



**Urban Resilience and Adaptation for  
India and Mongolia**  
curricula, capacity, ICT and stakeholder collabora  
to support green & blue infrastructure and natur  
based solutions

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619050-EPP-1-2020-1-DE-EPPKA2-CBHE-JP



**Course Name: EVNS 413: ADVANCED SUSTAINABLE DEVELOPMENT**

**Number of credits: 3**

**Period: Spring semester**

Coordinator	<b>Dr. Mathimaran Natarajan</b>
Credits	3
Lecturers	--
Level	Postgraduate
Host institution	Pondicherry University
Course duration	18 weeks
New/revised	New

**Summary**

*This 3 ECTS course provides the students the advanced knowledge of sustainable development. The course covers wide range of topic from the origin of sustainable development concept to the United Nations 17 Goals of Sustainable Development. Furthermore, the course will offer specific topics such as sustainable energy systems, land use systems, ecosystem services, ethical and social aspect of sustainable development.*

**Target student audiences**

Master students majoring in any Science, preferably in Ecology and Environmental Sciences will be the target audiences.

**Prerequisites**

Ability to communicate in English, basic knowledge in ecology and environmental sciences

**Aims and objectives**

The main course objective is to make the students understand the fundamentals as well as the advanced aspects of the sustainable development. This will allow the students to get acquainted with various aspects of the sustainable developments. Specifically the goal is to cover in detail each of the 17 sustainable development goals of the United Nations. The goal of this course is also to make the students get enriched with the various dimensions of sustainable development.

**The Authentic Tasks are:**

**General learning outcomes:**

By the end of the course, successful students will:



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1. Know the basic and advanced concepts of sustainable development
2. Understand in depth all 17 sustainable development goals of the UN
3. Appreciate the history and origin of the sustainability
4. Understand various dimensions of the sustainability
5. Get acquainted with key topics such as energy, land use, ecosystem services in sustainable development

### Overview of sessions and teaching methods

The course will make most of interactive and self-reflective methods of teaching and learning and, where possible, avoid standing lectures and presentations.

### Learning methods

- In class Lectures (face-to-face)
- E-learning materials – Video lectures
- Literature review and assignment submission

### Course outline

<b>Week -1</b>	Overview of Sustainable Development: concept and history of sustainability
	Evolution of sustainable development goals (SDGs) of the United Nations
<b>Week -2</b>	Stockholm conference – development and environmental initiatives by UNEP
	Brundtland commission
	Ethical implications – dimensions of sustainability
<b>Week -3</b>	Weak and strong sustainability – integrative concepts of sustainability
	Sustainable Land Use and Ecosystem Services
	Definition and concept of sustainable land use and ecosystem services
<b>Week -4</b>	Concept of value chain - global and national aspects on sustainable land use and ecosystem services
	Case studies on sustainable development of various land use systems
<b>Week -5</b>	agroecosystems – agroforestry system
	Environmental and Economic Sustainability
<b>Week -6</b>	People’s perception of the environment
	Global and National context of Environmental Impact Assessment
<b>Week -7</b>	institutional framework for environmental management
<b>Week -8</b>	Economic sustainability – Global and National context.
	Sustainable Energy – concept and case studies
<b>Week -9</b>	policy governing energy systems across globe



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<b>Week - 10</b>	national policy on sustainable energy
<b>Week -11</b>	international and region cooperation
	Ethical and Social Sustainable Development
<b>Week -12</b>	Concept and principles of Ethics
	Distribution of Natural Resources
<b>Week -13</b>	ethical dimension of sustainability
	origin of poverty
<b>Week - 14</b>	concept of poverty across world
	social inclusive growth
<b>Week - 15</b>	gender equality
	NGOs – role of NGOs in sustainable development
<b>Week - 16</b>	gender equality
<b>Week - 17</b>	NGOs – role of NGOs in sustainable development

## Revised Syllabus

### ADVANCED SUSTAINABLE DEVELOPMENT

**EVNS 413**

**3 Credits**

**Course objective:** To introduce the students to advanced aspects of sustainable development

**Course outcome:** The student would be able to understand the fundamentals and advanced concepts of sustainable development with focus on environmental, energy, economic and social dimensions of United Nations Sustainable Development Goals

**Course Coordinator/In-charge:** Dr. Mathimaran Natarajan

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### SYLLABUS

**UNIT-I Overview of Sustainable Development:** concept and history of sustainability - evolution of sustainable development goals (SDGs) of the United Nations - Stockholm conference – development and environmental initiatives by UNEP – Brundtland commission – ethical implications – dimensions of sustainability – weak and strong sustainability – integrative concepts of sustainability. **(8 hours)**

**UNIT-II Sustainable Land Use and Ecosystem Services:** definition and concept of sustainable land use and ecosystem services – concept of value chain - global and national aspects on



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sustainable land use and ecosystem services – case studies on sustainable development of various land use systems – agroecosystems – agroforestry system. **(8 Hours)**

**UNIT–III Environmental and Economic Sustainability:** People’s perception of the environment - Global and National context of Environmental Impact Assessment – institutional framework for environmental management – Economic sustainability – Global and National context. **(8 Hours)**

**UNIT –IV Sustainable Energy Systems:** Sustainable Energy – concept and case studies – policy governing energy systems across globe – national policy on sustainable energy – international and region cooperation. **(8 Hours)**

**UNIT–V Ethical and Social Sustainable Development:** Concept and principles of Ethics – Distribution of Natural Resources – ethical dimension of sustainability – origin of poverty – concept of poverty across world – social inclusive growth – gender equality - NGOs – role of NGOs in sustainable development – Corporate Social Responsibility (CSR) **(8 Hours)**

**Text Books:**

1. Fundamentals Of Sustainable Development. 3<sup>rd</sup> edition. Niko Roorda, Routledge. 2020
2. Sustainability Science – An Introduction. Harald Heinrichs, Pim Martens, Gerd Michelsen and Arnim Wiek. Springer Science+Business Media Dordrecht 2016.

**Reference Books:**

1. Handbook of Sustainability Science and Research. Edited by Walter Leal Filho. Springer International Publishing AG 2018.
2. Resource Management, Sustainable Development and Governance – Indian and International Perspectives. Baleshwar Thakur, Rajiv R. Thakur, Srikumar Chattopadhyay, Rajesh K. Abhay. Springer Nature Switzerland AG 2021.

**Course workload**

The table below summarizes course workload distribution:

Activities	Learning outcomes	Assessment	Estimated workload (hours)
<b>In-class activities (30 hours)</b>			
Lectures	Understanding overview of sustainable development with specific focus on UN’s 17 Goals of sustainable development	Class participation	20 hours
Reading and discussion of assigned papers for	Reading and discussion on research articles dealing with various topics of sustainable development	Class participation, creative and	5 hours



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seminars and preparation for lectures		active contribution to discussion	
Group project presentation	Presentation on innovative ideas for sustainable living	Quality of group assignments and individual presentations	5 hours
<b>Independent work (100 hours)</b>			
Group work: - Contribution to the group case-study projects - Contribution to the preparation and delivery of individual presentation	Collection of news and research articles on sustainable land use and ecosystem services	Quality of group assignments and individual presentations	30 hours
Course group assignment	Presentation and discussion on environmental and economic sustainability	Quality of developed strategy and their presentation	20 hours
Group presentation	On the topic of sustainable energy systems	Quality of group assignments and individual presentations	25 hours
Individual study	On Ethical and social aspects of sustainable development	Quality of answers to questions in the final examination	25 hours
<b>Total</b>			<b>130 hours</b>

### Grading

The students' performance will be based on the following:

#### Assessment

- Progress assessment (40%):
  - Exercise (10%): students have to complete the quiz or seminar of each topic.



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- Homework (10%): 1. Journal paper review (5%), 2. Write-up on sustainable development goals (5 %) or Sustainable land use and ecosystem services (5 %).
- Group report (20%): The entire class will be divided into groups of 5-6 students and be given an option to choose any one of the following topics for group project report.
  - o Environmental and Economic Sustainability
  - o Sustainable Energy Systems
  - o Ethical and Social Sustainable Development
- Final assessment (60%):
  - Final examination (60%)

**Evaluation**

Performances of students in each paper are expressed in terms of marks as well as in Letter Grades. In case of fractions the marks shall be rounded off to nearest integer. The class interval for the purpose of awarding the grades can be arrived at by dividing the difference between the highest mark secured and the minimum pass mark by 6 as there are six passing grades. The formula is given below:

$$K = (X-50)/6$$

Where, K = class interval, X= the highest mark in the subject.

The grades may be awarded as given in the following Table II.

**Table II**

Range of Marks in %	Letter Grade	Points for Calculate of CGPA
X to (X-K)+1	O	10
(X-K) to (X-2K)+1	A+	9
(X-2K) to (X-3K)+1	A	8
(X-3K) to (X-4K)+1	B+	7
(X-4K) to (X-5K)+1	B	6
(X-5K) to 50	C	5
Below 50	F	0
Failure due to lack of attendance	FA	0

K should not be rounded off to less than two decimal places. The numbers given in Range of Marks column, (X-K), (X-2K), (X-3K), etc., can be rounded off to the nearest whole number.

In courses where the number of students who have secured 50 marks and above is less than 10 then grading may be given based on the Table III.



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**Table III**

<b>Range of Marks in %</b>	<b>Letter Grade</b>	<b>Points for Calculate of CGPA</b>
81-100	O	10
71-80	A+	9
66-70	A	8
61-65	B+	7
56-60	B	6
50-55	C	5
Below 50	F	0
Failure due to lack of attendance	FA	0

In order to declare the pass, a Student should get

- A minimum of 40% marks in end-semester exam, and
- A minimum of 50% marks in aggregate when Internal Assessment and End-Semester marks are added.

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