

Annexe A: New/Revised Course Content in OBTL+ Format

Course Overview

Expected Implementation in Academic Year (New format)	AY2026-2027
Semester/Trimester/Others (specify approx. Start/End date)	Semester 1
Course Author * Faculty proposing/revising the course	Dr Shawn Lum
Course Author Email	shawn.lum@ntu.edu.sg
Course Title	CONSERVATION BIOLOGY & BIODIVERSITY
Course Code	ES4301
Academic Units	3
Contact Hours	39
Research Experience Components	Not Applicable

Course Requisites (if applicable)

Pre-requisites	ES2301 AND AAB20D; OR ES2301 AND ES2303
Co-requisites	NIL
Pre-requisite to	NIL
Mutually exclusive to	NIL
Replacement course to	NIL
Remarks (if any)	

Course Aims

This course starts by giving the students various definitions and measures of biodiversity. Throughout the course, the students will learn the importance of conservation and environmental impact assessments during the planning stages of large development projects. They will understand why it is important to prevent species extinction, what happens when a keystone taxon goes extinct and how this influences ecosystem dynamics. By the end of the course, the students will also gain an appreciation of how can the establishment of protected reserves limit the impact of other threats to biodiversity such as habitat destruction, fragmentation and degradation.

Course's Intended Learning Outcomes (ILOs)

Upon the successful completion of this course, you (student) would be able to:

ILO 1	Conservation Science • Explain the fundamental principles of biodiversity, biodiversity loss, and conservation • Assess conservation strategies and evaluate real-world challenges in implementation • Monitor and evaluate current issues in conservation
ILO 2	Conservation Management/Practice • Formulate ecological questions that underpin effective conservation management • Apply relevant scientific theories and technical tools used in conservation
ILO 3	Link between Conservation Science and Policy/Decision Making • Integrate conceptual knowledge of conservation with practical applications and policy frameworks • Apply scientific knowledge to support conservation policy mechanisms at local, national, and international levels • Analyse the relationships between conservation biology research and the social and economic contexts of policy and management • Demonstrate effective communication strategies for conservation science and nature conservation

Course Content

- What is Conservation Biology?
- Drivers of Biodiversity and Ecosystem Loss and Degradation
- Habitat Loss
- Invasive Species and Pathogens
- Hunting, Fisheries, and the Illegal Wildlife Trade
- Agriculture
- Genetics, Population Biology, and Ex-Situ Conservation
- Restoring Habitats and Connectivity
- Technology as part of the Conservation Toolkit

Science and Conservation Policy

Reading and References (if applicable)

Richard B. Primack – A Primer of Conservation Biology – Fourth Edition – Sinauer Associates

Assigned readings and class notes

Sodhi, N. and P. Ehrlich (Eds.). 2010. *Conservation biology for all*. Oxford: Oxford University Press [available online at: <https://conbio.org/publications/free-textbook/>]

Selected papers and other resources

NOTE: The above listing comprises the foundational readings for the course and more up-to-date relevant readings will be provided when they become available

Planned Schedule

Week or Session	Topics or Themes	ILO	Delivery Mode	Activities	Readings
1	Introduction/What is Biodiversity	1,2, 3	In-person	Lecture and Discussion	Relevant Chapters in Reference Books and selected papers and online resources
2	Habitats, Habitat Loss and Impacts	1,2, 3	In-person	Lecture and Discussion	Relevant Chapters in Reference Books and selected papers and online resources
3	Study of Biodiversity and Challenges	1,2, 3	In-person	Field trip (tentative)	Relevant Chapters in Reference Books and selected papers and online resources
4	Primary Production and Agriculture	1,2, 3	In-person	Lecture	Relevant Chapters in Reference Books and selected papers and online resources
5	Invasive Species & Pathogens / Case Studies	1,2, 3	In-person	Lecture	Relevant Chapters in Reference Books and selected papers and online resources
6	Assessing invasiveness	1,2, 3	In-person	Lecture	Relevant Chapters in Reference Books and selected papers and online resources
7	Overview of (1) Wildlife Trade (2) Climate Impacts	1,2, 3	In-person	Lecture	Relevant Chapters in Reference Books and selected papers and online resources
8	Genetics, Population Biology and Ex-Situ Conservation	1,2, 3	In-person	Lecture	Relevant Chapters in Reference Books and selected papers and online resources
9	Illegal Wildlife Trade: Forensic Science and Policy	1,2, 3	In-person	Lecture	Relevant Chapters in Reference Books and selected papers and online resources

Week or Session	Topics or Themes	ILO	Delivery Mode	Activities	Readings
10	Habitat Connectivity / Restoration	1,2, 3	In-person	Lecture	Relevant Chapters in Reference Books and selected papers and online resources
11	Tracking Movement of Flora and Fauna / Human-Wildlife Conflicts	1,2, 3	In-person	Lecture	Relevant Chapters in Reference Books and selected papers and online resources
12	Science and Conservation Policy / Non-Government Efforts / Course Summary	1,2, 3	In-person	Lecture	Relevant Chapters in Reference Books and selected papers and online resources
13	Review Summary	1,2, 3	In-person	Lecture	

Learning and Teaching Approach

Approach	How does this approach support you in achieving the learning outcomes?
Field trips and discussions in an authentic setting	We hope students (1) will be able to apply concepts covered in lectures and discussions to real conservation scenarios, and that they will be able to (2) assess the conservation status of a site through observation and field study, and to see understand (3) the nuances and multiple stakeholder viewpoints that are part of conservation and the policy implications of conservation biology.
Use of online and app-based biodiversity assessment tools	The study and conservation of biodiversity is greatly aided by the use of technology, crowd-sourced data, and other innovations. ES4301 aims to introduce these advances not just through lectures, but through hands-on familiarity with these modern conservation tools.

Assessment Structure

Assessment Components (includes both continuous and summative assessment)

No.	Component	ILO	Related PLO or Accreditation	Weightage	Description of Assessment Component	Team/Individual	Rubrics	Level of Understanding
1	Continuous Assessment (CA): Test/Quiz(CA1: Midterm Tests (two tests))	1,2,3		30		Individual	Analytic	Relational
2	Continuous Assessment (CA): Assignment(CA 2: Assignment 1)	1,2,3		20		Team	Holistic	Extended Abstract
3	Continuous Assessment (CA): Assignment(CA3: Assignment 2)	1,2,3		20		Individual	Holistic	Extended Abstract
4	Continuous Assessment (CA): Assignment(CA3: Assignment 3)	1,2,3		20		Individual	Holistic	Extended Abstract
5	Continuous Assessment (CA): Class Participation(CA4: Participation and Discussion Contributions)	1,2,3		10		Individual	Holistic	Extended Abstract

Description of Assessment Components (if applicable)

Assignments 2, 3, and 4 are focused on assessing real-world conservation work. Students work with the teaching team to craft individual or group projects within a general framework, such that the assignment can be tailored to topics of interest.

Formative Feedback

- The discussion and field-based nature of this course, rather than a focus on traditional lecture-based one-way content delivery, allows the teaching team to assess student understanding of concepts

- For assignments, students are asked to submit preliminary project ideas and to discuss team and individual projects with the teaching team during each stage of their respective projects.

NTU Graduate Attributes/Competency Mapping

This course intends to develop the following graduate attributes and competencies (maximum 5 most relevant)

Attributes/Competency	Level
Care for Environment	Advanced
Care for Society	Intermediate
Communication	Advanced
Curiosity	Advanced
Critical Thinking	Advanced

Course Policy

Policy (Academic Integrity)

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values. As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. On the use of technological tools (such as Generative AI tools), different courses / assignments have different intended learning outcomes. Students should refer to the specific assignment instructions on their use and requirements and/or consult your instructors on how you can use these tools to help your learning. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Policy (General)

You are expected to complete all assigned readings, activities, assignments, attend all classes punctually and complete all scheduled assignments by due dates. You are expected to take responsibility to follow up with assignments and course related announcements. You are expected to participate in all project critiques, class discussions and activities.

Policy (Absenteeism)

In-class activities make up a significant portion of your course grade. Absence from class without a valid reason will affect your participation grade. Valid reasons include falling sick supported by a medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies. There will be no make-up opportunities for in-class activities.

Policy (Others, if applicable)

Diversity and inclusion policy

Integrating a diverse set of experiences is important for a more comprehensive understanding of science.

It is our goal at ASE to create an inclusive and collaborative learning environment that supports a diversity of perspectives and learning experiences, and that honours your identities; including ethnicity, gender, socioeconomic status, sexual orientation, religion or ability.

To help accomplish this:

- If you are neuroatypical or neurodiverse, have dyslexia or ADHD (for example), or have a social anxiety disorder or social phobia;
- If you feel like your performance in the class is being impacted by your experiences outside of class;
- If something was said in class (by anyone, including the instructor) that made you feel uncomfortable;

Please speak to your teaching team, a peer or senior, Janelle or Michel (either in-person or via email) about how we can help facilitate your learning experience.

As a participant in course discussions, you should also strive to honour the diversity of your classmates. You can do this by: using preferred pronouns and names; being respectful of others opinions and actively making sure all voices are being heard; and refraining from the use of derogatory or demeaning speech or actions.

All members of the class are expected to adhere to the NTU anti-harassment policy. if you witness something that goes against this or have any other concerns, please speak to your instructors or an ASE faculty member.

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Last Updated By: Michel Ang Yan Xia