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

Course Overview

Expected Implementation in Academic Year (New format)	AY2025-2026
Semester/Trimester/Others (specify approx. Start/End date)	Semester 2
Course Author * Faculty proposing/revising the course	Asst Prof Zeng Yiwen
Course Author Email	yiwen.zeng@ntu.edu.sg
Course Title	Environmental Science and Policy
Course Code	ES4905
Academic Units	3
Contact Hours	39
Research Experience Components	Not Applicable

Course Requisites (if applicable)

Pre-requisites	NIL
Co-requisites	NIL
Pre-requisite to	NIL
Mutually exclusive to	NIL
Replacement course to	NIL
Remarks (if any)	

Course Aims

Global environmental issues, such as pollution, deforestation, invasive species, biodiversity loss and climate change, affects nature and people alike. Environmental policy is crucial to address such issues. This course explores the history and fundamental principles of key environmental policies. This course will also delve into the relationship between environmental science and policy-making, examining how regulatory frameworks across various geographies adopt, interpret, and accommodate scientific information. Through a series of case studies, you (students) will gain insights into the science-policy interactions that arise in the management of natural resources and environmental risks. Key topics include air and water pollution, invasive species, the protection and management of natural ecosystems, global wildlife trade, and climate change. This is crucial for both environmental science and/or public policy majors intending to work in environment-related private, public or NGO sectors.

Course's Intended Learning Outcomes (ILOs)

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

ILO 1	Describe major developments in environmental science and policy, and identify how fundamental principles are applied in environmental policies
ILO 2	Demonstrate how regulatory frameworks have successfully integrated scientific information
ILO 3	Demonstrate ability to apply decision making tools for environmental policies
ILO 4	Assess and critique environmental policies based on scientific literature
ILO 5	Formulate and write a policy brief on a current environmental issue

Course Content

This course will cover major environmental issues, and key policies and principles related to these issues. It will include deeper dives into the relationship between science and policy across topics such as pollution (air and water), invasive species, protection and management of ecosystems, global wildlife trade, and climate change. We explore the role of intergovernmental panels and transboundary issues, and highlight the dynamics of environmental policies and emerging environmental issues.

Reading and References (if applicable)

General reading:

1) Environmental Politics and Policy (Twelfth Edition) by Walter A. Rosenbaum

2) Environmental Policy: New Directions for the Twenty-First Century (12th Edition) by Michael E. Kraft, Barry G. Rabe and Norman J. Vig

Lectures will have specific readings

Planned Schedule

Week or Session	Topics or Themes	ILO	Delivery Mode	Activities	Readings
1	Introduction to major environmental issues, key environmental principles and history of key environmental policies	1	In-person	In-class discussion	Rachel Carson (1962) Silent Spring
2	Pollution: the science	1	In-person	Movie review	Helfand et al. (2003) Chapter 6 - The Theory of Pollution Policy. Handbook of Environmental Economics 249–303
3	Pollution: policy response	1, 2	In-person	Movie review	Helfand et al. (2003) Chapter 6 - The Theory of Pollution Policy. Handbook of Environmental Economics 249–303
4	Invasive species: the science	1	In-person	Guest lecture	Lodge et al. (2016) Risk Analysis and Bioeconomics of Invasive Species to Inform Policy and Management. Annual Review of Environment and Resources 41, 453–488
5	Invasive species: policy response	1,2,3	In-person	Class exercise: semi-quantitative risk assessment	Lodge et al. (2016) Risk Analysis and Bioeconomics of Invasive Species to Inform Policy and Management. Annual Review of Environment and Resources 41, 453–488
6	Protection and management of ecosystems: the science	1,3	In-person	Guest lecture	EO Wilson (2016) Half-Earth
7	Protection and management of ecosystems: policy response	1,2,3,4	In-person	Class exercise: propensity score matching	EO Wilson (2016) Half-Earth

Week or Session	Topics or Themes	ILO	Delivery Mode	Activities	Readings
8	Global wildlife trade: the science	1,4	In-person	Group presentations	Hughes (2021) Wildlife trade. Current Biology 21, 1218–1224
9	Global wildlife trade: policy responses	1,2,4	In-person	Group presentations	Hughes (2021) Wildlife trade. Current Biology 21, 1218–1224
10	Climate change: the science	1,2,4	In-person	Group presentations	IPCC AR6 synthesis report
11	Climate change: policy responses	1,2,4	In-person	Group presentations	IPCC AR6 synthesis report
12	Recap of key issues and policies, roles of intergovernmental panels & challenges of transboundary environmental issues	1,2,4	In-person	Group presentations	Brooks et al. (2014) IPBES ≠ IPCC. Trends in Ecology and Evolution 29, 543–545
13	Dynamics of environmental policies & emerging environmental issues	2,4,5	In-person	In-class discussion; submission of policy brief	West et al. (2023) Action needed to make carbon offsets from forest conservation work for climate change mitigation. Science 381, 873-877

Learning and Teaching Approach

Approach	How does this approach support you in achieving the learning outcomes?
Lectures	Introduction to key concepts and knowledge necessary in environmental science and policy
Tutorials	More active engagement with the topics; and exposure to practical skills associated with environmental policy
Student presentation/ flipped classroom	You will present research on specific important (current) environmental issues and apply knowledge
Movie review	Functions as a case study to engage in research and reflective (written) discussion for higher-order thinking
Policy brief	Final assessment, brings together core competencies to create a convincing argument for a particular environmental policy which is supported for science, and presented in an accessible manner

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): Class Participation()	1,2,3,4	1,2,3,4,5,6	5		Individual	Holistic	Extended Abstract
2	Continuous Assessment (CA): Others(Movie review: You will watch a film related to environmental science and policy, and provide a critical review about the film, elaborating on the relationship between environmental science and policy-making)	1,2	1,2	15		Individual	Holistic	Relational
3	Continuous Assessment (CA): Test/Quiz(Quiz 1 (short answer): Risk assessment)	1,3	1,3	5		Individual	Analytic	Multistructural
4	Continuous Assessment (CA): Test/Quiz(Quiz 2 (short answer): Causal inference)	1,3	1,3	10		Individual	Analytic	Relational

No.	Component	ILO	Related PLO or Accreditation	Weightage	Description of Assessment Component	Team/Individual	Rubrics	Level of Understanding
5	Continuous Assessment (CA): Presentation(Group presentation: You will select from a list of topics (major environmental issues) and present (and critique) the latest science and policies that have been implemented. Format of "presentation" can range from the traditional slide decks, to other forms of media including short films, podcasts and animations.)	1,2,3,4	1,2,3,4,5,6	30		Team	Holistic	Relational

No.	Component	ILO	Related PLO or Accreditation	Weightage	Description of Assessment Component	Team/Individual	Rubrics	Level of Understanding
6	Continuous Assessment (CA): Others(Policy briefs: You will select from a list of current environmental policy issues and communicate the science around these issues to a wider audience. This document should be prepared in the perspective of an advocacy/academic group or think tank, and designed to inform private and public sector readers. The brief should be professionally presented to include figures and graphs where appropriate.)	1,2,3,4,5	1,2,3,4,5,6	35		Individual	Holistic	Relational

Description of Assessment Components (if applicable)

Movie review: You will watch a film related to environmental science and policy, and provide a critical review about the film, elaborating on the relationship between environmental science and policy-making.
Group presentation: You will select from a list of topics (major environmental issues) and present (and critique) the latest science and policies that have been implemented. Format of "presentation" can range from the traditional slide decks, to other forms of media including short films, podcasts and animations.
Policy briefs: You will select from a list of current environmental policy issues and communicate the science around these issues to a wider audience. This document should be prepared in the perspective of an advocacy/academic group or think tank, and designed to inform private and public sector readers. The brief should be professionally presented to include figures and graphs where appropriate.

Formative Feedback

1. You will receive written feedback on the movie review and policy brief
2. You will receive verbal feedback for quizzes, general class participation and group presentations and assignments,

so you can learn from them.

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
Collaboration	Advanced
Communication	Advanced
Global Perspective	Advanced
Transdisciplinarity	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 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, our school pastoral officer, Ms Christina Tee, or a peer or senior (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 a faculty member.

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Last Updated By: Siti Nur Amirah Binte Suhari