



Mahidol University
International College

ICGN 128 Climate emergency; biodiversity crisis; and humanity at risk

Instructor: Dr Wayne Phillips

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Class time: TBC

Classroom: TBC

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Course Description

Anthropogenic activities; biodiversity crisis; biodiversity loss; biological diversity; climate change; climate crisis; climate emergency; ecosystem functions; harmful and unsustainable practices; humanity at risk; mitigate and adapt; threats, impacts and consequences.

Course Goals

We face a dual crisis: climate change and biodiversity loss. This course confronts these interconnected challenges head-on, analyzing the destructive human activities responsible. Students will discover how protecting and restoring biodiversity is essential for climate solutions. The course culminates in the development and presentation of real-world projects designed to mitigate and adapt to climate change, and to safeguard our planet's precious biodiversity.

Course Learning Outcomes (CLOs)

- CLO 1 Explain the principles of climate, biodiversity, and ecosystem functions and services.
- CLO 2 Describe the impacts and consequences of climate change and biodiversity loss on humanity.
- CLO 3 Explore options to address and redress climate change and biodiversity loss.
- CLO 4 Work effectively in groups.

Course content:



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Session	Discussion content	Hours		Instructor
		Class	Field	
1	<i>Course introduction</i> Grading & rubric	1	-	WNP
2	<i>The Earth's climate</i> Variability & seasonality	1	2	WNP
3	<i>Ecosystem structure & function</i> The biosphere - abundance, distribution & diversity	1	4	WNP
4	<i>Ecosystem services and human well-being</i> Provisioning; regulating; cultural; supporting services	1	2	WNP
5	<i>Planetary boundaries</i> Land-system change & biosphere integrity	1	2	WNP
6	<i>Planetary boundaries</i> Freshwater change & biogeochemical flows	1	2	WNP
7	<i>Planetary boundaries</i> Stratospheric ozone depletion; atmospheric aerosol loading & novel entities	1	2	WNP
8	<i>Climate change & GHG emissions</i> Sources & sinks; ocean acidification	1	2	WNP
9	<i>Ecological and Carbon Footprints</i> The role of the individual	1	4	WNP
11	<i>Net Zero - pathways to sustainability</i> The role of institutions; Kyoto Protocol; Paris Agreement	1	2	WNP
12	<i>Biodiversity conservation and ecosystem protection</i>	1	2	WNP
	TOTAL	12	24	



Assessment and evaluation

Teaching will be in the classroom and in local ecosystems. You will be assessed and evaluated on your ability to demonstrate competent acquisition of the CLOs in the following way:

Course Learning Outcome		Measurement method	Weight (%)	
1	Explain the principles of climate, biodiversity, and ecosystem functions and services.	Learning Journal	20	25
		Participation	5	
2	Describe the impacts and consequences of climate change and biodiversity loss on humanity	Learning Journal	20	25
		Participation	5	
3	Explore options to address and redress climate change and biodiversity loss	Learning Journal	20	25
		Participation	5	
4	Work effectively in groups	Peer evaluation	25	25
TOTAL			100	100

Field work

The field visits are designed to complement class-based discussions and aim to provide the experiential framework to allow you to better achieve the Course Learning Outcomes. You will demonstrate your achievement by writing a *Field Report* that outlines the key issues and summarises what can be done to address and redress negative impacts.



Rubric for peer evaluation 25%

Meaning Grade GPA	Outstanding A 4.0	Competent B 3.0	Adequate C 2.0	Ineffective D 1.0	Failed F 0.0
Overall assessment of team member	I would actively try to work with this person again	I would be pleased to work with this person again	I would not mind working with this person again	I would be reluctant to work with this person again	I would refuse to work with this person again
Contribution to group goals	Team member consistently and actively worked towards goals, and willingly accepted and fulfilled individual role within the group	Team member worked towards goals, and accepted and fulfilled individual role within the group	Team member worked towards goals, and accepted and fulfilled individual role within the group but needed occasional prompting	Team member worked towards goals, and accepted individual role within the group but only when prompted	Team member put little effort towards goals and let others do the work
Contribution of knowledge	Team member consistently and actively contributed knowledge, opinions, and useful ideas without being prompted or reminded	Team member contributed knowledge, opinions, and ideas without being prompted or reminded	Team member sometimes contributed knowledge, opinions, and ideas but needed occasional prompting and reminding	Team member contributed knowledge, opinions, and ideas only when prompted	Team member did not contribute knowledge, opinions, or ideas.
Quality of contribution	Team member's contributions always exceeded expectations	Team member's contributions frequently exceeded expectations	The team member's contributions met expectations	Team member's contributions sometimes failed to meet expectations	Team member's contributions failed to meet expectations
Responsibility	Team member exceeded expectations on timely completion of tasks, follow up, and feedback	The team member was responsible and completed most tasks on time	The team member did not complete all tasks on time	The team member frequently failed to complete tasks on time	The team member failed to complete any tasks on time and needed frequent prompting
Cooperation	Team member consistently helped identify tasks and goals and encouraged others to contribute	Team member often helped identify tasks & goals and often encouraged others to contribute	Team member sometimes helped identify tasks & goals and sometimes encouraged others to contribute	Team member occasionally helped identify tasks & goals but needed encouragement to contribute	Team member did not help identify tasks and goals and let others do the work



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Rubric for participation during discussions (15%)

Meaning Grade GPA	Outstanding A 4.0	Competent B 3.0	Adequate C 2.0	Ineffective D 1.0	Failed F 0.0
In-class discussions	You always ask and answer questions. You lead discussions and naturally fit the role of team leader.	You often ask and answer questions but you are sometimes distracted by other things.	You sometimes get involved in discussions.	You sit back and let others do all the talking and thinking.	Who are you again?



Rubric for Learning Journal (60%)

Meaning Grade GPA	Outstanding A 4.0	Competent B 3.0	Adequate C 2.0	Ineffective D 1.0	Failed F 0.0
Factual knowledge [15%]	You use the correct terminology and you use relevant facts correctly.	You use the correct terminology and facts most of the time.	You sometimes use the incorrect terminology and your use of facts is sometimes irrelevant and/or wrong.	You often use incorrect terminology and you sometimes use irrelevant made-up “facts”.	You show no sign of knowing the correct terminology or any relevant facts.
Conceptual knowledge [15%]	You address the major concepts and it is clear you understand how the facts fit theory.	You know and address most of the relevant major concepts.	You address some of the major concepts but it is clear you do not fully understand them.	You address a major concept but get it wrong.	You show no sign of understanding the concepts discussed in class.
Procedural knowledge [25%]	It is clear you understand the procedures and you can discuss the pros and cons of different methods within the context of a study.	You have an acceptable level of knowledge about the procedures you used. You know other methods exist but do not elaborate or explain.	You have an adequate understanding of procedures you used but it is clear you do not know about other methods.	You have minimal understanding of the procedures you used and do not know about other methods.	You have little practical knowledge.
Content (facts) [30%]	You provide substantial, specific and illustrative examples that demonstrate a strong development of ideas.	You provide sufficiently developed examples with adequate elaboration and explanation of ideas.	You provide limited examples and could elaborate and explain more.	You provide examples that are superficial and/or minimal.	You provide incomplete or no examples. There is no development of ideas.
Organisation [5%]	You present information in effective order using effective transitions between ideas and concepts. You use an effective and interesting introduction and closure.	You present information in a logical order using appropriate transitions between ideas. You provide an interesting introduction and closure.	You present information in a predictable order and sometimes use appropriate transitions between ideas. You provide an adequate introduction and closure but miss some major points.	You present information in a predictable order but use few transitions between ideas. Your work is missing an introduction and/or closure.	You present information in a confusing and/or random way with no transitions between ideas. Your work is missing an introduction and closure.



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Communication [10%]	You use interesting and precise vocabulary with a variety of complex sentences. Your writing is fluent and near error-free.	You use specific vocabulary and write with a variety of sentence structures, a lot of which are complex. Your writing errors are minor and do not interfere with meaning.	You use appropriate vocabulary with some variety of sentence structure. Your writing errors can create some confusion but the overall meaning is still clear.	You use simple vocabulary in simple predictable sentences. Your writing errors affect meaning.	You rely heavily on simple sentence structures and disregard writing conventions such as spelling, punctuation and grammar.
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