# People's Democratic Republic of Algeria Ministry of Higher Education and Scientific Research

# Harmonisation Master's Offer Presentation Academic–Professional

Department	Faculty	Institution		
Anabita atural Engineering	Faculty of Civil and	University of Hassiba Ben		
Arcintectural Engineering	Architectural Engineering	Bouali, Chlef		

Field: Architecture, Urban Planning, and Urban Professions

Branch: Urban Technical & Management

Specialization: Urban Engineering

Theme: Urban Techniques and Ecological Management

Academic Year: 2020-2021

## **Table of Contents**

## I. Context and Teaching Objectives

- 1. Admission Requirements
- 2. Training Objectives
- 3. Targeted Professional Skills
- 4. National and Regional Employment Opportunities for Graduates
- 5. Pathways to Other Specializations
- 6. Training Monitoring Indicators
- 7. Supervision Capacity
- 8. Available Thematic Areas in the Program
- 9. Theme 04: Urban Techniques and Ecological Management (Description, Pedagogical and Educational Objectives, Topics Covered)

## II. Semester-Based Teaching Organization Model

- 1. Semester 01
- 2. Semester 02
- 3. Semester 03
- 4. Semester 04
- 5. General summary of the formation

## **III. Detailed Program by Subject**

# I. Context and Teaching Objectives

#### I-1. Admission Requirements:



## I-2. Training Objectives:

The program aims to prepare a "professional" equipped with the competencies and skills to actively participate in urban and regional development processes. It also seeks to train a "catalyst" capable of integrating sustainable development practices into urban service management.

Upon completion, learners will be able to:

- Contribute to regional diagnostic studies related to urban management.
- Actively participate in multidisciplinary project teams.

The learner will be prepared to conduct research work in a corporate or academic setting in preparation for entry into PhD programs.

#### I-3 - Targeted professional skills:

With regard to the targeted profiles and competencies, reference should be made to the national framework of professions and the legislative texts regulating the profession of architecture. In fact, the Algerian classification of professions and occupations (NAME) is a comprehensive base to guide the objectives of educational programmes in terms of profiles and competencies. Within this framework, in the field of 'maintenance, installation and hygiene', specifically in the 'urban hygiene and environment' branch, a series of professions are defined (under the title of head of department) in local authorities or at the head of municipal institutions.

In another context, Executive Decree No. 11-334 of 22 Shawwal 1432 (corresponding to 20 September 2011) on the special statutes of the employees of the administration of local communities, in Title XII on the duties of the division related to the management of urban

technologies, stipulates the tasks assigned to graduates of this specialisation in Articles 223 and 235.

The training programme is designed to prepare a competent cadre with the necessary skills to assume the tasks and responsibilities entrusted to them. The learner is trained to:

-Participate in defining and implementing strategic directions in the field of urban planning

-Participate in the preparation of technical studies and development plans

-Contribute to the formulation of various urban planning tools and decisions

-Ensure the general functioning of technical services and conduct applied studies and research -Assist and guide authorities in the design of facilities or realisation projects in the fields of: Housing, urban planning, infrastructure and public utilities.

## I-4. National and Regional Employment Opportunities:

The training programme in Urban Engineering is expected to prepare future professionals who should have multifaceted professional competencies in listening and taking initiatives within the scope of urban services functions. In this framework, with its primary focus on local communities and municipal services, the programme must remain close to the daily activities of urban communities. Thus, 1541 municipalities and their departments constitute the main geographical framework for the graduates' professional practice. There are also other opportunities for professional practice as 'counsellors' in the private sector. In addition, the training offers opportunities for scientific research through doctoral programmes for graduates.

#### I-5. Pathways to Other Specializations:

Linkages with other disciplines have not yet been established. However, it can be noted that in the same field, courses within curricular and incidental units may allow credits to be pooled and transferred between programmes.

#### I-6- Training follow-up indicators:

Training follow-up indicators can be defined based on the fields launched by the Committee for the Implementation of Quality Assurance in Educational Institutions (CIQAI). At the 'local' level, the reports of local committees and councils are expected to contribute to the evaluation process through

- Pedagogical committees

- Scientific councils (at the level of the department and faculty)

As for measuring the effectiveness of educational outcomes, this includes:

- Dissertations and end-of-study projects
- Field placement reports
- Educational portfolios
- Continuous assessment

Tracking the pathways of graduates includes:

- Tracking employability
- Employment opportunities in other fields (e.g. scientific research...)

#### I-7- Framing ability: 30 students.

#### I-8 – Thematic axes available in the configuration:

Four main thematic axes were agreed upon during the Urban Management and Technologies Division (UMTD) expert meeting and are currently being implemented. They are:

- 1- Urban risks and urban resilience
- 2- Transport and urban mobility
- 3- Managing Urban Networks
- 4- Urban techniques and ecological management

The Master of Urban Engineering chose **the Urban techniques and Ecological Management** thematic axis out of the four available thematic axes due to its compatibility with the requirements of the labour market, which enhances employment opportunities.

#### Thematic 04: Urban techniques and Ecological Management

#### • Description:

This course focuses on the environmental issues emerging in urban areas, addressing all management concerns within an ecological framework. Given that preserving the urban environment has become a major challenge that must be considered in any urban management policy, this specialization—or what is termed a "thematic axis"—naturally asserts itself. Future graduates will receive training that equips them with the necessary knowledge and skills to initiate well-considered actions aimed at providing effective solutions to urban challenges with an environmental dimension.

#### • Pedagogical and Educational Objectives (Targeted Skills):

The primary objective of this thematic module is to equip students with the mastery of urban sector management techniques—integrated within an ecological vision—by providing them with the core principles and foundations of this discipline. To achieve this, students must possess prior knowledge of fundamental concepts related to urban planning and development techniques, as well as environmental conservation principles. This prior knowledge will enable them to apply the module's theoretical frameworks in practical contexts, allowing them to effectively address environmental challenges in the urban areas under study.

#### • Topics Covered (Within Memos or Projects):

In general, the topics addressed during the training program will revolve around ecological and environmental issues in urban areas. However, this module will primarily focus on the following aspects:

-Urban waste management

- Urban environment and living conditions
- Conservation of resources and renewable energy
- Sustainable cities and eco-districts

- Sustainable development and urban planning (e.g., green building, green and blue infrastructure)

- Eco-design.

# II- Model for Organizing Semester-Based Teaching – Template (Presentation of the Four-Semester Structure)

## II –1–Semester 1

Teaching Unit	Total Hexagonal H V	Weekly Hours				Total	Coeff	Credits	Evaluation Mode		
	14-16 wks	С	GW	AW	Others				Continuous	Exam	
Basic Teaching Unit							12	18			
<b>BTU1 (O/P)</b>											
Workshop (1) - Ecological Urban Design	90				6		4	6	100%		
Urban Ecology and Sustainable Development 1	45	1h30	1h30				2	3	34%	66%	
Sustainable Techniques and Management of Rainwater	45	1h30	1h30				2	3	34%	66%	
BTU2 (O/P)											
Energy Management	45	1h30	1h30				2	3	34%	66%	
Climate changes	45	1h30	1h30				2	3	34%	66%	
methodology TU							5	9			
<b>Introduction to Research 1</b>	22h30	1h30					2	4		100%	
<b>Applied Geomatics 01</b>	45 h			<b>3 h</b>			3	5	100%		
transversal discovery TU							3	3			
Strategy, Legislation, and Standardization	22h30	1h30					2	2		100%	
Language General terminology 1	22h30	1h30					1	1		100%	
Total Semestre 1	379h30	10h30	6h	3h	6h	25h30	20	30			

## II-2 -Semester 2

Teaching Unit	Total Hexagonal H V	Weekly Hours				Total	Coeff	Credits	Evaluation Mode	
	14-16 wks	С	GW	AW	Others				Continuous	Exam
Basic Teaching Unit							12	18		
BTU1 (O/P)										
WORKSHOP 2 Sustainable project	90				6		4	6	100%	
Urban Ecology and Sustainable Development 2	45	1h30	1h30				2	3	34%	66%
BTU2 (O/P)										
Sustainable Building	45	1h30	1h30				2	3	34%	66%
Urban Networks, Transport, and Mobility	45	1h30	1h30				2	3	34%	66%
methodology TU							5	9		
INTRODUCTION TO RESEARCH 2	22h30	1h30					2	4		100%
Applied Geomatics 02	45 h			<b>3 h</b>			3	5	100%	
transversal discovery TU							3	3		
Project Management	22h30	1h30					2	2		100%
LANGUAGE 2 – Terminology of Urban Techniques	22h30	1h30					1	1		100%
Total Semestre 1	379h30	10h30	6h	3h	6h	25h30	20	30		

## II-3 -Semester 3

Teaching Unit	Total Hexagonal	Weekly Hours			Total	Coeff	eff Credits Evaluation N		Mode	
	HV		,, com	<i>y</i> 11001	5	Iotui	coun	creatio		111000
	14-16 wks	C	GW	AW	Others				Continuous	Exam
Basic Teaching Unit							12	18		
BTU1 (O/P)										
Workshop 3 Urban Improvement and Sustainability	90				6		4	6	100%	
Environmental assessment and environmental impact assessment of projects	45	1h30	1h30				2	3	34%	66%
BTU2 (O/P)										
Renewable Energies	45	1h30	1h30				2	3	34%	66%
Solid Urban Waste Management Techniques	45	1h30	1h30				2	3	34%	66%
Sustainable Urban Greening										
methodology TU							5	9		
Urban Economics	22h30	1h30					2	4		100%
<b>Open Forum</b>	45 h			<b>3 h</b>			3	5	100%	
transversal discovery TU							3	3		
Public Finance and Taxation	22h30	1h30					2	2		100%
Total Semestre 1	379h30	10h30	6h	3h	6h	25h30	20	30		

## II-4 -Semester 4

Teaching Unit	Total Hexagonal H V	Weekly Hours			Total	Coeff	Credits	Evaluation Mode		
	14-16 wks	С	GW	AW	Others				Continuous	Exam
Basic Teaching Unit										
<b>BTU1 (O/P)</b>										
Graduation Thesis/Mémoire	90				6		10	15	100%	
<b>BTU2 (O/P)</b>										
methodology TU										
transversal discovery TU										
Total Semestre 1	90h				6h	90h	10	15		

#### General summary of the training: The program's total instructional hours including lectures, tutorials, practical work, and other activities are-distributed across the four semesters, covering all types of teaching units. Activity Type M T U **T/DTU** Total BTU 247.5 67.5 427.7 Cours 112.5 270 247.5 22.5 **Tutorials** -135 **Practical Work** 135 --

-

45

247.5

27

22.5

-

-

135

9

07.5

**Individual Work** 

**Other Activities** 

**Total Hours** 

Cridits

**Credit ratio for** 

teaching units

\_

495

990

84

70

-

540

1372.5

120

100

# **III- Detailed Program by Unit**

# Semester 1

# Course content 1. Urban techniques and ecological management

# Title of Course 01. Workshop (1) - Ecological Urban Design

Credits: 6

Coefficient: 4

## **Total Weekly Hours: 6 hours**

Course (Hours/week): /

Tutorial Work (Hours/week): /

Practical Work (Hours/week): /

Workshop (Hours/week): 6 hours

**Course Description:** 

#### **Prerequisites:**

Core courses in licence degree of Urban Engineering

#### **Course Learning Objectives**

- Introduction to the practice of analysis.
- Acquire the tools of field analysis.

## Learning objectives:

Identify the natural elements to be taken into account for eco-design in a given site (specific climate, constraining topography, presence of a watercourse, etc.)

Identify the artificial elements (buildings, various developments) opposing the sustainability of the site.

Identify the issues and potential for sustainability in a given site

Define an eco-design approach with sustainability targets appropriate to a given site (water management, energy management, waste management, creation of microclimates, design of sustainable public spaces, etc.)

## **Contents:**

- Urban eco-design: principles, approaches, issues
- Eco-construction and eco-layout (HQE, HQE2R)

**Project**: The aim is to propose an eco-design approach for a residential area.

• Diagnosis:

- Urban analysis that identifies: on the one hand, the environmental, functional, landscape and social problems that define the site under study, and on the other hand, the elements of sustainability in the neighborhood, the environmental elements to be taken into consideration (climate, water, nature of the soil, vegetation...).
- A detailed climatic and bioclimatic analysis to determine eco-construction and eco-design guidelines for the site studied (to design sustainable water management, comfort in public spaces, etc.)
- An analysis of the impact of the environmental quality of buildings: energy consumption, water management, etc.
- An analysis of the environmental quality of public or collective spaces (water management, waste management, safety, etc.)
- Sustainability issues :
- Define the priority sustainability issues for the site studied (water management, energy management, management of public spaces, and management of green spaces...)
- Define the issues of territoriality, identity, functionality, socialization, urban safety, environmental protection and urban ecology that can be developed
- Proposal for an eco-design approach
- Guidelines for eco-construction.
- Guidelines for eco-mobility.
- ➢ Guidelines for eco-design and management of public spaces (energy, water, waste, etc.)
- Public spaces and sustainability

## Course content 2. Urban techniques and ecological management

# Title of Course 02. Urban Ecology and Sustainable Development 1

Credits: 3 Coefficient: 3 **Total Weekly Hours: 3 hours** Course (Hours/week): 1 h 30 m Tutorial Work (Hours/week): 1 h 30 m Practical Work (Hours/week): / Workshop (Hours/week): /

#### **Course Description:**

#### **Prerequisites:**

Completion of core courses in the Licence degree in Urban Engineering.

#### **Course Objectives:**

- Acquisition of Fundamental Concepts
- Assimilation of Theoretical Knowledge

#### Learning Objectives:

- Illustration and analysis of the various concepts and themes that study the interactions between living beings and the city.
- ✓ Multi-level illustration of intelligent methods for achieving harmonious coexistence between nature and living beings, making the city more pleasant to live in.
- Content:
- Introduction

Course 1: Terminology on urban ecology and other concepts used in this field.

Course 2: History of the Urban Ecology Concept

Course 3: Ecological Footprint and Biocapacity

Course 4: The City, Urban Environment, and Sustainable Development

Course 5: International Conferences, Protocols, and Environmental Programs Relating to the

Environment and Urban Ecology

Course 6: The Urban Environment in Algeria

- Course 7: Urban Solid Waste
- Course 8: Environmental Noise Pollution Prevention Plan and Noise Map
- Course 9: Sustainable Urban Transportation

Course 10: Green Infrastructure: Managing Nature in the City

Course 11: Water: Resource Management and Pollution

Course 12: Ways to Put Sustainable Urban Development into Practice (Environmental Charters

and Impact Assessments)

- Course 13: Different Forms of Environmental Pollution
- Course 14: Sustainable Tourism and Its Applications Ramifications

Course 15: Environmental management in Algerian cities, scale of intervention and Statutes.

# Course content 3. Urban techniques and ecological management

# Title of Course 03. Sustainable Techniques and Management of Rainwater

Credits: 3

Coefficient: 2

## **Total Weekly Hours: 3 hours**

Course (Hours/week): 1 h 30 m

Tutorial Work (Hours/week): 1 h 30 m

Practical Work (Hours/week): /

Workshop (Hours/week): /

#### **Course Description:**

#### **Prerequisites:**

Completion of core courses in the Licence degree in Urban Engineering.

#### **Course Objectives:**

- Analytical Tools and Methods Acquisition
- Theoretical Knowledge and Methodological Understanding

## **Learning Objectives**

-Introduce students to various "alternative" techniques and systems.

-Master knowledge related to the sustainable management of rainwater in urban areas.

-Enable students to provide technical solutions to the problem of collecting and treating rainwater.

#### Content

- 1. Climatology and the Water Cycle
- 2. Different Types of Rainwater
- 2.1. Meteoric Water
- 2.2. Runoff Water
- 2.3. Combined and Separate Sewer Systems During Rainfall
- 2.4. Treatment Facilities
- 3- Pollutants Contained in Rainwater
- 3.1. Meteoric Water & Dry Deposition
- 3.2. Runoff Water
- 3.3. Networks (Combined, Separate Stormwater, Network Management)

Institution University of Hassiba Ben Bouali, Chlef Master's title: Urban Engineering Academic Year: 2020-2021 3.4. In-Network Treatment Structures

4- Effects of Soil Impermeabilization: Reduced Infiltration, Lowering of Water Tables, Flooding

5- Treatment of Urban Rainwater (Alternative Techniques to Sewer Systems)

- 5.1. Source Treatments
- 5.2. Infiltration Treatments
- 5.3. Storage Treatments in Basins
- 6- Measures Aimed at Promoting Rainwater Infiltration into the Soil:
- 6.1. Trees and Green Roofs
- 6.2. Permeable Pavements
- 6.3. Rain Gardens
- 6.4. Retention Basins
- 6.5. Retention Trenches
- 6.6. Infiltration Wells
- 6.7. Reservoir-Structured Roadways
- 6.8. Irrigation of Impermeable Pavements with Recycled Water
- 7- Urban Integration of Rainwater Management Systems
- 7.1. Environmental Approach
- 7.2. Landscape and Urban Approach
- 7.3. Climate Approach

# Course content 4. Urban techniques and ecological management

## Title of Course 04. Energy Management

Credits: 3

Coefficient: 2

#### **Total Weekly Hours: 3 hours**

Course (Hours/week): 1 h 30 m

Tutorial Work (Hours/week): 1 h 30 m

Practical Work (Hours/week): /

Workshop (Hours/week): /

#### **Course Description:**

#### **Prerequisites:**

Completion of core courses in the Licence degree in Urban Engineering.

#### **Course Learning Objectives**

- Acquisition of Specialized Knowledge .
- Understand the knowledge and approaches of formation.

#### Learning Objectives:

√Master "Sustainable Construction" techniques.

 $\checkmark$ Gain in-depth knowledge about heat transfer, and Heating, Ventilation, and Air Conditioning (HVAC) systems as sources of energy waste or savings.

 $\checkmark$ Learn how to conduct a quantitative analysis of energy consumption and adjust usage.

 $\sqrt{\text{Learn to reduce energy consumption in line with the Algerian National Program (2016–2030) to preserve natural resources.}$ 

#### **Content:**

Introduction:

What is energy?

Energy: Quality and Quantity

Energy consumption statistics in Algeria

#### **Chapter 1: Sources and Forms of Energy**

Lecture 1: Energy Sources

1-1General Definition

2-1Fossil Energy

3-1Nuclear Energy

4-1Renewable Energy

Lecture 2: Forms of Energy

1-2Mechanical Energy

1-1-2Kinetic Energy

2-1-2Potential Energy

2-2Thermal Energy

3-2Chemical Energy

4-2Radiant (Light) Energy

5-2Nuclear Energy

6-2Electrical Energy

#### **Chapter 2: Quantitative Analysis of Energy Consumption**

Academic Year: 2020-2021

Lecture 1: Concepts of Thermal Comfort

Institution University of Hassiba Ben Bouali, Chlef

Master's title: Urban Engineering

Lecture 2: Calculating Energy Balance Lecture 3: Simplified Calculation of Household Energy Consumption Lecture 4: Advanced Methods for Calculating Energy Consumption 1-4Degree-Days 2-4Digital Simulation (Computer Programs) **Chapter 3: Qualitative Analysis of Energy Consumption** Lecture 1: Energy Efficiency Label (Label énergétique) Lecture 2: Energy Audit (Audit énergétique) Lecture 3: The Impact of Energy Consumption on the Environment **Chapter 4: Energy Conservation Strategies** Lecture 1: Energy Policies Lecture 2: 100% Renewable Cities 1-2Fully Renewable-Based Heating 1-1-2Geothermal Heating 2-1-2Solar Thermal Heating Lecture 3: Street Lighting (Energy Efficiency) Lecture 4: International Case Studies (Mini-Project)

# Course content 5. Urban techniques and ecological management

# Title of Course 05. Climate changes

Credits: 3

Coefficient: 2

#### **Total Weekly Hours: 3 hours**

Course (Hours/week): 1 h 30 m

Tutorial Work (Hours/week): 1 h 30 m

Practical Work (Hours/week): /

Workshop (Hours/week): /

#### **Course Description:**

#### **Prerequisites:**

Completion of core courses in the Licence degree in Urban Engineering.

#### **Course Learning Objectives**

- Acquisition of Specialized Knowledge .
- Understand the knowledge and approaches of formation.

#### **Learning Objectives:**

 $\checkmark$  Explain and analyze the various concepts contributing to the processes driving climate change.

 $\checkmark$  Present a multi-level overview of smart adaptation strategies to this phenomenon.

#### **Content:**

Introduction:

Lecture 1: Standard Terminology (Intergovernmental Panel on Climate Change - IPCC) Used in Climate Change Studies

Lecture 2: International Conferences, Protocols, and Environmental Programs Related to Climate Change

Lecture 3: Major (Severe) Risks Expected Due to Climate Change

Lecture 4: Primary Sources of Greenhouse Gas Emissions

Lecture 5: Urban Heat Islands and Climate Change

Lecture 6: Urban Elements Contributing to Greenhouse Gas Reduction

Lecture 7: Waste Management for Mitigating Greenhouse Gas Emissions

Lecture 8: Bioenergy for Mitigating Greenhouse Gas Emissions

Lecture 9: Clean Energy for Mitigating Greenhouse Gas Emissions

Lecture 10: Lessons Learned from Greenhouse Gas Control Experiences

Lecture 11: Climate Predictions and Community Early Warning Systems

Lecture 12: Water Resources and Climate Change: Challenges and Adaptation Strategies

Lecture 13: Energy and Climate Change: Challenges and Adaptation Strategies

Lecture 14: Agriculture, Food Security, and Climate Change: Challenges and Adaptation Strategies

Lecture 15: Algeria and the Maghreb Region in the Face of Climate Change

## Course content 6. Urban techniques and ecological management

# Title of Course 06. Introduction to Research 1

Credits: 4

Coefficient: 2

#### **Total Weekly Hours: 3 hours**

Course (Hours/week): 1 h 30 m

Tutorial Work (Hours/week): 1 h 30 m

Practical Work (Hours/week): /

Workshop (Hours/week): /

## **Course Description:**

Prerequisites: Good writing skills, analytical and synthesis abilities.

## **General Objective:**

The course Introduction to Research aims to introduce students to the research process, enabling them to acquire essential techniques for managing documentary research and mastering fundamental principles of scientific inquiry.

## Learning Objectives:

Identify a motivating, accessible, and feasible research topic

Clearly formulate a research problem and plan the study

Develop relevant documentary monitoring

Apply research content in the field (interviews / surveys)

Learn how to synthesize, analyse, comment on, or summarize information

## **Course Content:**

## **I – NOTE-TAKING TECHNIQUES**

a. Written note-taking

b. Oral note-taking

## **II – SCIENTIFIC RESEARCH**

a. Sources and methods of acquiring knowledge

- b. What is scientific research?
- c. Functions of research
- d. Types of research

## **III – PRELIMINARY CONCEPTS**

- a. Concept of "approach"
- b. Concept of "method"
- c. Concept of "technique"
- d. Concept of "survey"

## **IV – THE SEVEN STAGES OF THE RESEARCH PROCESS**

- a. Initial Research Question (IRQ)
- **b.** Exploration
- c. Problem Formulation
- d. Construction of the Analytical Framework

Institution University of Hassiba Ben Bouali, Chlef

Master's title: Urban Engineering

# e. Field Observation

f. Data Analysis

g. Conclusion

# Course content 7: Urban techniques and ecological management

# Title of Course 07: Applied Geomatics 01

Credits: 5

Coefficient: 3

## **Total Weekly Hours: 3 hours**

Course (Hours/week): /

Tutorial Work (Hours/week): /

Practical Work (Hours/week): 3 hours

Workshop (Hours/week): /

## **Course Description:**

## **Prerequisites:**

The student should be familiar with basic concepts in cartography and Computer-Aided Design (CAD).

## **General Course Objective:**

This course aims to introduce students, through a practical approach, to the diverse capabilities of Geographic Information Systems (GIS) in managing and analyzing spatial data.

**Course Content:** 

## **Chapter 1: Introduction to Geographic Information Systems (GIS)**

Geographic information and fundamental data

Components of a GIS

Applications and importance of GIS

## **Chapter 2: Georeferencing and Positioning Systems**

Types of geographic coordinates

Map projection systems

## **Chapter 3: Introduction to GIS Software**

Software structure and interface navigation

Data structure

Layer management Data control **Chapter 4: Creating a Geographic Database** Building a simple database Linking tables and relationships using Excel files Queries **Chapter 5: Statistical and Thematic Analysis** Types of cartographic representation Data import/export **Chapter 6: Preparing Maps for Printing** Map layout and print formatting **Chapter 7: Practical Applications of GIS** GIS applications in urban and regional problem-solving

# Course content 8. Urban techniques and ecological management

# Title of Course 08. Strategy, Legislation, and Standardization

Credits: 2 Coefficient: 2 **Total Weekly Hours: 1 h 30 m** Course (Hours/week): 1 h 30 m Tutorial Work (Hours/week): / Practical Work (Hours/week): / Workshop (Hours/week): /

## **Course Description:**

## **General Course Objective:**

To equip students with knowledge of legislative and regulatory concepts that enable them to understand technical and administrative procedures related to their academic and/or future professional field. Additionally, the course introduces standard-compliant planning practices in urban engineering.

## Learning Objectives:

Explain and analyze Algerian legislative and regulatory texts related to the Master's program in Urban Engineering.

Present methodologies and frameworks for developing action plans aligned with current laws and standards in the field.

#### **Course Content:**

## Axis 1: Legislative and Regulatory Texts (Pertaining to Urban Engineering in Algeria)

- Introduction & General Concepts
- Urban Planning Law
- Legislation on City Governance
- Environmental Law
- Regulations on Major Risk Prevention & Disaster Management
- Regulations on Classified Facilities
- Transportation Legislation
- Water Resource Management Laws

# Axis 2: Strategies and Planning Mechanisms (Within Algerian Urban Engineering Context)

- Urban Development Strategies
- Urban Environmental Protection Strategies
- Risk & Disaster Control Strategies in Urban Areas
- Urban Transport Planning & Management Strategies
- Sustainable Water Resource Management Strategies in Urban Areas

# Course content 9. Urban techniques and ecological management

# Title of Course 09. Language General terminology 1

Credits: 1

Coefficient: 1

## Total Weekly Hours: 1 h 30 m

Course (Hours/week): 1 h 30 m

Tutorial Work (Hours/week): /

Practical Work (Hours/week): /

Workshop (Hours/week): /

## **Course Description:**

## **Prerequisites:**

Students must have basic language proficiency in French (reading, writing, and comprehension).

#### **Course Objectives:**

This module aims to:

- Develop students' specialized French vocabulary in urban planning.
- Enhance their ability to understand and draft technical documents independently.
- Improve technical communication skills for academic and professional contexts.

#### **Course Content:**

#### **Axis 1: Thematic Vocabulary**

- Focuses on key terms related to:
- Urban Risk Origins
- Landslides, hydrology, floods
- Seismic and meteorological hazards
- Technological Risks
- Urban Vulnerability
- Governance & Legal Risks
- National Risk Reduction Measures
- Climate Change & Sustainable Development
- Risk Culture
- Crisis & Disaster Management

#### Axis 2: Practical Technical French for Urban Systems

- Analysis of scientific texts/articles on:
- City Structure
- Urban Morphology
- Urban Risks & Vulnerability

# **Semester 2**

# Course content 1. Urban techniques and ecological management

# Title of Course 01. WORKSHOP 2 Sustainable project

Credits: 6 Coefficient: 4 **Total Weekly Hours: 6 h** Course (Hours/week): / Tutorial Work (Hours/week): / Practical Work (Hours/week): / Workshop (Hours/week): **6 h** 

#### **Course Description:**

Prerequisites: Completion of core courses in the Licence degree in Urban Engineering.

#### **General Course Objectives:**

- Introduction to Field Analysis
- Acquisition of Field Analysis Tools

## Learning objectives:

- Master a working method that is part of a sustainability process with the aim of creating better urban quality. Learn to think about urban planning with reference to sustainable development.
- Master the "sustainable project" tool to concretize the ambitions and interests of ecourbanism.

## Content:

In order to achieve the objectives of the "sustainable project" workshop, the work will be structured in three phases:

#### Phase I: conceptual basis and study of experiences

This is an important phase, as it will enable students to grasp the key concepts of this course (and of the profile), and to gain a better understanding of contemporary urban issues. It should be flexible and open-ended, to support students throughout their learning process. It will include: theoretical background, lectures, and experience studies, short seminars... etc.

This phase will also include a presentation of the workshop's challenges.

#### Phase II: diagnosis of the territory

Work in this phase will be carried out in small groups divided by geographical sector and/or by indicators, but students will have to "draw" together the outlines of a global sustainable project (as part of an overall strategy)

- Identification and proposal of a territory at stake (/ sustainable development)
- Carrying out a targeted diagnosis through the Identification of sustainable development indicators: "water, energy, mobility and displacement, building materials"
- Synthesis of the diagnosis
- Proposals for major orientations and intentions (for future developments).

#### Phase III: sustainable project

- A report from each group to cross-reference the issues and propose a general synthesis, which will lead to the proposal of a "federating" sustainable project
- Targeted proposals (in relation to the indicators): They should enable the project to fit into its environment: sustainable
- Construction materials and processes energy management (reduced consumption) water management - waste management and recycling - upkeep and maintenance - soft mobility and public transport....
- Proposals must be innovative in terms of sustainable development, and the student must guarantee that his or her future proposal will make the best possible use of the strengths and potential of his or her territory, and will correct its weaknesses as far as possible.

## Course content 2. Urban techniques and ecological management

## Title of Course 02. Urban Ecology and Sustainable Development 2

Credits: 4 Coefficient: 3 **Total Weekly Hours: 3 h** Course (Hours/week): 1 h 30 m Tutorial Work (Hours/week): 1 h 30 m Practical Work (Hours/week): / Workshop (Hours/week): /

#### • Learning Objectives:

- Illustration and analysis of the various concepts and themes that study the interactions between living beings and the city.
- ✓ Multi-level illustration of intelligent methods for achieving harmonious coexistence between nature and living beings, making the city more pleasant to live in.
- Content:

#### • Introduction

Course 1: Ecological Transition or Sustainable Development

Course 2: Urban Sprawl and Its Impact on Biodiversity and the Urban Environment

- Course 3: Action 21
- Course 4: Eco-City, the Sustainable City
- Course 5: Feedback on Eco-Neighborhoods

Course 6: Social Equity, Ecological Equity

- Course 7: Environmental and Urban Governance
- Course 8: Biodiversity Conservation in Urban Environments
- Course 9: Environment and Public Health
- **Course 10:** Ecological Economics
- Course 11: Eco-Citizenship in Urban Environments
- Course 12: Buffer Zones
- Course 13: Wetlands in Algeria
- Course 14: Strategic Environmental Assessment
- Course 15: Urban Environmental Management and Municipalization

# Course content 3. Urban techniques and ecological management

# Title of Course 03. Sustainable Building

Credits: 4

Coefficient: 3

## Total Weekly Hours: 3 h

Course (Hours/week): 1 h 30 m

Tutorial Work (Hours/week): 1 h 30 m

Practical Work (Hours/week): /

Workshop (Hours/week): /

## Learning Objectives :

- > Understand the fundamental laws of thermodynamics
- Understand the modes of heat transfer in buildings
- Master the calculation of heat loss (preparation for the Energy Management course)
- Gain an overview of energy-efficient building types

#### **Course Content:**

## **CHAPTER 1: Fundamental Laws of Thermodynamics**

- 1.1. Concepts of heat and temperature
- 1.2. Heat capacity
- 1.3. Phase change
- 1.4. Humidity and condensation

#### **CHAPTER 2: Modes of Heat Transfer**

- 2.1. Conduction
- 2.2. Convection
- 2.3. Radiation

#### **CHAPTER 3: HVAC Systems**

- 3.1. Heating
- 3.2. Ventilation
- 3.3. Air conditioning

## **CHAPTER 4: Low-Energy Buildings**

- 4.1. Bioclimatic buildings
- 4.2. Passive buildings
- 4.3. Solar buildings
- 4.4. Positive-energy buildings
- 4.5. Healthy (bio) buildings

Institution University of Hassiba Ben Bouali, Chlef Master's title: Urban Engineering

#### Academic Year: 2020-2021

# Course content 4. Urban techniques and ecological management

# Title of Course 04. Urban Networks, Transport, and Mobility

Credits: 4

Coefficient: 2

## Total Weekly Hours: 3 h

Cours (Hours/week): 1 h 30 m Tutorial Work (Hours/week): 1 h 30 m Practical Work (Hours/week): / Workshop (Hours/week): /

## **Prerequisites:**

## General knowledge in legislation and economics

#### **General Course Objectives:**

- Acquire in-depth knowledge of urban transport systems
- > Understand methods and approaches related to sustainable mobility planning

#### Learning Objectives:

- Master theoretical and practical foundations for managing urban mobility
- Learn key principles of sustainable development in transport planning
- > Develop skills to use mobility projects for regional development

#### **Course Content:**

I. Urban Mobility & Transport

## II. Challenges of Urban Mobility

a) Economic challenges (costs, funding)

## b) Environmental challenges (pollution, energy use)

c) **Social challenges** (accessibility, equity)

## III. Sustainable & Eco-Friendly Mobility

## IV. Non-Motorized Transport (NMT)

## V. The Compact City Model

## VI. Stakeholders in Sustainable Mobility

- a) Authorities (government, city planners)
- b) Professionals (engineers, urbanists)
- c) Associations (NGOs, advocacy groups)
- d) Users (citizens, commuters)

#### **VII.** Mobility Management

- a) Route selection (efficiency, congestion)
- b) Mode choice (public vs. private transport)
- c) Timing of trips (peak vs. off-peak)
- d) Origin-destination points (accessibility)
- e) Environmental impacts (assessment methods)
- VIII. Urban Mobility Plans (PDU)
- IX. National Transport Policy (Algerian Context)

#### X. Environmental Impact Assessment of Mobility Plans

- a) Air quality & health effects
- b) Noise pollution
- c) Greenhouse gas emissions
- d) Energy consumption
- e) Land use efficiency
- f) Urban landscape impact
- XI. Case Studies in Sustainable Mobility (Europe & Global Examples)
- XII. Adapting Sustainable Mobility to Algerian Cities

## Course content 5. Urban techniques and ecological management

# Title of Course 05. INTRODUCTION TO RESEARCH 2

Credits: 4

Coefficient: 2

Total Weekly Hours: 1h30

- Cours (hours/week): 1h30
- Tutorials (hours/week): /
- Practical Work (hours/week): /

#### **Course Description**

Prerequisite: Introduction to Research 1

**General Objective:** The course in research methodology aims to guide students in writing a Master's thesis. Through this course, students will be able to:

Institution University of Hassiba Ben Bouali, Chlef Master's title: Urban Engineering Academic Year: 2020-2021

- Define the research topic
- Undertake preliminary exploratory research
- > Set objectives and formulate the research question
- Define and implement a methodology
- Structure and process information
- Write the thesis using a scientific style

#### **Course Content**

- $\succ$  What is a thesis?
- ➤ What is a Master's thesis?
- ➤ What is a research topic?
- I. STAGES IN WRITING A THESIS
  - Defining the topic
  - Information collection
  - Information processing
  - > Writing
- II. COMPONENTS OF A THESIS
  - ➤ Introduction
  - Bibliographic References
  - Different Types of Sources
- **III. STRUCTURING THE THESIS**

#### **IV. FORMATTING GUIDELINES**

#### V. APPENDICES

- a. Methodological tools for surveys
- b. How to write a summary
- c. Scientific writing style

## Course content 6. Urban techniques and ecological management

## Title of Course 06. Applied Geomatics 02

Credits: 4

#### Coefficient: 2

Total Weekly Hours: 1h30

- Cours (hours/week): 1h30
- Tutorials (hours/week): /
- Practical Work (hours/week): /

#### **Course Description**

#### **Prerequisite:**

- > Fundamentals of aerial photography
- > Principles of cartography
- > Basics of Geographic Information Systems (GIS)

## **General Course Objective:**

This course covers theoretical and technical aspects of:

- Satellite image acquisition
- > Multispectral image analysis
- Earth observation data processing

## Learning Objectives:

Students will develop geomatics (GIS/remote sensing) competencies through:

- -Using satellite imagery for urban analysis
- Managing geospatial data for ecological applications
- Assessing natural risks in urban areas

Practical skills development in:

-Extracting information from satellite images

-Spatial data analysis

-GIS data integration

**Course Content:** 

#### **1. Fundamental Concepts**

#### 2. Physics of Remote Sensing

- Electromagnetic radiation & spectra
- Signal distortion & influencing factors
- Spectral signatures of:
  - Vegetation
  - Water bodies
  - Mineral formations

#### 3. Sensor Specifications & Performance

• Spatial resolution

- Radiometric resolution
- Temporal resolution

#### 4. Satellite Image Processing (ENVI 5.1 Software)

- ENVI 5.1 interface
- 2D histogram analysis
- Spectral indices calculation:
  - NDVI (vegetation)
  - Water index
  - Urban area index

#### 5. Supervised Classification of Multispectral Images

- Land use/land cover mapping
- Thematic map production (ENVI + ArcGIS)

#### 6. Digital Elevation Models (DEMs)

• Creation techniques

#### 7. DEM-Derived Maps

- Slope maps
- Hypsometric maps
- Watershed delineation
- Hydrographic network mapping

#### 8. Geospatial Modeling

- Mathematical equation integration
- Natural risk mapping (floods, landslides)

# Course content 7: Urban techniques and ecological management

# Title of Course 07. Project Management

Total Weekly Hours: 03H00

- Cours (hours/week): 1H30
- ➤ Tutorials (hours/week): 1H30
- Practical Work (hours/week): None

#### **Course Description**

- Understand the challenges of project management from the needs assessment phase to project delivery.
- > Master the role, duties, and responsibilities of a project manager.
- > Understand the project ownership, task scheduling methods, and project planning.
- Adhere to project constraints: deadlines, costs, and quality.

#### **Learning Objectives**

The project manager must identify their scope of action, project stakes and objectives, various collaborators, etc., and effectively prepare for and manage the project daily.

#### **Course Content**

- 1. The Project
- 2. Project Stakeholders and Their Roles
- 3. Project Phases (Process)
- 4. Programming and Needs Assessment
- 5. Project Framing
- 6. Mastery of Procedures
- 7. Project Planning and Monitoring (Project Management)
- 8. Public Procurement for Projects
- 9. Public Contract Regulations

# Course content 8: Urban techniques and ecological management

# Title of Course 08. LANGUAGE 2 – Terminology of Urban Techniques

## Number of Credits: 1 Coefficient: 1

Total Weekly Contact Hours: 1 hour 30 minutes

- Cours (hours/week): 1h30
- Tutorials (hours/week): /
- Practical work (hours/week): /

## **Course Description:**

Prerequisites: Students should have basic skills in linguistic expression.

The *Terminology* module aims to develop students' knowledge of a foreign language (French), with the objective of mastering technical vocabulary related to their field of specialization. Additionally, this module is designed to enhance students' autonomy in understanding and writing technical documents in a foreign language.

#### **Content:**

#### Axis 1. Vocabulary related to the following proposed themes:

- 1. Genesis of risks in urban environments (e.g., land movement, hydrology and flooding, seismic activity, meteorological hazards, etc.).
- 2. Technological-origin risks.
- 3. Urban vulnerability.
- 4. Governance and legal risk.
- 5. National actions to reduce risks.
- 6. Climate change and sustainable development.
- 7. Risk culture.
- 8. Crisis and disaster management.

#### Axis 2. Practice of Technical French Specific to the Urban System

Through the study of texts and scientific articles related to:

- 1. Structure of the city
- 2. Urban morphology
- 3. Urban risks and vulnerabilities

# Semester 3

# Course content 1. Urban techniques and ecological management

# Title of Course 01. Workshop 3 Urban Improvement and Sustainability

Credits: 6

Coefficient: 4

Total Weekly Hours: 6h

- Cours (hours/week): /
- Tutorials (hours/week): /
- Practical Work (hours/week): /
- Workshop (hours/week): 6h

## **Course Description**

**Prerequisites:** Foundational knowledge from the Bachelor's program in Urban Management (U.M)

## **General Course Objectives**:

- Introduction to analytical practices
- Acquisition of on-site analysis tools

## **Learning Objectives:**

- Conduct a well-structured urban analysis to achieve a selective recomposition of the studied area.
- Learn to identify one or more key issues arising from a specific understanding of urban reality.
- Determine intervention strategies.

Content: Urban Improvement and Sustainability

First Exercise: Presentation and Analysis of Urban Space (Urban Analysis)

## **Objective of this exercise:**

Understand the organization of urban space in terms of forms, structures, and their economic and social components, emphasizing the theoretical and practical conditions of the emergence of these urban forms, their growth processes, and the control of their transformations.

- Analysis (Diagnostic Definition): Establish a territorial diagnosis by identifying key characteristics and demonstrating their evolution.
- Synthesis (Stakes and Issues of the Study Area): Highlight strengths to be enhanced and problems to be addressed, with a view to improving and respecting the local urban and identity profile.
  - Intervention Strategies (Proposals): Select sustainable intervention strategies based on constraints identified during analysis and synthesis.

Second Exercise: Urban Planning and Projection Project

A proposed planning project carried out in several phases:

- Site Familiarization: Selection and brief analysis based on documentary and field studies, covering situational, typo-morphological, socio-economic, political-cultural, physical, ecological, and land tenure aspects of the sector in question.
- > Definition of Intervention Issues: Identification of key challenges for intervention.
- > Planning Intentions: General layout and spatial orientation across the site.
- > **Project Design:** Comprehensive development proposal.

This project-based, in-situ approach to urban planning challenges guides students in progressively formulating intervention choices and supporting actions within a complex and often contradictory urban environment.

# Course content 2. Urban techniques and ecological management

# Title of Course 02: Environmental assessment and environmental

# impact assessment of projects

Credits: 3

Coefficient: 2

## **Teaching objectives:**

- Master the fundamental tool for project decision-making based on environmental impact assessment.
- Know how to prioritize and plan the development and use of resources and the territory.
- Define, predict and anticipate the impact of a project on the natural environment.
- Avoid, minimize and compensate for the negative impacts of projects on the environment.

## **Contents :**

- Introduction to environmental assessment
- Definition: Genesis and development of the concept, objectives;
- Environmental issues: definitions and typology of possible impacts
- Types of environmental assessments
- Articulation of environmental assessment with environmental and urban planning law
- The regulatory framework for Environmental Impact Assessment (EIA) and Impact Assessment (IA) in Algeria.
- Environmental Impact Assessment (definitions, objectives, players, projects subject to EIA,procedures and approval)
- Environmental Impact Statement (definitions, objectives, players, procedures and approval)
- General phases of an EIA
- -Study references
- -Project context: description of the receiving environment
- -Project description
- -Impact analysis

- Accident risk management
- Environmental monitoring and follow-up
- Environmental impact assessment case study analysis

# Course content 3. Urban techniques and ecological management

## Title of Course 03. Renewable Energies

Credits: 3

Coefficient: 2

Total Weekly Hours: 3h

- Cours (hours/week): 1h 30m
- ➤ Tutorials (hours/week): 1h 30m
- Practical Work (hours/week): /
- Workshop (hours/week): /

#### **Prerequisites:**

Basic education in Urban Engineering (Bachelor's level)

#### **General Course Objectives:**

- > Introduce analytical tools for renewable energy systems
- > Master scientific methodologies for urban energy transition

#### **Learning Objectives:**

- > Analyze concepts and applications of renewable energies in urban areas
- Explore smart methodologies to transform cities into renewable-energy-compatible environments
- **Course Content:**

Introduction:

- **Cours 01: Fundamental Concepts**
- **Cours 02: Renewable Energies & Energy Transition**
- **Cours 03: Solar Energy**
- **Cours 04: Wind Energy**
- **Cours 05: Geothermal Energy**
- **Cours 06: Hydropower**
- **Cours 07: Biomass Energy**
- **Cours 08: Biomass & Transport**
- **Cours 09: Integrating Renewables into Urban Areas**
- **Cours 10: Legal Framework for Renewables in Algeria**

Cours 11: Algeria's Renewable Energy Potential Cours 12: National Renewable Energy Plan (Algeria) Cours 13: Case Studies Cours 14: Green Jobs Cours 15: Algerian Renewable Energy Projects

## Course content 4. Urban techniques and ecological management

## Title of Course 04. Solid Urban Waste Management Techniques

Credits: 3

Coefficient: 2

Total Weekly Hours: 3h

- Cours (hours/week): 1h 30m
- Tutorials (hours/week): 1h 30m
- Practical Work (hours/week): /
- ➢ Workshop (hours/week): /

#### **Prerequisites:**

Completion of core courses in the Licence degree in Urban Engineering.

#### **General Course Objectives:**

Acquire in-depth knowledge of sustainable waste management systems master integrated waste management methodologies

#### **Learning Objectives:**

- > Understand concepts and techniques of sustainable urban waste management
- > Learn integrated waste management approaches
- > Analyze financial, legal, and technical frameworks

#### **Course Content:**

#### I. Introduction

#### **1.1 Definition of Waste Management**

- Theoretical approaches
- Practical methodologies
- Historical evolution of waste management

#### **II.** Waste Management Fundamentals

2.1 Stages of Waste Management
2.2 Objectives of Waste Management
2.3 Key Stakeholders
2.4 Current Waste Management Phases
2.5 General Principles
III. Management of Different Waste Types
3.1 Household & Similar Waste (DMA)
3.2 Special & Hazardous Waste
3.3 Inert Waste (DI)
3.4 Waste Treatment Facilities
IV. Financial Regulations
V. Penal Provisions
VI. Special Provisions
VII. Transitional Provisions

# Course content 5. Urban techniques and ecological management

## Title of Course 05. Sustainable Urban Greening

## Credits: 3

Coefficient: 2

Total Weekly Hours: 3h

- Cours (hours/week): 1h 30m
- Tutorials (hours/week): 1h 30m
- Practical Work (hours/week): /
- Workshop (hours/week): /

## **Course Description:**

## **Prerequisites:**

Completion of core courses in the Licence degree in Urban Engineering.

## **General Objective of the Course:**

- > Gain in-depth knowledge.
- > Understand the concepts and methodologies related to the training.

#### Learning Objectives:

- This course aims to highlight the importance of vegetation in the sustainable management of cities—not merely as an aesthetic element but as a living organism that plays technical and environmental roles at various levels of the urban system.
- Present diverse forms of urban greening as a fundamental pillar of any sustainable project, emphasizing resident participation as a critical factor in this process.
- > Differentiate types of greening applicable at various urban scales.
- > Understand the technical role of greening in sustainable cities.
- Learn design criteria for sustainable greening forms (e.g., green roofs, rain gardens, wall base greening, etc.).

#### **Content:**

#### **1. Plants Reclaiming the City:**

- Effects of impermeabilization and mineralization on the urban environment.
- Greening and sustainable development.
- Challenges of reducing mineralization and integrating plants sustainably.
- Adapting urban greening to climate change.
- Innovative forms of urban greening.

## 2. Plants: A Technical Element in Sustainable Urban Management:

- The role of plants in soil protection, water management (rainwater and wastewater), energy efficiency, microclimate formation, improving urban comfort, and waste management (supported by scientific research on the technical benefits of urban vegetation).
- Ecological agriculture: Integrated management of green spaces.
- Digital tools and their role in sustainable greening (e.g., ArcGIS, Envimet, etc.).

#### 3. Sustainable Greening Programs and Legislation:

- Urban greening programs.
- Urban planning strategies and plant integration.
- Biotope Area Factor (Coefficient de Biotope par surface).
- Greening charter.
- Greening permits (Permis de végétaliser).

## 4. Sustainable Urban Greening and Environmental Citizenship:

- Economic and environmental benefits for the city.

- Socio-economic benefits of citizen involvement.
- Organizational structures for associations supporting sustainable greening.
- Awareness, education, and training programs.

#### 5. Levels of Sustainable Urban Greening:

#### A. City Level:

- Green networks (Trame verte).
- Green corridors (Coulée verte).
- Urban parks and urban agriculture/urban farms.

#### **B. Neighborhood Level:**

- Gardens: communal/participatory/inclusive/small-scale.
- Greening courtyards and building bases (materials and impermeability reduction techniques).
- Rain gardens (design and calculations)/swales/vegetated pathways.

#### C. Street Level:

- Street greening (standards).
- Green alleys (design and management).
- Planted sidewalks (balancing aesthetics and rainwater management).
- Wall base and tree base greening (regulations).

#### **D. Non-Ground Greening (Hors-sol):**

- Edible sidewalks (Mange-trottoir).
- Planted urban furniture.
- Small floral plantings.

#### E. Building Level: Vegetal Envelope

- **Green Roofs:** Types, components, environmental and technical roles, implementation techniques.
- Green Walls and Vegetated Facades: Types, components, environmental and technical roles, implementation techniques.
- Crop-planted roofs.
- Edible walls.
- 6. Other Forms of Sustainable Urban Greening

# Course content 6. Urban techniques and ecological management

## Title of Course 06: Urban Economics

Credits: 4

Coefficient: 2

Total Weekly Hours: 1h 30m

- Cours (hours/week): 1h 30m
- Tutorials (hours/week): /
- Practical Work (hours/week): /
- ➢ Workshop (hours/week): /

#### **Course Description:**

**Prerequisites:** Basic knowledge of legislation and general economics.

#### **General Objective of the Course:**

This course aims to instill the fundamental concepts of urban economics, as well as the techniques and methodologies for environmental management using economic tools.

#### Learning Objectives:

The theoretical and practical knowledge gained will enable learners to:

- Understand different approaches to sound public financial management for achieving sustainable development.
- Learn how to employ economic mechanisms to promote regional development while protecting the environment.

#### **Course Content:**

#### **Awareness of Ecological Disruptions:**

- Depletion of natural resources
- > The issue of global warming
- Environmentally destructive economic practices

#### Public Environmental Policy in Algeria: Challenges, Objectives, and Tools

#### Institutional Tools of Public Environmental Policy:

- > Evolution of the institutional framework in Algeria
- > Administrative Institutions: Roles and Organization
- Central administration
- Provincial directorates

- Public administrative institutions (e.g., ANCC, CNL)
- Public industrial and commercial institutions (e.g., CNFE, ONEDD)
- Other institutions and bodies

#### **Economic Tools of Public Environmental Policy:**

- Financing environmental protection:
- Public expenditures
- Finance law and the state budget
- Local government budgets
- Special Treasury accounts
- International cooperation
- Other local stakeholders

#### **Environmental taxation:**

- > Taxes on polluting or environmentally hazardous activities
- Taxes on fossil fuels, etc.
- Licensing systems
- Other tools (financial subsidies, etc.)

# Course content 7. Urban techniques and ecological management

## Title of Course 07. Open Forum

Credits: 5

Coefficient: 3

Total Weekly Hours: 3 h

Cours (hours/week): /

- Tutorials (hours/week): /
- Practical Work (hours/week): /
- Workshop (hours/week): 3 h

#### **Course Description:**

Prerequisites: Basic knowledge of legislation and economics

#### **General Course Objectives:**

▶ Raise awareness about the latest developments and innovations in urban engineering

> Acquire scientific knowledge through case studies in urban engineering

#### Learning Objectives:

- > Develop skills in scientific discussion and debate
- > Master strategies for continuous monitoring of field-related information

#### **Course Content:**

- Interventions by field experts and specialists, showcasing previous experiences
- Screening of technical and scientific documentaries, followed by enriched discussions
- Practical applications of analysis, diagnosis, monitoring, and management tools

# Course content 8. Urban techniques and ecological management

## Title of Course 08: Public Finance and Taxation

Credits: 3

Coefficient: 3

Total Weekly Hours: 3h

Cours (hours/week): 1h 30m

- Tutorials (hours/week): 1h 30m
- Practical Work (hours/week): /
- ➢ Workshop (hours/week): /

#### **Course Description:**

Prerequisites: Basic knowledge of legislation and economics

#### **General Course Objective:**

This course aims to equip learners with fundamental concepts, techniques, and methodologies for managing financial resources.

## Learning Objectives:

Through theoretical and practical knowledge, learners will:

Understand methodologies for sound public financial management

Learn to use financial tools to achieve sustainable development and enhance regional growth

## **Course Content:**

#### **1. Public Finance**

- a. Key Concepts
- b. General Principles of Public Finance
- c. Finance Law
- d. Public Budget: Procedures, Revenues, Expenditures
- e. Types of Public Budgets:
- State Budget
- Provincial (Wilaya) Budget
- Municipal Budget
- f. Special Funds:
- Local Funds
- National Funds
- 2. Taxation (Definitions, Tax Base, Rates, Beneficiaries)

#### **3. Petroleum Taxation**

4. Parafiscal Levies

#### 5. Tax Legislation

- a. Direct Taxes and Similar Levies Law
- b. Registration Law
- c. Stamp Duty Law
- d. Turnover Tax Law
- e. Indirect Taxes Law
- f. Tax Procedures Law

#### 6. Regulatory Texts with Tax Implications

- a. Mining Code (Law No. 14-05)
- b. Investment Promotion Law (No. 16-09 dated 3 August 2016)

# Semester 4

# Course content 1. Urban techniques and ecological management

## Title of Course 01. Graduation Thesis/Mémoire

Credits: 15

Coefficient: 10

Total Weekly Hours: 6h

Cours (hours/week): /

- Tutorials (hours/week): /
- Practical Work (hours/week): /
- ➢ Workshop (hours/week): 6h

## **General Course Objective:**

- Master knowledge and skills in academic writing and communication
- Develop competencies in analysis, programming, and interpretation of collected data and results obtained through practical case studies

## Learning Objectives :

- Enhance written composition abilities
- Develop skills in information organization and written communication

## **Content:**

• Preparation of a thesis or research paper in accordance with Executive Decree No. 362 dated June 9, 2014