

Master's Programme: Social-Ecological Resilience for Sustainable Development

Course 3: Governance and management of social-ecological systems (15hp)

Course leader: Miriam Huitric

Updated: PLANNING VT2018.

Brief Description

This course will explore alternative approaches for analysing how people make choices, use rules, and learn to manage and govern social-ecological systems. The course will combine economic approaches to uncertainty, approaches to ecological management that enable learning, how institutional choices shape environmental management, and how governance can be designed to adapt to social-ecological change. Students will learn how to apply cost-benefit analysis, decision analysis under uncertainty, and game theory to the analysis of environmental issues. They will explore successful cases of environmental management, and how governance systems have been successfully transformed. Strategies for effecting positive change in environmental management, and barriers impeding such change will be examined. Students will be introduced to theoretical concepts, methods for analysis, and conduct group and individual research projects that utilize these concepts and methods.

Course Learning Outcomes

It is expected that the student, after taking the course, will be able to:

1. Understand decision analysis in simple real world situations.
2. Be familiar with institutional aspects of social-ecological management that can lead to successful and unsuccessful management.
3. Understand how human behaviour relates to the creation of ecological problems.
4. Analyse the ability of different aspects of ecological management to support or impede learning.
5. Explain the challenges and opportunities of adaptive governance.

Course Modules

The course consists of the following four modules, which are detailed in the following pages:

Module 9: Drama of the Commons (3 hp),

Module 7: Challenges of Environmental Decision-making (4 hp),

Module 8: Adaptive Management (4 hp),

Module 10: Adaptive Governance (4 hp).

Module 9: Drama of the Commons (3 hp)

Module Leader: Miriam Huitric

Instructors: Caroline Schill (CS), Miriam Huitric (MH)

Brief description

During this module you will be introduced to different theoretical and applied approaches related to understanding and analysing the nature and use of common property/ common pool resources in the context of social-ecological systems. This will include: prisoner's dilemma, collective action, human behaviour, institutions, institutional analysis and social networks. We explore this field using exercises, lab work and case studies – both to illustrate and apply the course's theoretical content.

Module content

Concepts	Methods	Applications
Week 1: Tragedy and Drama of the Commons: Institutions and Networks		
Tragedy of the Commons Common Pool Resources Prisoner's Dilemma Institutions – norms, rules and rights Property rights	Institutional Analysis Coding	Roles institutions in managing the commons
Week 2: Behavioural Experiments		
Tragedy of the Commons Common Pool Resources	Behavioural laboratory and field experiments	Understanding individual and collective behaviour

Schedule

	<i>Lectures</i>	<i>Class exercises</i>	<i>Home work</i>
Week 1: Tragedy & Drama of the Commons			
JANUARY Mon 15	READING DAY		Homework 1 - Bring Homework in paper form on Tues
Tues 16 9:00-12:00 13:00-17:00	AM: Course & Module Intro [MH, 1 hr]; AM: Tragedy of the Commons [MH, 2 hr] PM: Drama of the Commons – role of and challenges for institutions in managing the commons [MH, 2 hr]	AM: Class exercise [MH, 1 hr] PM: Class exercise [MH, 1 hr] PM: Presentation of Seminar instructions [MH, 1/4 hr]	Hand out Final Assignment (Mondo)
Wed 17 9:00-12:00		AM: Organised group discussions, meet at 9	PM: Individual coding exercise. Send to Miriam and Madagascar seminar group by 17:00. PM: reading + prep for seminar
Thurs 18		AM/PM Groups prepare for their seminar [in group, 5 hr]	Prepare for CS: Reading + Homework 2. Bring Homework in paper form on Mon
Fri 19 9:00-12:00		AM: Seminar 2 [MH, 3 hr]	Prepare for CS: Reading + Homework 2. Bring Homework in paper form on Mon
Week 2: Behavioural Lab & Field Experiments			
Mon 22 9:00-12:00	AM: The value added of using behavioural experiments to study the commons [CS, 3hr]		PM: Work on Final Assignment Q5
Tues 23 10:00-15:00 15:00-16:00	AM/PM: Experiments exercise [CS, 4hr]	PM: Review of day [CS, 1hr]	
Wed 24 9:00-11:00 11:00-12:00		AM: Class module evaluation workshop [class, 2hr] AM: Q&A on CPR & Mod 9 – optional session [MH, 1hr]	Work on Final Assignment
Thurs 25			17:00 Hand-in Final Assignment

Learning outcomes

After completing the course, course participants are expected to:

1. Be able to define and describe key concepts including: common pool resources, institutions, norms and rules, prisoner's dilemma and tragedy of the commons.
2. Have insights into how to perform institutional analyses.
3. Have insights into the role of experiments in understanding individual and collective behaviour.
4. Be able to apply the above components to real settings

Assessment and Grading

Component	Weighting (%)	Learning Outcomes
Homework 1+2	Pass/fail	1, 3, 4
Seminar	Pass/fail	1,2,4
Experiments Exercise	Pass/fail	1,3
Final Assignment	100%	1-4
Module Workshop	Compulsory	
	100%	

Attendance of lectures and participation in **all** seminars is compulsory. Participation does not only mean attendance, the participant must have prepared for and take an active role in the seminar. The individual course evaluation at the end of the course is compulsory.

Criteria for assessment

The participant must achieve passing grades for all parts of the module in order to pass the module as a whole. Failure to submit on time will result in a maximum grade C. The maximum grade for a re-submitted Fx grade is an E. The following grades are issued; the lower limit for each grade is expressed as a percentage of the maximum points available:

- A 95% Excellent
- B 85% Very good
- C 75% Good
- D 65% Satisfactory
- E 60% Sufficient (pass)
- Fx 50% Insufficient (fail)
- F Below 50% Poor or insufficient conduct (fail)

In addition to specific grading criteria handed out with specific assignments, the following criteria are used for grading assignments:

A	requires excellent insight and deep understanding of the modules' concepts and how they relate to one another and to the Commons. The text clearly demonstrates independent thinking, an ability to connect key concepts presented during the module, and to make connections beyond the immediate subject area. The text has no faults with <i>formalia</i> .
B	requires very good insight and deep understanding of the modules' concepts. The text demonstrates a clear ability to connect key concepts presented during the module. The text has at most minor faults with <i>formalia</i> .
C	requires good insight into the modules' concepts and how they are interrelated, as well as independent sound judgements and analytical skills in discussing them. The text demonstrates an ability to connect key concepts presented during the module. The text has smaller faults with <i>formalia</i> .
D	requires additional skills in discussing and explaining the modules' concepts. The text demonstrates an ability to connect key concepts presented during the module. Concepts are defined and in general correctly used, and applied. The text has faults with <i>formalia</i> .
E	is issued to participants who can recapitulate the contents of the module. The text indicates an ability to define and to some extent connect the key concepts presented during the module. The text has faults with <i>formalia</i> .
Fx	is issued where the text has serious faults with <i>formalia</i> . Concepts are poorly defined and used incorrectly. The maximum grade for a re-submitted Fx grade is an E
F	is issued where the text indicates an inability to connect key concepts presented during the course. The text does not follow <i>formalia</i> requirements; concepts are incorrectly defined and/or misapplied.

Reading List – readings should be done prior to lectures!

Course Book – available online as pdf or e-book. Free:

Janssen, M.A. and Anderies, J.M. 2013. *Sustaining the Commons*. Published by: Center for the Study of Institutional Diversity, Arizona State University, Tempe.
<http://sustainingthecommons.asu.edu>

Week 1: Tragedy and Drama of the Commons

Lecture: Tragedy of the Commons

Read the Hardin paper first. Some questions to think about after you have read the article: Can you think of settings that the example of the “commons” in his paper applies to and settings that it does not apply to? Why is this reading here?

After this watch the white board seminar with Lin Ostrom and then read the book chapters.

Revisit the questions and your responses – add to these/ edit these, and make a note of *why* you made these changes.

Hardin, G. 1968. The tragedy of the commons. *Science* **162**: 1243-1248.

Watch Elinor Ostrom’s Whiteboard Seminar “Going Beyond the Tragedy of the Commons”:

<http://www.stockholmresilience.org/21/seminar-and-events/whiteboard-seminars/4-22-2009-whiteboard-seminar-with-elinor-ostrom-going-beyond-the-tragedy-of-commons.html>

Course Book: Chapters 1-2.

Additional Reading:

Dietz T., Ostrom E. and Stern P.C., 2003. The Struggle to Govern the Commons. *Science* **302**(5652): 1907 – 1912.

Lecture: Drama of the Commons

Read Ostrom’s paper first, it is a dense paper and you will see that there are many terms – she does not use these flippantly! There are very concrete definitions for each of these. Use the book chapters (from previous lecture too) to understand the terms in this paper and to see how her work has progressed from her seminal work on defining principles to govern the commons.

Ostrom, E., 2007: A diagnostic approach for going beyond panaceas. *Proc. Nat. Acad. Sciences* **104** (39): 15181–15187.

Course Book: Chapters 3, 7, 10-11.

Additional Reading:

Ostrom, E. 1993: The evolution of norms, rules, and rights. *Beijer Disc Paper Series* No. 39. On Mondo.

Seminar: Applying Week 1’s material to different contexts

Dietz T., Ostrom E. and Stern P.C., 2003. The Struggle to Govern the Commons. *Science* **302**(5652): 1907 – 1912.

Tengö M, Johansson K, Rakotondrasoa F, Lundberg J, Andriamaherilala J-A, Rakotoarisoa J-A and Elmqvist T. 2007. Taboos and Forest Governance: Informal Protection of Hot Spot Dry Forest in Southern Madagascar. *AMBIO* **36**(8):683-691. DOI:

[http://dx.doi.org/10.1579/0044-7447\(2007\)36\[683:TAFGIP\]2.0.CO;2](http://dx.doi.org/10.1579/0044-7447(2007)36[683:TAFGIP]2.0.CO;2)

Week 2: Behavioural Lab & Field Experiments

Lecture: The value added of using behavioural experiments to study the commons

Course Book: chapter section 8.1 (1 page intro only)

Course Book: chapter 9

Schill, C., T. Lindahl, and A.-S. Crépin. 2015. Collective action and the risk of ecosystem regime shifts: insights from a laboratory experiment. *Ecology and Society* **20**(1):48. **Including** Appendix 1 (instructions of the “Threshold treatment”).

Short video: Juan Camilo Cárdenas “Invisible hands working together” <https://www.youtube.com/watch?v=BqEOGDX766Q>

Additional Reading:

Course Book: chapter sections 8.2 – 8.6

Note: Introducing different types of social dilemma experiments, apart from common-pool resource and public good experiments.

Ostrom, E. 2006. The value-added of laboratory experiments for the study of institutions and common-pool resources. *Journal of Economic Behavior and Organization* **61**(2):149–163.

- Note: Read this if you want to get to know Elinor Ostrom’s motivation for using behavioural (economic) experiments and a more detailed description of the experimental evidence on the importance of communication and sanctioning.

Janssen, M. A., T. Lindahl, and J. J. Murphy. 2015. Advancing the understanding of behavior in social-ecological systems: results from lab and field experiments. *Ecology and Society* **20**(4). [Introduction to special issue in *Ecology and Society* on “Advancing the understanding of behavior in social-ecological systems: results from lab and field experiments” of which the Schill et al. paper is part of; link: <http://www.ecologyandsociety.org/issues/view.php/feature/102>]

- Note: Read this if you would like to have an idea about some very recent experimental studies on the commons (both lab and field) with a particular SES angle.

Anderies, J. M., M. A. Janssen, F. Bousquet, J.-C. Cardenas, D. Castillo, M.-C. Lopez, R. Tobias, B. Vollan, and A. Wutich. 2011. The challenge of understanding decisions in experimental studies of common pool resource governance. *Ecological Economics* **70**(9):1571–1579.

- Note: Read this if you would like to know about methodological and ethical challenges of the experimental method (mostly economic experiments) and ways of complementing experimental data to gain understanding about the role of individual attributes and the social-ecological context on behavioural responses.

Module 7: Challenges of Environmental Decision-making (4 hp)

Module leader: Gustav Engström

Instructors: Anne-Sophie Crépin (ASC), Therese Lindahl (TL), Gustav Engström (GE), Johan Gars (JG)

Brief description

The objective of this module is to help the students understand the whole width of challenges associated with decisions making coupled to environmental issues. The module will explore alternative approaches for analysing how people make choices individually and collectively to manage social-ecological systems and what consequences these choices have. The students will learn economic approaches to decision-making that incorporate uncertainty and complex dynamics including regime shifts, behavioural biases, climate change and international trade.

Module content

Concepts	Methods	Applications
Section 1: Policy instruments for environmental decision making		
Market failures, Incentives, Taxes, Subsidies, Regulations, Rights, Selection criteria	Market analysis using diagrams and examples, Policy instruments design and choice	Multidisciplinary case studies and examples
Section 2: Basis for environmental decisions – empirical applications		
Empirical methods for policy, Economics of climate change, Integrated assessment models	Randomized and Quasi experiments and valuation, Integrated assessment modelling	Multidisciplinary case studies and examples
Section 3: Decision analysis framework for SES		
Risk, Knightian uncertainty, complexity, regime shifts, behavioural biases, trade	Multidisciplinary approaches to solving problems, environmental decision-making, Individual and collective decision-making, Trade theory	Multidisciplinary case studies and examples

Schedule - All lectures are in room 251 unless otherwise noted

	<i>Lectures</i>	<i>Class exercises</i>	<i>Home work</i>
Week 1:			
JANUARY Fri 26 9:00-12:00 13:00-14:00	AM: Module Intro (GE, ½ hr) AM: Economics and the environment (GE&TL 2 hr)	PM: Discussion economics and the environment (GE&TL, 1 hr)	
Mon 29 9.00-12.00	AM: Policy Instruments for the environment (GE 2 hr)	AM: Discussion policy instruments (GE, 1 hr)	
Tues 30	READING DAY		
Wed 31 10:00-12:00 13:00-15:00	AM: Empirical methods for Environmental Decision-making (GE, 3 hr)	PM: Discussion empirical methods (GE, 1 hr)	
FEBRUARY Thurs 1			
Fri 2 10.00-12.00 13.00-14.00	AM: Climate and economics (JG 2hr)	PM: Discussion on climate and economics (JG 1hr)	
Week 2:			
Mon 5 10.00-12.00 13.00-15.00	AM: Behavioural biases in decisions (TL, 2 hr)	PM: Group discussion/exercise on behavioural biases in decisions (TL, 2hr)	
Tues 6	AM: Decision-making under uncertainty. (ASC, 2 hr)	PM: Group Discussions (ASC, 2 hr)	
Wed 7 9:00-12:00 13:00-18:00	AM: Decision-making with regime shifts. (ASC, 2hr)	AM: Group discussions (ASC, 1 hr) PM: Career's Afternoon at BIG	
Thurs 8	READING DAY		
Fri 9 9.00-11.00	AM: Exam handout on Mondo		
Week 3:			
Mon 12 12.00 13:00-15:00		PM: Class module evaluation workshop [class, 2hr]	Examination: Deadline individual home exam: 12noon

Learning outcomes

It is expected that the student, after taking the module, will be able to:

1. Apply and discuss essential elements of decision analysis in real world situations
2. Be familiar with economic and institutional aspects of social-ecological management that can lead to successful and unsuccessful management
3. Grasp the challenges of decision making for social ecological systems related to uncertainties, climate change, trade, behavioural biases and regime shifts
4. Be able to discuss relevant issues related to decision making using economic thinking.

Assessment and Grading

Examination will be conducted through one final individual exam (lecture material allowed). The exam will be based primarily on lecture slides and notes and can give at most 100 points. The exam will include technical questions, multiple choice questions and short essay style questions (max 0.5 page). Technical questions and multiple choice questions can be either right or wrong. The number of points you can get for each question will be specified in the exam. For the essay style questions question, the grading will be as following:

100%	is issued to participants who can recapitulate and explain all of the arguments and concepts discussed in the module that are relevant to discuss the question and show outstanding insight and understanding of how the module concepts are related to the problem.
75%	is issued to participants who can recapitulate and explain at least 75% of the arguments and concepts discussed in the different module components that are relevant to answer the question and show independent sound judgements and analytical skills in discussing them. The exact grade is issued in proportion to the extent of the content they are able to present.
50%	is issued to participants who can recapitulate and explain at least 50% of the arguments and concepts discussed in the different module components that are relevant to answer the question. The exact grade is issued in proportion to the extent of the content they are able to present.
25%	is issued to participants who can recapitulate and explain less than half of the arguments and concepts discussed in the different module components that are relevant to answer the question. The grade is issued in proportion to the extent of the content they are able to present.

Component	Weighting (%)	Learning Outcomes
Final exam	100%	1-5
Attendance in class and discussion	Compulsory	1-5
Module Review	Compulsory	

Attendance of lectures is compulsory. Attendance means active participation. The student should be prepared for and take an active role in class discussions. The individual course evaluation at the end of the course is compulsory.

Criteria for assessment

The participant must achieve passing grades for all parts of the course in order to pass the course as a whole. Failure to submit on time will result in a maximum grade C. The maximum grade for Fx grade is an E.

The following grades are issued, the lower limits for each grade is expressed as the total number points that must be obtained to reach that grade:

- A 95% Excellent
- B 85% Very good
- C 75% Good
- D 65% Satisfactory
- E 60% Sufficient (pass)
- Fx 50% Insufficient (fail)
- F Below 50% Poor or insufficient conduct (fail)

Reading list– readings should be done prior to lectures!

All readings are available at SU online library, online or will be distributed during class.

Lecture 0: Economics and the environment.

Lecture material available on Mondo.

Lecture 1: Policy instruments and tools for decision-making

Lecture notes available on Mondo.

Lecture 2: Empirical methods for environmental decision making

Lecture slides¬es.

<http://www.ecosystemvaluation.org/>

- The big picture
- Essentials of ecosystem valuation
- Dollar-based ecosystem valuation methods

Optional recommended reading:

Greenstone, M., & Gayer, T. (2009). *Quasi-experimental and experimental approaches to environmental economics*. www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-07-22.pdf

Angrist, J., & Pischke, J.-S. (2010). *The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con out of Econometrics* (NBER WORKING PAPER SERIES No. 15794). <http://www.nber.org/papers/w15794>

Lecture 3: Climate and economics

Krugman, P. 2010, Building a Green Economy, The New York Times, April 7. Available online http://www.nytimes.com/2010/04/11/magazine/11Economy-t.html?pagewanted=all&_r=0

Lecture 4: Decision making under uncertainty

Crépin, A.-S. 2014, Decision making for social ecological systems, draft lecture notes. Sections 1-3.

Lecture 5: Behavioural biases in decisions:

Chapter 8 in Janssen, M.A. and Anderies, J.M. 2013. *Sustaining the Commons*. Published by: Center for the Study of Institutional Diversity, Arizona State University, Tempe. Available as open access e-book: <https://csid.asu.edu/publications/sustaining-commons>

Scholz, RW. 2011. *Ibid*. Chapter 7: Drivers of individual behavior

Weber, E.U. Experienced-based and descriptive based perceptions of long term risk: Why global warming does not scare us (yet), *Climatic Change* **77**: 103–120.

Optional reading:

Lindahl T., and Stikvoort B., 2014. Nudge for Environmental Protection, Beijer Discussion paper #248. http://beijer.kva.se/PDF/22693601_Disc248.pdf

Shogren, J., and L Taylor, 2008 On Behavioral-Environmental Economics, *Review of Environmental Economics and Policy* **2**(1): 26–44

Lecture 6: Decision making with regime shifts

Crépin, A.-S. 2014, Decision making for social ecological systems, draft lecture notes. Sections 5-6.

Crépin, A.-S., Biggs, R., Polasky, S., Troell, M and de Zeeuw, A., 2012 Regime shifts and management, *Ecological Economics* **84**:15-22.

Gollier, C. (2001). Should we beware of the precautionary principle?. *Economic Policy*, *16*(33), 302-327.

Polasky, S. et al. (2011) Decision-making under great uncertainty: environmental management in an era of global change. *Trends in ecology & evolution* *26*.8: 398-404.

Module 8: Adaptive Management (4 hp)

Module leaders: Jon Norberg

jon.norberg@su.se

Instructors: Susa Niiranen (SN), Thorsten Blenckner (TB), Miriam Huitric (MH), Per Olsson (PO), Kirill Orach (KO), Henrik Österblom (HÖ), Matilda Valman (MV), Simon West (SW)

Brief description

The use and abuse of natural resources have resulted in a decline of ecosystem health. Despite significant efforts, management has failed at regional and global scales. Consequently, innovative approaches to improve ecosystem health are needed. Understanding of the social, political, legal and economic aspects of resource management, coupled with a deep understanding of ecology, has been advocated as being imperative for successful out-comes. This is “Adaptive Management”.

This course will introduce students to theory, methods, case studies and practical implementation of adaptive management. Scenarios are useful for bringing future considerations into present decisions when prediction is not possible. Scenarios also provide an effective tool to capture divergent and/or shared visions among multiple stakeholders of “what” to manage, “how” and for “whom”. It also presents an instrument that can help to highlight obstacles and possibilities for management of social-ecological systems under great uncertainty and in situations where the cost for management mistakes is large. Role-plays offer one type of scenario planning.

During this course students will be actively engaged through participation in a role-play that will be running throughout the whole course. Participants will assume the role and perspective of different stakeholders tasked to participate in adaptive management of natural resources. Students will also practically experience the challenges and opportunities of conducting research during this exercise. The experiences gained through the role-play will be continuously developed, discussed and reflected on, using case studies of adaptive management with different degrees of social and ecological complexity. Throughout the role-play and in the case studies presented, students will become acquainted with qualitative interview techniques, text analysis, interpretation of data, social network analysis and the process of leading participatory stakeholder dialogues.

In lectures, students will be exposed to a variety of case studies, presented by experts. Students will actively participate in a role-play that will run throughout the course. Students will independently search for literature and interpret data. Discussion seminars will be provided throughout the course.

Module content

Concepts	Methods	Applications
Week 1:		
What is adaptive management?	Literature search, lectures	Empirical data collection for social-ecological systems studies
What is a role-play?		
Week 2:		
How does adaptive management work in practice?	Participatory observations, theories for studying social-ecological systems, text analysis and interviews	Science-policy dialogues, empirical data collection for social-ecological systems studies
	Role play	Designing research program on social-ecological system
Week 3:		
How does adaptive management work in practice?	Role play	Designing research program on social-ecological system

Schedule - All lectures are in room 251 unless otherwise noted. Attendance and participation of class exercises and lectures are compulsory!

	Lectures	Class exercises	Home work
Week 1: Adaptive management: introduction and preparation for role-play			
FEBRUARY Tues 13 9:30-12:00	AM: Module introduction + introduction to adaptive management (JN, 1 hr) AM: Adaptive management of the Baltic Sea – HELCOM example (MV, 1.5 hrs)		Independent work: readings Independent literature search and analysis for role-play
Wed 14 9:30-12:00 13:00-17:00	AM: Adaptive management, from concept to implementation, Handing out individual examination task (JN, 2.5hrs);	PM: <i>BIG/SU Career day</i>	Independent work: readings
Thurs 15 9:30-12:00 13:00-15:30	AM: Practical instructions for the role play (HÖ); AM: Adaptive management, Great Barrier Reef case (PO, 2 hrs)	PM: Preparation for role play	Preparation for role play
Fri 16 9:30-12:00 13:00-15:30	AM: The Baltic Sea – learning the basics for a role play (TB, 2.5hrs)	AM: Role-play year 1 (session 1) (SN, KO) PM: Role-play year 1 (session 2) (SN, KO, TB)	Collection and interpretation of literature/data for the role-play.
Week 2: Case studies and Role-play			
Mon 19 9:30-12:00 13:00-15:30	AM: Interview methodology (MH 2.5 hrs)	PM: Interview methodology continues (MH, 2.5 hrs)	Collection and interpretation of literature/data for role-play.
Tues 20 10:00-12:00 13:00-15:30	AM: Adaptive management in EU context (KO, 2 hrs)	PM: Preparation for the role-play year 2	Collection and interpretation of literature/data for role-play.
Wed 21 10:00-12:00 13:00-15:30	AM: Adaptive management and governance in practice (SW, 2 hrs)	PM: Role-play year 2 (session 3) (SN, MV, TB)	Collection and interpretation of literature/data for role-play.
Thurs 22 13:00-15:30		PM: Preparation for the role-play year 10	Collection and interpretation of literature/data for role-play.
Fri 23 9:30-12:00 13:00-15:30		AM: Role-play year 10 (session 4) (SN, MV, TB) PM: Role-play year 10 (session 5) (SN, MV)	
Week 3: role play, case studies and Independent work on essay			
Mon 26 10:00-12:00		AM: Debriefing Summary of impressions from Role-play. Discussion of experiences, improvements for next year's role-play. Clarifications on the examination. (SN 2hr)	PM: Work on individual examination
Tues 27			AM-PM Work on individual examination

Wed 28
10:00-12:00

AM: Student-lead module
evaluation

AM-PM Work on individual
examination
17:00 Hand in individual
examination

Learning outcomes

Following the course the participants are expected to be able to:

1. Understand basic aspects of adaptive management
2. Have an empirical understanding of case studies of adaptive management
3. Understand how to apply basic methods for studying adaptive management processes (interviews, social network analysis, text analysis)
4. Have a basic understanding of how social, political, economic and ecological contexts influence adaptive management outcomes
5. Know how to engage in role-play and understand basic aspects of how to develop a strategy for adaptive management within any given social-ecological context.
6. Understand basic aspects related to how to conduct scenario planning and stakeholder dialogues.

Assessment and Grading

Component	Weighting (%)	Learning Outcomes
Individual report	100%	1-6
Participation in class discussions, exercises and role-play	Compulsory	1-6
	100%	

Attendance of lectures and participation in all seminars is compulsory. Participation does not only mean attendance, the participant must have prepared for and take an active role in the seminar. The individual course evaluation at the end of the course is compulsory.

Criteria for assessment

The participant must achieve passing grades for all parts of the course in order to pass the course as a whole. Failure to submit on time will result in a maximum grade C. The maximum grade for Fx grade is an E.

The following grades are issued, the lower limits for each grade is expressed as a percentage of the maximum points available:

- A 95% Excellent
- B 85% Very good
- C 75% Good
- D 65% Satisfactory
- E 60% Sufficient (pass)
- Fx 50% Insufficient (fail)
- F Below 50% Poor or insufficient conduct (fail)

A	Outstanding insights and understanding of the concepts and theories used within the course. Outstanding skills in written analysis and synthesis.
B	Very good insights and understanding of the concepts and theories used within the course. Very good skills in written analysis and synthesis.
C	Good insights and understanding of the concepts and theories used within the course. Good skills in written analysis and synthesis.
D	Show some understanding but requires further insights in concepts and theories.
E	Able to refer and define concepts and theories but lack understanding.

Reading List

Week 1:

- Hughes et al. (2005) Adaptive management of the Great Barrier Reef and the Grand Canyon World Heritage Areas. *Ambio*, **36**: 586-592.
- Kern, K. (2011) Governance for Sustainable Development in the Baltic Sea Region. *Journal of Baltic Studies* **42**(1): 21-35
- Walters, C. J. and Holling, C. S. 1990. Large-scale management experiments and learning by doing. *Ecology*, **71**(6): 2060-2068.
- Österblom, H., Hansson, S., Larsson, U., Hjerne, O., Wulff, F., Elmgren, R., Folke, C., 2007. Human-induced Trophic Cascades and Ecological Regime Shifts in the Baltic Sea. *Ecosystems* **10**, 877-889.
- Österblom et al. (2010) Making the ecosystem approach operational - Can regime shifts in ecological- and governance systems facilitate the transition? *Marine Policy*, **34**, 1290-1299.

Week 2:

- Olsson P, Folke C., Hughes TP. (2008) Navigating the transition to ecosystem-based management of the Great Barrier Reef, Australia. *PNAS*, **105**, 9489-9494.
- West, Schultz & Bekessy (2016). Rethinking Social Barriers to Adaptive Management. *Environmental Management* **58**,(3): 399-416.
- Westley (2002). The Devil in the Dynamics: Adaptive Management on the Frontlines. [In Panarchy]
- Österblom et al. (2011) Incentives, social–ecological feedbacks and European fisheries. *Marine Policy*, **35**, 568-574.

Module 10: Adaptive Governance (4 hp)

Module leader: Thomas Hahn

thomas.hahn@su.se

Instructors:

Brief description

The following course builds on insights from previous courses, and covers existing research on adaptive governance of social-ecological systems. You will be introduced to different theoretical approaches related to the governance of dynamic, non-linear social-ecological systems and resilience. In this course, we introduce and discuss the role of institutions, social networks, bridging organizations and global environmental governance in dealing with uncertainty, change, tipping points, crises and innovation. We explore the topic across a diverse set of real-world challenges, ranging from “planetary boundaries”, to ocean governance and infectious diseases, as well as across levels of societal organization. In the latter case, we will introduce and discuss the features of adaptive modes of governance from the local to the global level.

Module content

Concepts	Methods	Applications
Week 1: From institutions to governance		
Governance Adaptive governance Institutions International institutions Bridging organizations	Case Analysis	To mini-case studies
Week 2: Innovation and Transformation +		
Innovations Transitions Transformations Global networks and institutions		Mini Review Planetary Boundaries
Week 3: Global Governance		
Summing up Exam		

Schedule- All lectures are in room 251 unless otherwise noted

Learning outcomes

After completing the course, course participants are expected to be able to:

1. define and describe key concepts related to adaptive governance, such as adaptive co-management, social learning, social networks, bridging organization, and polycentric governance.
2. define and describe the role of innovation and transformations in adaptive governance.
3. describe how these concepts are related to each other in the context of governance of dynamic social-ecological systems.
4. apply concepts related to adaptive governance at multiple levels, on a real-world case.

Assessment and Grading

Component	Weighting (%)	Learning Outcomes
Blog Contributions	Pass/ Fail	1-3
Case Analysis	Pass/ Fail	1,3,4
Reading assignment II	Pass/ Fail	1-3
Final Exam	100%	1-4
Course Evaluation – online via BIG	Compulsory	
	100%	

Lectures are a very important part of the course and we expect you - and have put aside time for - to read the assigned literature before the lecture. All lectures will provide an overview of an existing research field, and explore how they relate to the governance of dynamic social-ecological systems.

The case analysis will give you an opportunity to elaborate how these concepts can be used to analyze real-world challenges. We expect you work in small groups, gather relevant information, synthesize insights into a brief group report, and present it to a larger group. Instructions to this exercise will be handed out during the course.

The reading assignments will help you reflect on how different concepts presented in the lectures relate to each other and their differences and similarities in key papers. Reading assignment II includes discussion in smaller groups. Participation in this exercise is mandatory, and we expect you to read the assigned course literature in advance.

Both readings assignments give you an opportunity to analyze a couple of key concepts and papers closer, identify, and discuss similarities and differences compared to other related fields.

The blog is a joint resource that builds on your active contribution. Each one of you is expected to contribute with a short summary and reflection of one lecture, e.g. key points and messages, and add a short comment to another blogpost. The comment can be a reflection, or something you found unclear in the lecture or the literature. Blogposts and comments will be passed on to the lecturer and course coordinators for feedback. The blog will be presented at the first introduction lecture.

Criteria for assessment

The participant must achieve passing grades for all parts of the course in order to pass the course as a whole. Failure to submit on time will result in a maximum grade C. The maximum grade for Fx grade is an E.

The following grades are issued; the lower limit for each grade is expressed as a percentage of the maximum points available:

- A 95% Excellent
- B 85% Very good
- C 75% Good
- D 65% Satisfactory
- E 60% Sufficient (pass)
- Fx 50% Insufficient (fail)
- F Below 50% Poor or insufficient conduct (fail)

In addition to specific grading criteria handed out with specific assignments, the following criteria are used for grading assignments:

A	The text has no faults with formalia. Concepts are well-defined, correctly applied and integrated in a clear way to illustrate theoretical challenges, and real-world problems or opportunities in the context of adaptive governance, at multiple levels of social organization. The text clearly demonstrates independent thinking, an ability to connect key concepts presented during the course, and to make connections beyond the immediate subject area.
B	The text has minor faults with formalia. Concepts are defined and correctly used, and applied in a way that illustrates both theoretical challenges, or real-world problems or opportunities in the context of adaptive governance, at multiple levels of social organization. The text demonstrates a clear ability to connect key concepts presented during the course.
C	The text has smaller faults with formalia. Concepts are defined and correctly used, and applied to illustrate both theoretical challenges, or real-world problems and opportunities in the context of adaptive governance, at multiple levels of social organization. The text demonstrates an ability to connect key concepts presented during the course.
D	The text has faults with formalia. Concepts are defined and in general correctly used, and applied to illustrate both theoretical challenges, or real-world problems and opportunities in the context of adaptive governance, at multiple levels of social organization. The text demonstrates an ability to connect key concepts presented during the course.
E	The text has faults with formalia. Concepts are defined and in general correctly used, and loosely applied to illustrate both theoretical challenges, or real-world problems and opportunities in the context of adaptive governance, at multiple levels of social organization. The text indicates an ability to connect key concepts presented during the course.

Reading List – readings should if possible be done prior to lectures.

*** = Required reading. Note: subject to minor changes.**