INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Urban Environment Management	Field of study	Environmental Protection Technologies
Master in	Environmental Technology	School	School of Agriculture
Academic Year	2024/2025	Year of study	2
Level	2-2	ECTS credits	6.0
Type	Semestral	Semester	1
Code	1076-809-2103-00-24		

Workload (hours)	162	Contact hours	T	-	TP	-	PL	-	TC	-	S	-	E	-	OT	-	O	-

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s)	Artur Jorge de Jesus Gonçalves

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Understand cities as an open and complex system
2. Evaluate cities in their relation with the environment and with local and global sustainable development
3. Develope methodologies to define and apply urban sustainable development indicators
4. Understand complexity of main urban issues, evaluating different models and practices that reduce its environmental impacts
5. Develop and apply sustainable urban management strategies, models and plans
6. Students should develop autonomous and team working skills, with the development of technical solutions in a real world context.

Prerequisites

Before the course unit the learner is expected to be able to:
Basic knowledge on Environmental variables.

Course contents

Urban development and environment co-evolution. The definition of cities, its structure and urban functions. Environmental fundamental variables (soils, climate, hydrology, etc). Urban green spaces. City environmental indicators. Urban planning tools. Municipal plans. Environmental management systems. Mobility and transportation. Sustainable construction. Urban sustainability policies.

Course contents (extended version)

1. Introducing the urban complexity
2. Cities in history
   - From Classical Age to the Industrial Revolution
   - The Industrial Revolution and the degradation of the urban environment
   - The XX Century and Urban Planning
   - The Global Urbanization Process
3. Cities as systems
   - The limits of cities
   - Cities and the landscape
   - The functional perspective of the city
   - Urban sustainability
4. Urban space
   - Organization and structure
   - The elements and the functions
   - The distribution of functions and structures
5. Urban Green Spaces
   - The relevance of Urban Green spaces
   - Urban Green Infrastructure
   - Green spaces in Urban Planning
6. Mobility and transportation in urban areas
   - Transportation and urban organization
   - Mobility and Accessibility
   - Social and environmental impacts of urban transportation
7. Urban Environment
   - Fundamental Biophysical variables (geology, soil, morphology, etc.)
   - Urban Climate
   - Hydrology, water use and main sources of pollution
   - Air quality and main pollution sources
   - urban noise
   - Urban waste management
8. Urban environmental planning and management
   - Urban Planning
   - Main sources of urban environmental degradation
   - Urban sustainable planning - Local Agenda 21
   - Urban Sustainable Management
   - Urban environmental assessment and monitoring - Indicators

Recommended reading

1. Beaujeu-Garnier J, (1997). Geografia Urbana. Fundação Calouste Gulbenkian, Lisboa
2. Mumford, L. (1998). A Cidade na História, suas origens, transformações e perspectivas (N. Silva, Trans.). São Paulo - Br: Livraria Martins Fontes Editora.
3. Hough, M. (1998). Naturaleza y Ciudad. Barcelona: Gustavo Gili.
4. Moughtin, C. , & Shirley, P. (2005). Urban Design: Green Dimension: Architectural Press.
5. Hernández Aja, Agustín (coord.)(2013). Manual de desenho bioclimático urbano. Manual de orientações para a elaboração de normas urbanísticas. Bragança: IPB. ISBN 978-972-745-157-9

Teaching and learning methods

Lecture sessions with multimedia support, tutorial classes and practice based on group works using field data and bibliography.

Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final)
   - Practical Work - 75% (Three homeworks, focusing on a urban case studies.)
   - Practical Work - 25% (Final Individual evaluation. Individual Homework.)
2. Alternative 2 - (Regular, Student Worker) (Final, Supplementary, Special)
   - Final Written Exam - 100% (Final Written exam on all of the course materials including practical exercises.)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

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19-12-2024	04-01-2025	05-01-2025	07-01-2025