

## 1. Introduction

The course evaluation is based on two assignments:

- An individual in-class test, which accounts for 40% of the final grade.
- A group project, which accounts for 60% of the final grade. The group project is divided into an individual sub-project (20%) and a group work (40%).

This document sets out the content and the organisation of the course evaluation.

## 2. Individual test (40%)

- The individual test will occur on Friday, 9 May 2025, from 09.15 to 10.00 in class.
- It will be a written exam or multiple-choice exam of 10 “simple” questions.
- The exam will focus on concepts and principles for UGBI planning and design.
- It will be based on the course presentations and readings (not the exercises!)
- You will be informed after each lesson block which elements of the course will be included in the exam.

## 3. Composition and Organisation of the Working Groups

25 students are registered for ENV-462. Consequently, there will be 4 working groups of 6 to 7 members.

Students are free to organise and set up their working groups. But remember: diversity in the group is key!

Once your group is set up:

- Go on Moodle ENV-462 / Course information / Working Groups.
- Open the Excel file [ENV-462\_Working Groups (as of 28.02.25)] (see below).
- Choose a group n° (no matter which one).
- Enter the student's name according to the chosen personal sub-project (see Figure 2, page 3)
- Start with 1 and finish with 6 or 7 depending if your group have 6 or 7 members

ENV-462 Urban Green & Blue Infrastructure and Global Warming		
Spring 2025		
Working Groups		
<b>GROUP 1</b>		
<b>nb</b>	<b>Student's Name</b>	<b>Personal Sub-Project</b>
1		07.03.25 Urban Rainwater Management
2		14.03.25 "Grey 2 Green" Strategy
3		21.03.25 Urban Heat Island
4		28.03.25 Mitigation of Urban Heat Island
5		04.04.25 Tree in the City
6		11.04.25 Urban Ecology & Biodiversity
7		02.05.25 Health & Well-Being
8		09.05.25 Healthy & Biophilic Design
<b>GROUP 2</b>		
<b>nb</b>	<b>Student's Name</b>	<b>Personal Sub-Project</b>
1		07.03.25 Urban Rainwater Management
2		14.03.25 "Grey 2 Green" Strategy
3		21.03.25 Urban Heat Island
4		28.03.25 Mitigation of Urban Heat Island
5		04.04.25 Tree in the City
6		11.04.25 Urban Ecology & Biodiversity
7		02.05.25 Health & Well-Being
8		09.05.25 Healthy & Biophilic Design
<b>GROUP 3</b>		
<b>nb</b>	<b>Student's Name</b>	<b>Personal Sub-Project</b>
1		07.03.25 Urban Rainwater Management
2		14.03.25 "Grey 2 Green" Strategy
3		21.03.25 Urban Heat Island
4		28.03.25 Mitigation of Urban Heat Island
5		04.04.25 Tree in the City
6		11.04.25 Urban Ecology & Biodiversity
7		02.05.25 Health & Well-Being
8		09.05.25 Healthy & Biophilic Design
<b>GROUP 4</b>		
<b>nb</b>	<b>Student's Name</b>	<b>Personal Sub-Project</b>
1		07.03.25 Urban Rainwater Management
2		14.03.25 "Grey 2 Green" Strategy
3		21.03.25 Urban Heat Island
4		28.03.25 Mitigation of Urban Heat Island
5		04.04.25 Tree in the City
6		11.04.25 Urban Ecology & Biodiversity
7		02.05.25 Health & Well-Being
8		09.05.25 Healthy & Biophilic Design

## 4. Personal Sub-Project (20%)

<b>Assignment</b>	The personal sub-project is part of a group project (20% of the final grade).		
<b>Objectives</b>	Sub-projects are meant to practice 3 core principles of UGBI strategic planning/design: <ul style="list-style-type: none"> <li>➤ Green-grey integration: combining green and grey infrastructure</li> <li>➤ Connectivity: creating green space networks</li> <li>➤ Multifunctionality: delivering and enhancing multiple functions and services</li> </ul>		
<b>Tasks</b>	Students will have to: <ul style="list-style-type: none"> <li>• Assess and analyse UGBI data and ecosystem services.</li> <li>• Pre-design a “grey to green” project.</li> <li>• Discuss project strengths/weaknesses/opportunities/threats (SWOT).</li> </ul>		
<b>Methode</b>	Sub-projects enable a step-by-step approach to develop the working group project: <ul style="list-style-type: none"> <li>• Sub-projects are based on the list of exercises presented in Figure 2 (page 3).</li> <li>• Each group member has to choose a sub-project based on Figure 2 (page 3).</li> <li>• Each exercise covers a specific UGBI issue and constitutes 1 “green &amp; blue” layer.</li> <li>• Within the working group, each member is responsible for 1 “green &amp; blue” layer.</li> </ul>		
<b>Output</b>	At the end of the sub-project, students are expected to deliver: <ul style="list-style-type: none"> <li>• A short report including pictures and plans (no annexes).</li> <li>• The report's format and structure will be given before each exercise.</li> </ul>		
<b>Deadline</b>	Students have two weeks after each exercise to submit their sub-projects in PDF format:		
	<u>Lecture</u>	<u>Topic</u>	<u>Deadline</u>
	07.03.25	Urban Rainwater Management	20.03.2025 at 12 am
	14.03.25	“Grey 2 Green” Strategy	27.03.2025 at 12 am
	21.03.25	Urban Heat Island	03.04.2025 at 12 am
	28.03.25	Mitigation of Urban Heat Island	10.04.2025 at 12 am
	04.04.25	Tree in the City	17.04.2025 at 12 am
	11.04.25	Urban Ecology & Biodiversity	25.04.2025 at 12 am*
	02.05.25	Health & Well-Being	15.05.2025 at 12 am

\*This subproject deadline is granted an extra day to account for public holidays (Easter weekend).

<b>Submission</b>	<ul style="list-style-type: none"> <li>• Personal sub-projects in PDF format will be downloaded on time in the assignment module on Moodle: Assessment/Personal sub-project/Lecture.</li> <li>• <u>Deadlines are mandatory!</u></li> </ul>
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Figure 2 – Description, content, and organisation of the course exercises, i.e., the sub-projects

	Exercises	Assignment	GIS Analysis	Language
27.02.2025 <b>Concept and Definition of UGBI</b>	<p><u>Introduction to GIS-based green &amp; blue infrastructure assessment and planning</u></p> <p>This exercise introduces QGIS and the calculation of 3 UGBI basic statistics:</p> <ul style="list-style-type: none"> <li>- Land Surface Temperatures (LST) in inhabited hectares</li> <li>- Normalized Difference Vegetation Index (NDVI) in inhabited hectares</li> <li>- Canopy height in inhabited hectares</li> </ul>	NO	YES	English
07.03.25 <b>Urban Rainwater Management</b>	<p><u>Planning and design of UGBI for rainwater management</u></p> <p>This exercise introduces the concept of rainwater management through UGBI:</p> <ul style="list-style-type: none"> <li>- Basic GIS statistics and analysis of rainfall and runoff data</li> <li>- Strategic planning of UGBI networks to manage rainwater</li> </ul>	YES	YES	English
14.03.25 <b>“Grey 2 Green” Strategy</b>	<p><u>Modelling tools for sizing and designing an open bio-retention pond</u></p> <p>This exercise introduces modelling tools to design rainwater management UGBI:</p> <ul style="list-style-type: none"> <li>- Modelling and sizing tools for rainwater management UGBI</li> <li>- Strategic process to design an open bio-retention pond</li> </ul>	YES	NO	French
21.03.25 <b>Urban Heat Island</b>	<p><u>Strategic assessment and planning of urban canopy plans</u></p> <p>This exercise introduces the core principles of urban canopy strategies:</p> <ul style="list-style-type: none"> <li>- Strategic assessment of the urban canopy ecosystem services</li> <li>- Canopy strategy and plan to strengthen urban canopy ecosystem services</li> </ul>	YES	YES	English
28.03.25 <b>Mitigation of Urban Heat Island</b>	<p><u>Planning and design of UGBI to mitigate urban heat island</u></p> <p>This exercise introduces the concept of urban heat mitigation through UGBI:</p> <ul style="list-style-type: none"> <li>- Basic GIS statistics and analysis of urban heat data</li> <li>- Strategic planning of UGBI networks to mitigate urban heat</li> </ul>	YES	YES	English
04.04.25 <b>Tree in the City</b>	<p><u>Planning and design of tree plantations in a densely urbanised environment</u></p> <p>This exercise introduces methods and tools to achieve adequate urban tree plantations:</p> <ul style="list-style-type: none"> <li>- Assessment of suitable and less suitable places for tree plantations</li> <li>- Strategic planning and design of tree plantations</li> </ul>	YES	NO	French
11.04.25 <b>Urban Ecology &amp; Biodiversity</b>	<p><u>Planning and design of urban green &amp; blue ecological network</u></p> <p>This exercise introduces the core principles of urban ecological network strategies:</p> <ul style="list-style-type: none"> <li>- Assessment of structural and functional connectivity of UGBI networks</li> <li>- Planning/Design principles to strengthen the structural connectivity of UGBI networks</li> </ul>	YES	YES	English
02.05.25 <b>Health &amp; Well-Being</b>	<p><u>Distribution of green &amp; blue infrastructure and social health in urban areas</u></p> <p>This exercise introduces the way to asses</p> <ul style="list-style-type: none"> <li>- Assessment of UGBI ecosystem services and disservices</li> <li>- Planning principles to strengthen UGBI's contribution to people's health &amp; Well-Being</li> </ul>	YES	NO	French
<b>Healthy &amp; Biophilic Design</b> 29.04.2024	<p><u>Planning and design of biophilic green &amp; blue urban environment</u></p> <p>This exercise introduces the core principles of UGBI “biophilic” design:</p> <ul style="list-style-type: none"> <li>- Identification of the key biophilic patterns for the planning site</li> <li>- Strategy to improve the biophilic design of urban spaces and places</li> </ul>	NO	NO	English

## 5. Groupe Project (40%)

<b>Assignment</b>	The group project is based on the personal sub-projects (40% of the final grade).
<b>Objectives</b>	The group project is meant to practice 3 core principles of UGBI strategic planning/design: <ul style="list-style-type: none"><li>➢ Green-grey integration: combining green and grey infrastructure</li><li>➢ Connectivity: creating green space networks</li><li>➢ Multifunctionality: delivering and enhancing multiple functions and services</li></ul>
<b>Tasks</b>	The group will have to: <ul style="list-style-type: none"><li>• Synthesise results and learning experiences from the group sub-projects.</li><li>• Integrate and connect the “green &amp; blue” sub-layers in a coherent and optimised project.</li><li>• Increase UGBI multifunctionality while avoiding trade-offs.</li><li>• Discuss project strengths/weaknesses/opportunities/threats (SWOT)</li></ul>
<b>Method</b>	The group project synthesises the step-by-step approach developed in the sub-projects: <ul style="list-style-type: none"><li>• Case study on the EPFL campus, close to the Learning Centre.</li><li>• 4 working groups of 6 to 7 members (see Chapter 3).</li><li>• Within the group, each member is the respondent for one personal sub-project.</li><li>• The group organises itself and defines the tasks and activities of its members.</li></ul>
<b>Output</b>	At the end of the project, the group is expected to deliver: <ul style="list-style-type: none"><li>• One poster in A0 format presenting the result of the group project</li><li>• One oral presentation of the group project using the poster (no PowerPoint!)</li></ul>
<b>Deadline</b>	<b>Poster</b> The deadline to submit the project poster in PDF format is <u>Monday, 26.05.2025, at midnight</u> . <b>Groupe presentation</b> The group presentation of the project will take place on <u>Friday, 30.05.2025</u> , according to the following schedule (20 min presentation + 10 min discussion): <ul style="list-style-type: none"><li>• 09.15-09.45      Group presentation (group n° to be defined)</li><li>• 10.00-10.30      Group presentation (group n° to be defined)</li><li>• 10.45-11.15      Group presentation (group n° to be defined)</li><li>• 11.30-12.00      Group presentation (group n° to be defined)</li></ul>
<b>Submission</b>	<ul style="list-style-type: none"><li>• Personal sub-projects in PDF format will be downloaded on time in the assignment module on Moodle: Assessment/Personal sub-project/Lecture.</li><li>• <u>Deadlines are mandatory!</u></li></ul>

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