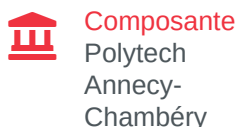


Urban planning and architectural integration



En bref

- > **Langues d'enseignement:** Anglais
- > **Ouvert aux étudiants en échange:** Oui

Présentation

Description

- * Semester 9
- * Duration : Within one semester
- * Type: Mandatory
- * Student workload: Lecture (CM): 9 hours? Lab (TP): 6 hours, 9 hours of self-study
- * Applicability: ESBC course only
- * Teaching and learning method : seminar, case studies, discussion
- * Module examination: 1 written exam (30%), 1 individual project (20%), Lab (50%)

Objectifs

Major intended learning outcomes

Upon completion of the module students will:

- * Understand the urban microclimate and the urban heat island phenomenon
- * Understand the operation of microclimate simulation models
- * Best practices for Urban Heat Island (UHI) mitigation
- * Operating conditions of photovoltaic systems (PVs) within the urban environment and the impact of temperature on PV efficiency
- * Surface uses within the urban environment and advanced solutions (cool materials, etc.)

- * Learn to use GIS software for urban analysis

Heures d'enseignement

Urban planning and architectural integration - CM	Cours Magistral	10h
Urban planning and architectural integration - TD	Travaux Dirigés	
Urban planning and architectural integration - TP	Travaux Pratiques	3h

Pré-requis obligatoires

Admission to 2nd semester

Plan du cours

Content of the module:

1. General Introduction
 1. a. Definition and origins of modern Urban Planning
 - b. Urbanization and Climate Change
 - c. Sustainable Urban Planning and Digitalisation of the Built Environment
2. The Urban Environment
 1. a. Urban Microclimate
 - b. Urban Heat Island phenomenon
 - c. Urban Climate Modelling
 - d. Best Practices for UHI mitigation
3. Solar Radiation & Urban Environment
 1. a. Solar PV power generation in cities
 - b. PV Performances in the Urban Environment
 - c. PV Performances during heatwaves
 - d. Impact of PV systems on Urban Microclimate
 - e. Best Practices for PV installations in the Urban Environment
4. Surface uses in the Urban Environment

Bibliographie

Papers:

- *  <https://doi.org/10.1177/1420326X20939310>
- * 10.1109/WCPEC.2006.279690

- * DOI:10.1016/j.csite.2018.100374
- * <https://doi.org/10.1016/j.renene.2020.07.057>
- * <https://doi.org/10.1016/j.enbuild.2022.111919>
- * Photovoltaic Array Performance Model · D. L. King, W. Boyson, J. A. Kratochvill (2004)
- * <https://doi.org/10.1016/j.buildenv.2011.06.012>

Websites, blogs:

- * <https://www.climateinteractive.org/c-roads/>
- * <https://yceo.users.earthengine.app/view/uhimap>

Infos pratiques

Lieux

- Le Bourget-du-Lac (73)
-

Campus

- Le Bourget-du-Lac / campus Savoie Technolac