbiology		4	Conduct experiment and class activities
	Culture media and microbial sources		4	Conduct experiment and class activities
	Observing microorganisms		4	Conduct experiment and class activities
	Microbe staining		4	Conduct experiment and class activities
	Microbe isolation		4	Conduct experiment and class activities
	Measuring and counting microorganisms		4	Conduct experiment and class activities
	Wine fermentation and vinegar fermentation		2	Conduct experiment and class activities
	Yoghurt fermentation		4	Conduct experiment and class activities
2	Writing report			Write a report

**ON BEHALF OF RECTOR
DEAN/ DIRECTOR**

Can Tho,/...../20...
HEAD OF DEPARTMENT