

Course title: Water and sustainability science				
Course code: WSW 161		No. of credits: 2		L-T-P distribution: 1-1-0
Pre-requisite course code and title (if any): none				
Course description This course explores “sustainability” in some of its key ecological, social, economic and political dimensions, with special reference to water and to the South Asian context. The concept of “sustainability” has become fundamental in the policy-making arena, although it is rarely defined with precision and coherence. Although “sustainability science” is not a unified theory but panoply of approaches, students are expected to end the course with a clearer overview of the notion and the current debates. Some of the key implications, locally as well as globally, will also be examined.				
Course objectives				
<ul style="list-style-type: none"> ▪ To explore “sustainability” in some of its ecological, social, economic, political and global dimensions. ▪ To expose some of the key concepts and debates on sustainability, with special reference to the South Asian water context. ▪ To provide students with a critical understanding of “sustainability”, carefully differentiating between the normative and analytical aspects, and based on theory and examples to be discussed in class. 				
Course content				
Module	Topic	L	T	P
1	Introduction <i>What is sustainability?</i> - Sustainability of what, for whom, for how long? - Complexity, uncertainty, urgency and system thinking <i>Historical background and contemporary context:</i> - How did we get there? The concept of the “Anthropocene”	2		
2	Ecological aspects of sustainability <i>Ecosystem services:</i> - A typology, with a focus on water <i>Metabolic analyses as a way of assessing sustainability:</i> - What is “social metabolism”, what does it tell? - The example of the water metabolism of Bangalore	2	2	
3	Social aspects of sustainability <i>Differentiating social groups and the relationship to “sustainability”:</i> - Wealth, gender, and traditional groups - The notion of needs, with special reference to water <i>Institutions and governance:</i> - The various property/possession-based regimes and their	4	2	

	<p>implications</p> <ul style="list-style-type: none"> - Is water a common-pool resource? Privatization vs. public service 			
4	<p>Economic aspects of sustainability</p> <p><i>The economy and the environment:</i></p> <ul style="list-style-type: none"> - The economy as an open system - Social costs/externalities, with special reference to water <p><i>Regulating the economy for sustainability:</i></p> <ul style="list-style-type: none"> - The different instruments - The valuation of the environment, with special reference to water 	4	2	
5	<p>Political aspects of sustainability</p> <p><i>The political economy of the environment:</i></p> <ul style="list-style-type: none"> - Environmental conflicts (esp. water conflicts) - Social movements and sustainability 	3	2	
6	<p>Global perspective and policy implications</p> <p><i>Macro-levels of sustainability:</i></p> <ul style="list-style-type: none"> - Trade and sustainability - Growth and sustainability <p><i>Towards a sustainable economy:</i></p> <ul style="list-style-type: none"> - Technical or political? Only win-win solutions? 	3	2	
		18	10	

Evaluation criteria

- Presentation of one article: 30%
- One assignment: 30%
- Final written exam: 40%

Learning outcomes

By the end of the course, students will:

- have a clearer idea of what “sustainability science” is.
- command a critical understanding of some of the key related concepts.
- be able to deal with the fact that “sustainability science” is not a unified theory but a panoply of approaches with various value premises depending on the stakeholders involved.
- have a broader view on the future possibilities leading to more sustainability.

Pedagogical approach

Facing the long-lasting and unresolved problems of unsustainability, the course will welcome non-orthodox approaches and critical thinking, as well as open classroom discussions about the different concepts and ideas.

Materials

Readings

Hoekstra, A., & Mekonnen, M. (2012). The water footprint of humanity. *Proceedings of the National Academy of Sciences*, 109(9), 3232-3237.

Haberl, H., Fischer-Kowalski, M., Krausmann, F., Martínez-Alier, J., & Winiwarter, V. (2011). A socio-metabolic transition towards sustainability? Challenges for another Great Transformation. *Sustainable Development*, 19, 1-14.

Bakker, K. (2007). The commons versus the commodity: 'Alter'-globalization, privatization, and the human right to water in the global South. *Antipode*, 39(3), 430-455.

Lélé, S., & Srinivasan, V. (2013). Disaggregated economic impact analysis incorporating ecological and social trade-offs and techno-institutional context: A case from the Western Ghats of India. *Ecological Economics*, 91, 98-112.

Paranjape, S., & Joy, K. (2011). A million revolts in the making: Understanding water conflicts (Chap. 4). In: *India infrastructure report 2011 – Water: Policy and performance for sustainable development*, pp. 44-55. New Delhi: Oxford University Press.

Kothari, A. (2013). Development and ecological sustainability in India: Possibilities for the post-2015 framework. *Economic & Political Weekly*, XLVIII(30), 144-154.

Journals

Sustainability Science section of the Proceedings of the US National Academy of Sciences

Ecological Economics

Journal of Industrial Ecology

Annual Review of Environment and Resources

Additional information (if any)

Student responsibilities

Course reviewers:

1. Dr. Rajeswari Raina, Principal Scientist, National Institute of Science, Technology and Development Studies (CSIR-NISTADS).
2. Dr. Deepak Malghan, Centre for Public Policy, Indian Institute of Management Bangalore.