

Academic Year	AY2017/18	Semester	2
Course Coordinator	Professor David Wardle		
Course Code	ES3305		
Course Title	Current Issues in Ecology		
Pre-requisites	ES2303 Introduction to Ecology		
No of AUs	3		
Contact Hours	3 hours x 13 weeks = 39 hours		
Proposal Date	6 June 2017		

Course Aims

This is an advanced ecology course, and as such it builds on the foundations and theory that the students will have been exposed to in ecology courses in their first two years. Because it is an advanced course, the aim is to get the students to think critically and to apply their knowledge to new and unfamiliar situations, rather than just memorize facts. As such, the students will be introduced to a series of 12 cutting edge topics including those currently under debate, and will be expected to critically assess them. A large part of the course will also be to write a review or opinion article on a fast moving topic in ecology.

Intended Learning Outcomes (ILO)

By the end of this course, you (as a student) would be able to:

1. Have a working knowledge of key, fast moving and high profile, topics in the general area of community and ecosystem ecology
2. Be able to apply ecological concepts to unfamiliar situations
3. Be able to critically assess controversial topics in ecology that are currently under debate and formulate well-reasoned opinions about these debates.
4. Be able to synthesize primary ecological literature on fast moving topics and present it convincingly in both written and oral form.

Course Content

The class content will be organized as 12 separate topics or 'issues in ecology', i.e., one a week. These very broadly fall into five groups: (1) Biodiversity Change, (2) Multitrophic interactions, (3) Pattern and Process in Nature, (4) Ecosystem Processes and Sustainability, and (5) Synthesis. Each topic will include a one hour formal lecture and a two hour team-based activity. A written exercise that cuts across these topics will also be a major part of the course.

Assessment (includes both continuous and summative assessment)

Component	Course LO Tested	Related Programme LO or Graduate Attributes	Weighting	Team/ Individual	Assessment Rubrics
1. Participation in class discussion	1,2,3	Knowledge, Intellectual flexibility and critical thinking, problem solving, passion and communication	10%	Team	Appendix 1

2. Preparation and presentation of perspectives article	1,2,3,4	Intellectual flexibility and critical thinking, formulating questions, passion and communication	50%	Individual	Appendix 2
3. End of course essay quiz	1,2,3	Knowledge, Intellectual flexibility and critical thinking, formulating questions	40%	Individual	Appendix 3
Total			100%		

Formative feedback

Students will receive oral feedback for Component 1, written feedback for Component 3, and either written or oral feedback as appropriate for the various parts of Component 2

Learning and Teaching approach

Approach	How does this approach support students in achieving the learning outcomes?
Lecture	To effectively convey information on fundamental theories and key concepts and to bring all students up to similar levels of knowledge (LO1)
Interactive team-based activities	Various activities (discussion groups, debate, etc) to help students analyze and formulate point of view on topics that are fast moving and/or are under debate and to present and discuss these constructively in a group setting (LO2, LO3, LO4)

Reading and References

This is an advanced course aimed at getting students to think critically, and is on fast moving topics many of which are under debate. No textbook exists which covers these sorts of issues, and a textbook would be inappropriate for this type of course. Because a key element of this course is to train students to make effective use of the primary scientific literature, they will be assigned a small number of scientific articles and review articles to read each week and will be expected to be prepared to discuss them in class.

Course Policies and Student Responsibilities

(1) General

Students are expected to complete all assigned pre-class readings and activities on time, attend all lectures and class discussions, and submit all scheduled assignments and tests by due dates. Students are expected to take responsibility to follow up with course notes, assignments and course related announcements for

seminar sessions they have missed.

(2) Absenteeism

Absence from scheduled lectures and discussion groups without a valid reason will affect your overall course grade. Valid reasons include falling sick supported by a medical certificate.

If you miss a lecture or discussion group exercise you must inform me via email (david.wardle@ntu.edu.sg) prior to the start of the class.

(3) Compulsory Assignments

You are required to submit compulsory assignments on due dates, unless a valid reason is provided. Valid reasons include falling sick supported by a medical certificate. If you will miss a deadline for a valid reason you must inform me via email (david.wardle@ntu.edu.sg) prior to the deadline, and as soon as is possible.

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. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Course Instructors

Instructor	Office Location	Phone	Email
David Wardle	N2-01c-49	6592-3602	david.wardle@slu.se
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Matthew Luskin	N2-01c-65 (room 6)	-	mattluskin@gmail.com
Stuart Davies	-	-	daviess@si.edu

Planned Weekly Schedule

Week	Topic	Instructor	Course LO	Readings/Activities
1 (Jan 14-19)	BIODIVERSITY CHANGE: Are global biodiversity losses reflected at local scales?	Wardle	1,2,3,4	SEE NOTE BELOW
2 (Jan 22-26)	INVASION BIOLOGY: Have impacts of invasive organisms been exaggerated and is invasion biology even a real discipline?	Wardle	1,2,3,4	"
3 (Jan 29 – Feb 2)	ABOVEGROUND-BELOWGROUND LINKAGES: Are the two subsystems closely interlinked or do they function independently?	Wardle	1,2,3,4	"
4 (Feb 5-9)	PLANT-HERBIVORE INTERACTIONS: Do these interactions, and plant defenses, change predictably with environmental stress and latitude?	Wardle	1,2,3,4	"
5 (Feb 12-16)	TROPHIC INTERACTIONS: Are ecosystems more commonly under bottom-up or top-down control?	Martin	1,2,3,4	"
6 (Feb 19-23)	PLANT REPRODUCTION AND POLLINATION: Do we already know everything there is (or want) to know?	Lum	1,2,3,4	
7 (Feb 26 – Mar 1)	INTER-ANNUAL MAST FRUITING IN SOUTHEAST ASIA. What are the theories and evidence behind it and what are the selective pressures that maintain it?	Luskin	1,2,3,4	"
8 (Mar 11-15)	HUMP-SHAPED DIVERSITY RESPONSES: Are these real phenomena or simply statistical artefacts?	Wardle	1,2,3,4	"
9 (Mar 18-22)	THE CONCEPT OF SPECIES ACROSS THE TREE OF LIFE: How can we apply different versions of the species concept to genetically promiscuous taxa such as bacteria and archaea?	Lauro		
10 (Mar 26-29)	FOREST CARBON CYCLE: Are forests accumulating more biomass due to elevated atmospheric CO ₂ ?	Davies	1,2,3,4	"
11 (Apr 1-6)	USERS AND USES: Is environmental sustainability possible in today's world?	Bhatia	1,2,3,4	"
12 (Apr 8-12)	DIVERSITY-FUNCTIONING: Is biodiversity loss causing ecosystem functioning to decline, and can current approaches answer this?	Wardle	1,2,3,4	"
13 (Apr 15-19)	SYNTHESIS, PRESENTATIONS AND ESSAY QUIZ	Wardle	1,2,3,4	"

NOTE: This is an advanced course, and no single book or publication would be appropriate for any of these topics, because a key goal of the course is to train the students to make the best use of published scientific literature. Instead, a suggested reading list will be given to the students each week, and they will be expected to read it before that week's discussion group exercise

Appendix 1: Assessment Criteria for Participation in Class Discussion

Standards	Criteria
A+ (Exceptional) A (Excellent)	Important contributions to class discussion; capacity to articulate and present points of view very clearly; participates in a meaningful and constructive manner including enabling other students to contribute and not dominating; evidence of having read and assimilated literature beyond the assigned reading; strong signs of evidence-based formation of points of view on controversial topics.
A- (Very good) B+ (Good)	Meaningful contributions to class discussion, capacity to articulate and present points of view clearly; participates in a meaningful and constructive manner including enabling other students to contribute and not dominating; evidence of having read and assimilated the assigned reading; some signs of evidence-based formation of points of view on controversial topics.
B (Average) B- (Satisfactory) C+ (Marginally satisfactory)	Some contributions to class discussion, some capacity to articulate and present points of view; some evidence of constructive engagement during discussion; some familiarity with the assigned reading; some evidence of having thought about controversial topics.
C (Bordering unsatisfactory) C- (Unsatisfactory)	Minimal contributions to class discussion, limited capacity to articulate and present points of view; limited evidence of constructive engagement during discussion; little or no familiarity with the assigned reading; little serious thought about discussion topics.
D, F (Deeply unsatisfactory)	Very minimal or no contributions to class discussion, no evidence of an individual viewpoint; failure to read the assigned reading; unexplained or unjustified absences from class activities.

Appendix 2: Assessment Criteria for Preparation and Presentation of Perspectives Article

Standards	Criteria
A+ (Exceptional) A (Excellent)	Selection of an excellent and important topic; outstanding proposal that is well structured and effective in highlighting key questions, scope and the way forward; well structured article in proper format that is well focused, addresses and synthesizes the issue at hand and provides excellent suggestions for future work; convincing, well structured and exciting oral presentation; signs throughout of real originality and thinking outside the box; strong capacity to familiarize with relevant literature and ability to extract and synthesize it to focus on key points.
A- (Very good) B+ (Good)	Selection of an interesting topic; very good proposal that has a reasonable structure and highlights questions and scope including the way forward; fairly well structured article in mostly proper format that has some focus, addresses and synthesizes the issue at hand and makes some suggestions for future work; reasonably clear well structured oral presentation; evidence throughout of some originality; some capacity to familiarize with relevant literature and ability to extract and synthesize it to focus on key points.
B (Average) B- (Satisfactory) C+ (Marginally satisfactory)	Selection of a topic that has some potential; adequate proposal structure and some capacity to highlights questions and scope; adequately structured article that has some evidence of focus, and goes some way to addressing and synthesizing the issue at hand; satisfactory oral presentation that goes

	some way to addressing the topic; originality throughout is somewhat limited; satisfactory to limited capacity to familiarize with relevant literature and ability to extract and synthesize it to focus on key points.
C (Bordering unsatisfactory) C- (Unsatisfactory)	Poor selection of a topic; inadequate proposal structure and limited capacity to highlight key questions and scope; poorly structured article that has limited evidence of focus and is restricted in its capacity to address and synthesize the issue at hand; lackluster and poorly organized oral presentation; originality throughout is limited to absent; little evidence of familiarization with relevant literature or capacity to synthesize it.
D, F (Deeply unsatisfactory)	Poorly written and organized proposal and article that is difficult to follow, lacks key questions; minimal evidence of familiarization with relevant literature; inadequate and badly structured oral presentation that lacks key questions or focus. OR failure to submit the proposal and/or article, and/or failure to deliver oral presentation.

Appendix 3: End of Course Essay Quiz

Standards	Criteria
A+ (Exceptional) A (Excellent)	Essay takes an original approach to the question at hand, is very well structured and focused, and does not deviate from the given question; evidence of excellent ability to apply knowledge taught in the course while thinking outside the box; evidence of deep understanding and not just memorization of key concepts taught in the course.
A- (Very good) B+ (Good)	Essay takes a conventional approach to the question at hand, has evidence of structure and focus, and is mostly on-topic; evidence of some ability to apply knowledge taught in the course; some evidence of understanding and not just memorization of key concepts taught in the course.
B (Average) B- (Satisfactory) C+ (Marginally satisfactory)	Essay takes a conventional (though somewhat unoriginal) approach to the question at hand, has some evidence of structure and focus, and does not deviate substantially from the topic; evidence of some (but not significant) ability to apply knowledge taught in the course; some familiarization of key concepts taught in the course but evidence of deep understanding is limited.
C (Bordering unsatisfactory) C- (Unsatisfactory)	Essay does a poor to middling job of addressing the question at hand, has limited structure and focus, and frequently strays off topic; limited evidence of ability to apply knowledge taught in the course; limited familiarization of key concepts taught in the course.
D, F (Deeply unsatisfactory)	Essay is inadequate in addressing the question at hand, lacks structure and focus, and is mostly or wholly off topic; inadequate capacity to apply knowledge taught in the course; poor familiarization of key concepts taught in the course. OR failure to submit the essay.