Module Brief- Additional Information

Note:

Please note that the information in this brief is tentative as faculty could still be in the process of developing or refining their module details.

Module Code and Title	**YSC2235 Field Research**
Module Description *The 100 word course description from Course Catalogue will be made available to students. Please provide **additional** information if you wish.*	To enable students to develop and perform field-based studies in environmental research and ecology. Students will be introduced to topics in environmental sciences, field research approaches, methods and techniques, sampling design, data analysis and interpretation during the semester. Students will then develop research questions and pursue them in small groups during an intensive 5-day field period during recess week. Student research projects will culminate in written and oral research reports modelled on scientific publications. Over the course of the module, we will address increasingly complex questions that build on foundational knowledge in previous lessons. We will start with seminar learning on topics in ecology and biodiversity and cover methods and equipment used to estimate the abiotic and biotic characteristics in a tropical forest. We will compare the abundances and diversity of organisms between two areas, quantify the distribution of species along an environmental gradient, and characterize the functional response of organisms to environmental drivers along those gradients. Students will apply basic statistical principles and analyses to compare trends in response variables between sites (using ANOVA or T-Test), or along a gradient (using regression).

Learning Objectives	• Obtain a better understanding of field-based research in the environmental sciences and ecology and the power, limitations, and trade-offs related to different scientific approaches and experimental designs.
	• To provide some of the basic methodological background needed to read and understand scientific research reports in the fields of ecology and environment.
	• To prepare students for independent field research in the fields of environmental sciences and ecology and equip them with the skills to:
	  ○ Formulate hypotheses about the biotic and abiotic components in the field
	  ○ Develop research approaches for testing hypotheses based on a critical assessment of requirements and constraints and related trade-offs.
	  ○ Design, plan and perform field-based research, and sampling design including data collection, analysis and interpretation

Modes of Learning & Teaching *Please provide details of the learning activities learners will participate in etc.*	The module consists of two components: 1. Six weeks (in Weeks 1-6) of seminar and field exercises during the semester, with meetings one day each week in a seminar to establish foundational knowledge on topics in ecology, experimental design, interactions between biotic and abiotic components of field sites, and general statistical analysis of data, followed by the field exercise. 2. There will be a **compulsory, 5-day field-based exercise during the recess week, 19-23 Feb 2021**, when students will work full-time in small groups on research projects, culminating in a presentation on the final day. Field exercises and assignments during the semester will take different approaches to the sampling and surveying of flora and fauna and environmental conditions. Each week we will start with a specific research question and explore and practice different field methods to address that question. Over the course of the semester, we will use a variety of ecosystem components and organisms as study systems and tackle increasingly complex issues and questions. At the completion of the module, students will have the knowledge and skills to: 1. Conduct a literature search, analyse, interpret, and synthesize data 2. Utilize the scientific method to investigate a question in field-based ecology 3. Manage field-based research efforts both from a research and logistical perspective. 4. Classify species based on traits and environmental setting 5. Design field-based approaches to investigate answers to scientific questions and test hypotheses 6. Understand relationships between biotic and abiotic factors and the change in these relationships along gradients 7. Make observations and informative comparisons between ecological characteristics in a field-based setting 8. Understand and apply basic statistical methodologies to data sets 9. Communicate their scientific design, methodological approach, and findings in a clear and coherent manner through both written and oral presentation. Reading assignments and seminar classes will provide the necessary basic background understanding of concepts related to (i) ecology, biodiversity and environment, and (ii) the design of field research, including the collection, analyses and interpretation of field data. During the 5-day field work period, students will develop a small research project, collect the field data, analyze the data, culminating in a research presentation Fieldwork will mostly take place at Sentosa.
Assessment Criteria *Please provide details of the assessment methods or*	1) Participation (individual; 10%) 2) 5 weekly reports (individual/group; 5 x 6% = 30) 3) Final report (individual; 40%)

what proportion of the overall grade is composed by each component of assessment	4) Presentation (group; 20%)
Required Reading List	Required Reading List for Semester 2 AY2021/2022 will be enabled at the following site during module registration: http://courses.yale-nus.edu.sg/required-reading-list/
Reading List (additional/supplementary)	Will be provided at the start of the semester
Any other Information	N.A.