

# Road engineering and structures

 ECTS  
6 credits

 Component  
INSTITUT  
NATIONAL  
DES SCIENCES  
APPLIQUEES  
TOULOUSE

 Number of  
hours  
70h

## Presentation

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### Description

Programme (detailed contents):

Road technics:

Mechanical behaviour and design of all types of pavements – Basic components, requirements and quality control (gravels, binding and fines) – Laboratory study (composition, mechanical performances, durability) – Production and processing (roles, tender spots and normalization request) – Quality tests of pavements – Work compliance and control processes - Maintenance of pavements: inspection, design, specific techniques.

Tunnels:

Different types of works - Main technics of boring and types of tunnel boring machines – Microtunnels – End works – Retaining structures and underground hydraulics – Safety in underground works – Case studies.

Management of infrastructures:

Inventory and classification of bridges – Condition state estimation (inspection, diagnosis) – IQOA method – Ranking and planning of maintenance works – Global approach to

identification and estimation of risks – Principles of risk-based maintenance.

Organisation:

Lectures, projects, conferences

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### Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):

- \* Main road techniques.
- \* Methods for boring tunnels
- \* Practice and stakes of bridge management

The student will be able to:

- \* Design of a structural pavement.
  - \* Elaborate methods for boring tunnels.
  - \* Participate to bridge management process
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### Pre-requisites

Cours de matériaux de génie civil.

## Useful info

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### Place

➤ Toulouse