



# Corsi a scelta Laurea Magistrale - 2° semestre

**Corso:** System Design for Sustainability (SDS)

**Docente:** Prof. Carlo Vezzoli

**Lingua di erogazione:** inglese

**N° max studenti ammessi:** 60

**Modalità d'esame per non frequentanti:** SI

## SCOPE OF THE COURSE

TO TEACH ABOUT THE THEORY AND THE PRACTICE OF SYSTEM DESIGN FOR SUSTAINABILITY (SDS)

*or PRODUCT-SERVICE SYSTEM DESIGN (PSSD) FOR SUSTAINABILITY.*

## COURSE INTERNATIONAL FRAMEWORK

the course is framed into the LeNS international network of more than 50 universities from all continents, aiming at the diffusion of design for sustainability with an open and copyleft ethos  
(info at [www.lens-international.org](http://www.lens-international.org))

Prodotto	Interni	Comunicazione	Fashion	D&E	PSSD
✓	✓	✓	✓	✗	✓



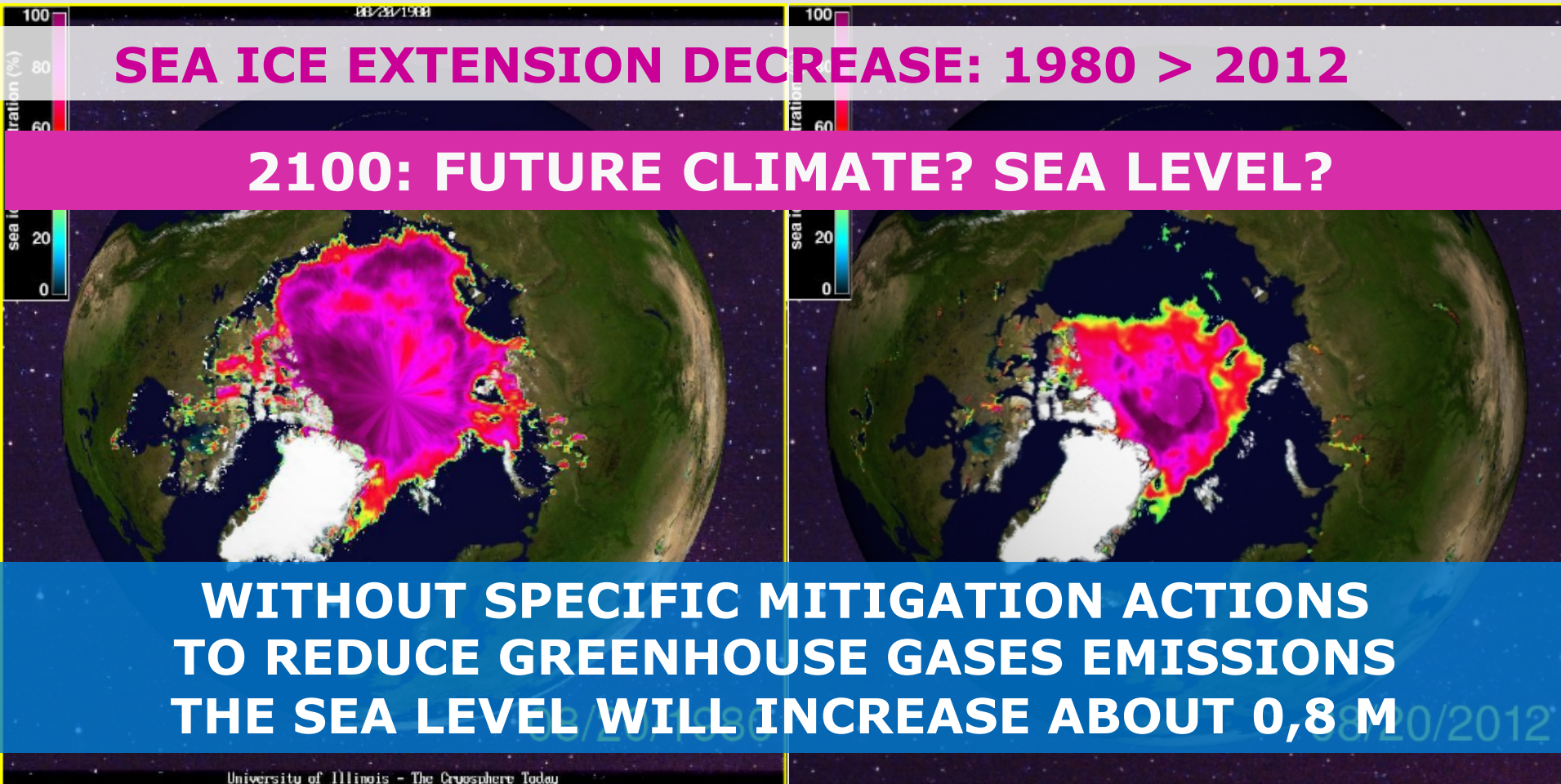
**SUSTAINABLE DEVELOPMENT?**

**WE ARE VERY CLOSE TO THE COLLAPSE!**

## INTERGOVERNMENTAL PANEL ON climate change

**SEA ICE EXTENSION DECREASE: 1980 > 2012**

**2100: FUTURE CLIMATE? SEA LEVEL?**





**YEAR 2012:**  
**PREMATURE DEATH FOR AIR POLLUTION**  
**(FINE PARTICLES, O<sub>3</sub>, NO<sub>2</sub>, ...)**

**IN EUROPE 491.000 (PEOPLE!)**  
**IN ITALY 84.000 (PEOPLE!)**

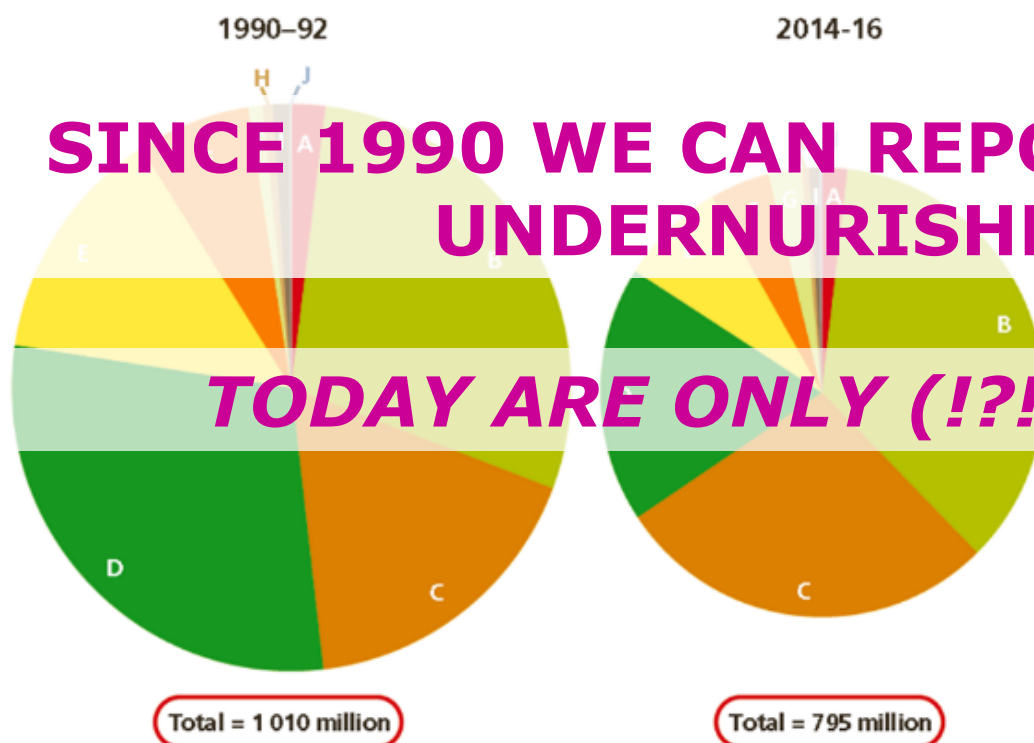
**[EUROPEAN ENVIRONMENT AGENCY – EEA]**

**THESES ARE NUMBERS OF A CIVIL WAR!**



# 2015: FAO FOOD INSECURITY IN THE WORLD

The changing distribution of hunger in the world: numbers and shares of undernourished people by region, 1990–92 and 2014–16



	Number (millions)		Regional share (%)	
	1990–92	2014–16	1990–92	2014–16
A Developed regions	2	1	2.0	1.8
B South-Eastern Asia	281	281	28.8	35.4
C Sub-Saharan Africa	176	220	17.4	27.7
D Eastern Asia	295	145	29.2	18.3
E South-Eastern Asia	138	61	13.6	7.6
F Latin America and the Caribbean	66	34	6.5	4.3
G Western Asia	8	19	0.8	2.4
H Northern Africa	6	4	0.6	0.5
I Caucasus and Central Asia	10	6	0.9	0.7
J Oceania	1	1	0.1	0.2
Total	1 011	795	100	100



**795 MILLIONS UNDERNOURISHED PEOPLE  
ARE MORE THAN ALL EUROPEAN  
INHABITANTS (742 MILLIONS)**

***WOULD EUROPEAN EVER ACCEPT THIS?***



# **SUSTAINABLE DEVELOPMENT?**

**WE NEED RADICAL CHANGE**

**PROMOTE (DESIGN!)  
SUSTAINABLE SYSTEM  
INNOVATIONS**

**BROADER THAN SINGLE  
PRODUCT OR PROCESS INNOVATION**





## SYSTEM DESIGN FOR SUSTAINABILITY (SDS)

### THE COURSE ADRESSES THE FOLLOWING QUESTIONS:

- . what are the **scenario** to radically reduce the environmental impact and improve social equity and cohesion in an economically profitable way?
- . what is a **role** a **designer** may play?
- . what a designer should design?
- . what a designer should know (the **knowledge-base**)?
- . what are the method and tools a designer may use (the **know-how**)?

Prodotto	Interni	Comunicazione	Fashion	D&E	PSSD
✓	✓	✓	✓	✗	✓





## THE COURSE IS STRUCTURED INTO 2 PARTS:

- THE THEORETICAL PART (5 lectures)
- THE DESIGN EXERCISE (8 lectures)

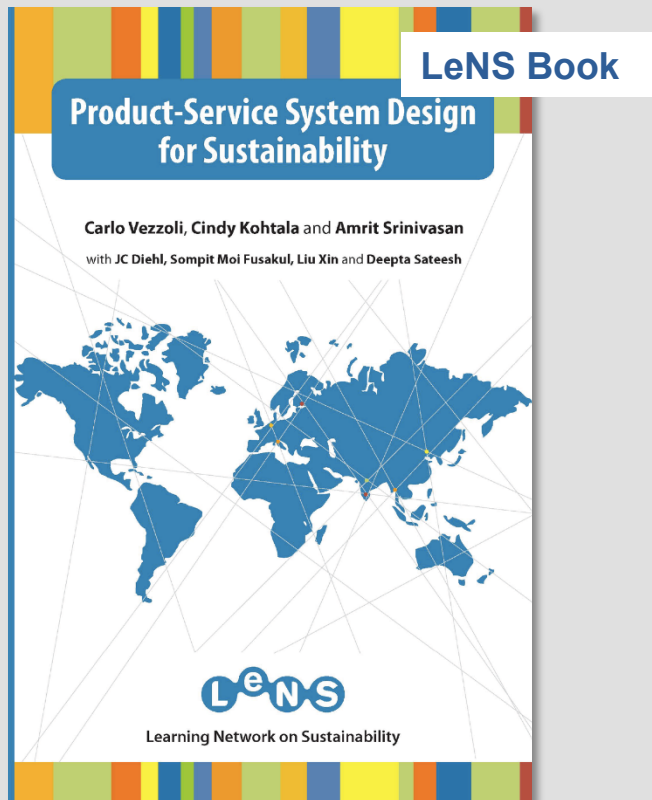
Prodotto	Interni	Comunicazione	Fashion	D&E	PSSD
✓	✓	✓	✓	✗	✓



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## THE THEORETICAL PART:

All the Learning Resources (book, slides, videos, etc.) of the course lectures can be viewed or downloaded for FREE from [www.lenses.polimi.it](http://www.lenses.polimi.it)



course System Design for Sustainability (SDS)

learning resource 0.0  
System Design for Sustainability (SDS) course and LeNS/LeNSes introduction

carlo vezzoli  
politecnico di milano · DESIGN dept. · DIS · School of Design · Italy

Learning Network on Sustainability (EU asia-link)  
Learning Network on Sustainable energy systems (EU edulink)

Slides

course System Design for Sustainability  
subject 1. Sustainable development and design: the reference framework

learning resource 1.1  
Sustainable development and system innovation

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Learning Network on Sustainability (EU asia-link)  
Learning Network on Sustainable energy systems (EU edulink)

Videos

Clip slide

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✓	✓	✓	✓	✗	✓



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## DESIGN EXERCISE: THE BRIEF

design an **EATING, CLOTHING CARE**, etc. system for a **CAMPUS** of one of the worldwide **LeNS** university partners, based on the promising models of Sustainable Product-Service Systems (S.PSS) applied to Distributed Economies (e.g. Distributed Renewable Energy - DRE)

## DESIGN EXERCISE: TRANSCULTURAL DESIGN LEARNING PROCESS

the design exercise process will benefit the contributions of a pool of international Professors from the LeNSin universities: they will provide a strategic analysis of the campus and the system to be redesigned as well as remote critics and suggestions on the concepts YOU will design for THEIR context

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✓	✓	✓	✓	✗	✓



Erasmus+

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12.2015 – 12.2018

the international Learning Network of networks on Sustainability [www.lens-international.org](http://www.lens-international.org)  
Multipolar and open network of network for curricula development on Design for Sustainability,  
focused on Sustainable Product-Service Systems (S.PSS) applied to Distributed Economies (DE).

## PARTNERS

### LeNS Mexico

Universidad Autónoma Metropolitana, Mexico D. F., Mexico  
Universidad del Valle de México, Mexico City, Mexico

#### ASSOCIATED PARTNERS:

Universidad Nacional Autónoma de México, Mexico D. F., Mexico  
Instituto Tecnológico y de estudios superiores de Monterrey, Nuevo Leon, Mexico

### LeNS Europe

Politecnico di Milano, DESIGN Dept., Milan, Italy  
Technology University Delft, Delft, the Netherlands  
Aalto University, Helsinki, Finland  
Brunel University, London, United Kingdom

### LeNS Brazil

Universidade federal do Paraná, Curitiba, Brazil  
Universidade federal de Pernambuco, Recife, Brazil

#### ASSOCIATED PARTNERS:

Universidade federal Fluminense, Niterói, Brazil  
Universidade federal de Uberlândia, Uberlândia, Brazil  
Universidade Estadual de Londrina, Londrina, Brazil  
Universidade federal de Santa Catarina, Santa Catarina, Brazil  
Universidade federal de Alagoas, Maceio Alagoas, Brazil

### LeNS South Africa

Cape Peninsula University of Technology,  
Cape Town, South Africa

Stellenbosch University, Stellenbosch, South Africa

#### ASSOCIATED PARTNERS:

Farm & Garden National Trust, CapeTown, South Africa  
Cape Craft and Design Institute NPC, CapeTown, South Africa

### LeNS China

Tsinghua University, Beijing, China

Hunan University, Changsha, China

#### ASSOCIATED PARTNERS:

Jiangnan University, Wuxi, China  
Wuhan University of Technology, Wuhan, China  
University of Science and Technology Beijing, Beijing, China  
Tongji University, Shanghai, China  
Hong Kong Polytechnic University, Hong Kong, China  
Guangzhou academy of fine arts, Guangzhou, China  
Beijing Information Science and Technology University,  
Beijing, China

### LeNS India

Ujwal Trust, Bangalore, India

Indian Institute of Technology Guwahati, Guwahati, India

#### ASSOCIATED PARTNERS:

Hunnarshala Foundation for Building Technology and Innovation, Bhuj, India  
Goa College of Architecture, Panjim, India  
Care school of architecture, Trichy, India  
Indian Institute of Technology Gandhinagar, Ahmedabad, India  
Pandit Dwarka Prasad Mishra Indian Institute of Information Te, Jabalpur, India  
Vastu-Shilpa Foundation for Studies and Research in Environment, Ahmedabad, India