

Urban planning and architectural integration (URBA951_S3E)



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

CM	Cours Magistral	10h
TD	Travaux Dirigés	
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>

Libellé court : URBA951_S3E

Nature : EC

Infos pratiques

Lieux

› Le Bourget-du-Lac (73)

Campus

› Le Bourget-du-Lac / campus Savoie Technolac

Contacts

Responsable du cours

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