

Module Information

Module Code	Module Title	Semester	Mod. Credits
LSM3232	Microbiology	1 & 2	4

Module Description

This module provides the strong foundation and the principles of microbiology, with emphasis on the properties, functions and classification of the major classes of microorganisms, especially bacteria, parasites, fungi and viruses. Students will also gain insights to the understanding of microbial activities and their influence on microbial diseases, industrial applications, ecology, food and water quality assurance. This will well prepare students for their ability to apply the knowledge and technical skills gained from this module to their career development upon graduation.

Eligibility and requirements

Prerequisites (prior knowledge required): LSM2211 or LSM2232 or LSM2233

Corequisites: NIL

Precluded modules (if any): NIL

Instructional methods

The following instructional methods will be employed:

- 1) Lecture
- 2) Blended Learning
- 3) Laboratory (Dry/Wet)

Assessment modes

The following assessments will be employed:

- 1) Lab reports = 10%
- 2) CA = 30%
- 3) Final Exam = 60%

Contact information for Module Coordinator and other instructors

Asso. Prof. Justin Chu Jang Hann

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Course content and syllabus

Lectures:

- 1) Scope of microbiology: the diversity of the microbial world and microbial taxonomy
- 2) Microbial structure and function: microbial physiology, microbial nutrition and microbial growth
- 3) Food microbiology
- 4) Environmental microbiology
- 5) Medical microbiology: Microbial diseases and their control

Practical (Wet Lab):

- 1) Basic Microscopy & Staining
- 2) Physiological effects on microbial growth
- 3) Microbial physiology
- 4) Medical microbiology
- 5) Food microbiology
- 6) Environmental microbiology including water microbiology

Learning activities

The following learning activities will be employed to achieve the learning outcomes of knowledge, cognitive skills, generic skills and/or attributes development stated in the 'Intended Learning Outcomes' below:

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| 1) Concept Mapping | 5) Interactive Lecture |
| 2) Group Discussion or Discussion Forum | 6) Laboratory Activities (Wet/Dry) |
| 3) Hands-on Technology | 7) Report/Essay Writing |

LSM3232 incorporates a right mix of instructional and learning activities that will provide an exciting blended learning experience for students that are keen to learn more about Microbiology. The lectures are supplemented with wet lab experiences with team work, group discussion as well as report writing. The wet lab experiences will enable students to pick up the necessary technical skills that will be helpful for their career development.

Intended Learning Outcomes

Knowledge development

Students will gain the strong foundation and the principles of microbiology, with emphasis on the properties, functions and classification of the major classes of microorganisms, especially bacteria, parasites, fungi and viruses. Students will also be able to apply their understanding and technical skills learned in this module for their career development in working with health and biomedical sciences industries as well as other industrial applications such as ecology, food and water quality assurance.

This module will provide the opportunities to develop the following cognitive skills, generic skills and attributes:

Very Good Opportunities	Good Opportunities
<ul style="list-style-type: none">1) Written Communication2) Verbal/Oral Communication3) Analytical & Critical Thinking4) Quantitative Thinking5) Interdisciplinary Thinking6) Creative Thinking7) Problem-solving & Decision-making8) Collaboration & Teamwork9) Planning, Organizing & Management skills10) Self-Efficacy11) Adaptability & Learnability12) Resilience	<ul style="list-style-type: none">1) Digital & Information Literacy2) Ethics Awareness
<p>Required and/or recommended readings</p> <p>Foundation in Microbiology. Talaro KP& Chess B. McGraw-Hill</p>	