

Module Information

Module Code	Module Title	Semester	Mod. Credits
LSM4263	Field Studies in Biodiversity	4	4

Module Description

LSM4263 is a class that emphasizes hands-on and experiential learning with the main goal of introducing students to the fundamentals of field-based biodiversity research including research design, basic field techniques for data collection, and data analysis/presentation. From field practicals, students will experience and encounter tropical environments, particularly coastal and primary/secondary forests. A rigorous multi-day field component is incorporated for student groups to collect data for their respective projects under the supervision of experienced, well-trained teaching assistants (TAs). These projects would have been collaboratively designed by the students themselves and approved by their TAs in the days preceding the field trip. By the end of the class, students are expected to have a basic understanding and first-hand experience in designing and executing a field-based biodiversity research project from start to finish. At the end of the module, students will be expected to conduct an academic presentation of their research project and reflect on the challenges and issues that they faced throughout the class.

Eligibility and requirements

Prerequisites (prior knowledge required): LSM2251 and LSM2252

Corequisites: NIL

Precluded modules (if any): NIL

Instructional methods

The following instructional methods will be employed:

- 1) Lecture
- 2) Tutorial
- 3) Laboratory (Dry/Wet)
- 4) Expedition/Site/Field visit

Assessment modes

The following assessments will be employed:

- 1) Assignment 1 (Writing report; background on field site) = 10%
- 2) Assignment 2 (Writing report; research proposal) = 15%
- 3) Assignment 3 (Writing report; final project report) = 40%
- 4) TA assessment = 10%
- 5) MCQ = 5%
- 6) Oral presentation (group) = 20%

Contact information for Module Coordinator and other instructors

Dr Chan Kin Onn (Module Coordinator)

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Course content and syllabus

- 1) Importance and relevance of biodiversity - Important issues in biodiversity and conservation
- 2) Overview of field techniques - An introduction to different field methods employed to study a variety of taxonomic groups
- 3) Biodiversity Research - An in-depth look into the various sub-fields in biodiversity research and what they entail (vertebrates and invertebrates)
- 4) Research Design - How to formulate, design, and write a research proposal within a hypothesis-testing framework. This will mostly be done through group-based tutorials
- 5) Data Analysis - Fundamentals in data analysis including statistics and data visualization in R.

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) Expedition/Field Trip/Site Visit | 4) Group/Individual Project |
| 2) Group Discussion or Discussion Forum | 5) Report/Essay Writing |
| 3) Group/Individual Presentation | |

1) The multi-day field trip is a major component of the class. Students will apply what they learned during lectures and tutorial discussions and get hands-on experience executing their research methods and collecting data for their own research project. Students will learn how to work collaboratively and adapt to resolve potential challenges they face in the field.

2) Group discussion through tutorials are essential for students to plan, develop, and design their research project under the guidance of a teaching assistant. Students take the lead in formulating and planning all aspects of their project through critical thinking, collaboration and teamwork.

3) The group presentation - Effective oral communication of their research project

4) Individual/report project - Written communication in the form of a rigorous academic report. Data analysis and interpretation will test analytical and quantitative thinking.

Intended Learning Outcomes

Knowledge development

By the end of the module, students will be expected to have:

- 1) a better understanding of various field methods in biodiversity research
- 2) a broader perspective on the types/sub-fields of biodiversity research and what they entail
- 3) first-hand and hands-on experience in formulating, designing, planning, managing, executing, analyzing, and completing a field-based research project of their own. This is a core outcome of the class that intends to prepare and expose students to the challenges and difficulties involved in field research. Putting students through the entire process from project design to presentation of results is intended to instill a sense of ownership and inspire students to consider a career in biodiversity research.

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

Very Good Opportunities	Good Opportunities
<ol style="list-style-type: none">1) Understand: Question, Connect & Explain2) Apply: Use, Execute & Implement3) Analyze: Differentiate, Organize & Attribute4) Create: Ideate, Plan, Generate & Produce5) Written Communication6) Verbal/Oral Communication7) Digital & Information Literacy8) Analytical & Critical Thinking9) Quantitative Thinking10) Problem-solving & Decision-making11) Collaboration & Teamwork12) Planning, Organizing & Management skills13) Self-Efficacy14) Adaptability & Learnability15) Resilience	<ol style="list-style-type: none">1) Evaluate: Review, Check & Critique2) Creative Thinking3) Ethics Awareness

Required and/or recommended readings

- 1) Discovery Statistics Using R (Book by Andy Field, Jeremy Miles, and Zoë Field)
- 2) R Programming Tutorial - Learn the Basics of Statistical Computing
[https://www.youtube.com/watch?v= V8eKsto3Ug&t=1227s>](https://www.youtube.com/watch?v=V8eKsto3Ug&t=1227s>)
- 3) Handbook of Biological Statistics <http://www.biostathandbook.com/>
- 4) Biogeography (5th Edition by Mark V. Lomolino, Brett R. Riddle, and Robert J. Whittaker)