



Option Ecological Transition and Territories

Specific courses for Civil and Environmental Engineering Option



TRANSITION ECOLOGIQUE ET TERRITOIRES

CIVIL ENGINEERING AND ENVIRONMENT

Lecturers:

| Lecturers : 0.0 | TC : 0.0 | PW : 0.0 | Autonomy : 0.0 | Study : 0.0 | Project : 0.0 | Language : FR

Objectives

Keywords :

Programme

Learning outcomes

Independent study

Objectifs :

Méthodes :

Core texts

Assessment

Specialisation Civil Engineering



BÂTIMENTS ET INFRASTRUCTURES

CONSTRUCTIONS

Lecturers:

| Lecturers : 0.0 | TC : 0.0 | PW : 0.0 | Autonomy : 0.0 | Study : 0.0 | Project : 0.0 | Language : FR

Objectives

Keywords :

Programme

Learning outcomes

Independent study

Objectifs :

Méthodes :

Core texts

Assessment



CONSTRUCTIONS

CONSTRUCTIONS

Lecturers: **Eric VINCENS, Francesco FROILIO**

| Lecturers : 14.0 | TC : 0.0 | PW : 0.0 | Autonomy : 0.0 | Study : 16.0 | Project : 0.0 | Language : FR

Objectives

Through this course, three construction technologies most representative of current practices are approached, namely reinforced concrete, prestressed concrete and steel construction.

The aim of this course is to provide tools for making technological choices, and calculation techniques for dimensioning beams, floors, columns as well as load-bearing walls. The European regulatory framework which should guide the engineer in the design is also addressed. All the Practical Sessions associated with these courses are supervised by professional engineers.

Keywords : reinforced concrete, prestressed concrete, steel construction

Programme

Steel construction: 2 practical sessions (4h each)

Reinforced concrete: lectures (10h) + 2 practical sessions (4h each)

Prestressed concrete: lectures (4h)

Learning outcomes

Independent study

Objectifs : This activity is not concerned with framed autonomy activities outside personal work.

Méthodes : This activity is not concerned with framed autonomy activities outside personal work.

Core texts

Jean Perchat , *TRAITÉ DE BÉTON ARMÉ - SELON L'EUROCODE 2*, Le Moniteur, 2010

Henry Thonier *CONCEPTION ET CALCUL DES STRUCTURES DE BÂTIMENT : L'EUROCODE 2 PRATIQUE*, Presses de l'École nationale des ponts et chaussée, 2006

Jean-Pierre Muzeau, *APKMANUEL DE CONSTRUCTION MÉTALLIQUE*, Eyrolles Afnor éd., 2012

Assessment

1 grade from the final exam*0.75 + 1 grade from practical sessions*0.25



OUVRAGES POUR LA MOBILITÉ

TRANSPORTATION WORKS AND STRUCTURES

Lecturers: **Eric VINCENS**

| Lecturers : 12 | TC : 0.0 | PW : 0.0 | Autonomy : 0.0 | Study : 8 | Project : 0.0 | Language : FR

Objectives

Transportation facilities are characterised by a long linear of works in an environment often more aggressive than for buildings or by non-standard geometries requiring technological solutions which are specific to them.

Among them, we can cite works of art, railway infrastructures as well as tunnels. Here, the main principles of design and monitoring of these structures will be given to fully understand the issues specific to their mechanical behavior and their durability. The speakers are all engineers, specialists in the field.

Keywords : bridge, railway, tunnel

Programme

Bridges: CM 4h + 1BE 4h
Tunnels: CM 4h + 1BE 4h
Railways: CM 4h

Learning outcomes

Independent study

Objectifs : This activity is not concerned with framed autonomy activities outside personal work.

Méthodes : This activity is not concerned with framed autonomy activities outside personal work.

Core texts

Bernard-Gely, Jean-Armand Calgaro, *CONCEPTION DES PONTS*, Presses de l'École nationale des ponts et chaussées, 1994
Michel Leboeuf *GRANDE VITESSE FERROVIAIRE.*, Cherche midi, 2014
Jean Sulem , Marc Panet *LE CALCUL DES TUNNELS PAR LA MÉTHODE CONVERGENCE-CONFINEMENT*, Presses de l'École nationale des ponts et chaussées, 2021

Assessment

Continuous evaluation, in particular through the Practical Sessions



PROJET TET

TET PROJECT

Lecturers: Eric VINCENS, Pietro SALIZZONI

| Lecturers : 0.0 | TC : 0.0 | PW : 70.0 | Autonomy : 0.0 | Study : 0.0 | Project : 0.0 | Language : FR

Objectives

The project is common to the three components of the "Option". It is based on the final project of the students's diploma from the National School of Architecture of Lyon belonging to the departement "Collaborative experimentation in architecture". Through this interdisciplinary work between student-architects and student-engineers, the goal is to get engineering students to invest in a reflection on economically viable solutions, adapted to a Post-Carbon Society taking into account the scarcity of resources, the necessary energy frugality in a regenerated city.

Keywords : home comfort, structures, foundation engineering, acoustics, LCA, circular economy

Programme

- Work on different themes at the Habitat and City scale including the lithosphere, hydrosphere and atmosphere
- 3 project monitoring meetings by theme

Learning outcomes

Independent study

Objectifs : This activity is not concerned with framed autonomy activities outside personal work.

Méhodes : This activity is not concerned with framed autonomy activities outside personal work.

Core texts

Marie-Hélène Contal, Jana Revedin, *ARCHITECTURES DURABLES : UNE NOUVELLE ÉTHIQUE POUR L'ARCHITECTURE ET LA VILLE*, Le Moniteur Editions, 2009
Laurence Lestel, Catherine Carré *LES RIVIÈRES URBAINES ET LEUR POLLUTION*, Quae, 2017
Jean-Jacques Terrin *VILLES ET CHANGEMENT CLIMATIQUE : ÎLOTS DE CHALEUR URBAINS*, Parenthèses, 2015

Assessment

0.33 * oral defense + 0.33 * final written report + 0.33 * 2 interim reports

City and its sustainable development



VILLE ET AMÉNAGEMENT DURABLE
CITY AND ITS SUSTAINABLE DEVELOPMENT

Lecturers:

| Lecturers : 0.0 | TC : 0.0 | PW : 0.0 | Autonomy : 0.0 | Study : 0.0 | Project : 0.0 | Language : FR

Objectives

Keywords :

Programme

**Learning
outcomes**

Independent study

Objectifs :

Méthodes :

Core texts

Assessment



CLIMATOLOGIE URBAINE

URBAN CLIMATE

Lecturers: **Pietro SALIZZONI**

| Lecturers : 15 | TC : 0.0 | PW : 0.0 | Autonomy : 0.0 | Study : 10 | Project : 0.0 | Language : MI

Objectives

The density of buildings and the construction materials used deeply alter the exchange of heat, humidity and momentum in the urban canopy, compared to a rural environment. These modifications induce very specific thermal and microclimatic conditions, which can in turn have a profound influence on the comfort of life. This module presents the issues associated with building architecture and urban planning to minimise the climate impact of urban areas, minimise the energy consumption of buildings and maximise the comfort of urban spaces.

Keywords :

Programme

Thermal comfort of urban spaces CM 11h + BE 6h
Natural ventilation of buildings: CM 4h + BE 4h
(4h CMs are shared with the HD Stream - Air Renewal)

Learning outcomes

Independent study

Objectifs : This activity is not concerned with framed autonomy activities outside personal work.

Méthodes : This activity is not concerned with framed autonomy activities outside personal work.

Core texts

Assessment



RÉGÉNÉRATION ET RÉSILIENCE URBAINE

REGENERATION AND URBAN RESILIENCE

Lecturers: **Pietro SALIZZONI**

| Lecturers : 17 | TC : 0.0 | PW : 0.0 | Autonomy : 0.0 | Study : 8.0 | Project : 0.0 | Language : MI

Objectives

Conditional on the approval of the CE

Provide an overview of the issues associated with the transformation, conversion and regeneration of urban spaces to take account of the challenges arising from climate change and the need for sustainable development.

Keywords :

Programme

Urban hydrology CM 8h + BE 4h

Soil depollution and reclamation CM4h + BE4h

The political, sociological and economic issues involved in urban regeneration CM 5h

Learning outcomes

Independent study

Objectifs : This activity is not concerned with framed autonomy activities outside personal work.

Méthodes : This activity is not concerned with framed autonomy activities outside personal work.

Core texts

Assessment

Written exam: 50%
Project reports: 50%



PROJET TET

SOIL POLLUTION

Lecturers: Eric VINCENS, Pietro SALIZZONI

| Lecturers : 16.0 | TC : 0.0 | PW : 4.0 | Autonomy : 0.0 | Study : 4.0 | Project : 0.0 | Language : FR

Objectives

The project is common to the three components of the "Option". It is based on the final project of the students's diploma from the National School of Architecture of Lyon belonging to the departement "Collaborative experimentation in architecture". Through this interdisciplinary work between student-architects and student-engineers, the goal is to get engineering students to invest in a reflection on economically viable solutions, adapted to a Post-Carbon Society taking into account the scarcity of resources, the necessary energy frugality in a regenerated city.

Keywords : home comfort, structures, foundation engineering, acoustics, LCA, circular economy

Programme

Learning outcomes

Independent study

Objectifs : This activity is not concerned with framed autonomy activities outside personal work.

Méthodes : This activity is not concerned with framed autonomy activities outside personal work.

Core texts

Assessment