August 17th to 20th 2015

Context: ATHENS program

Institution: École des Ponts ParisTech
in partnership with Saint-Gobain chair “Innovating solutions for a sustainable and responsible housing” and amàco

Professors: Lucile Couvreur, (amàco)
Adélaïde Feraille, Xavier Chateau (École des Ponts ParisTech)

Students: 20 students

Duration: 35h

Objective: To theoretically and experimentally try out ways to transform raw materials into building materials complying with sustainable development requirements.
The first days will be devoted to presentation of the amàco innovation processes: interdisciplinarity, technology transfer, re-engineering of traditional techniques. Real case studies (research projects and architectural achievements) and educational experiments highlighting physico-chemical phenomena specific to some materials (physics of granular media, rheology of clay sludge, etc) will be presented. Then the key issues around construction cycle and supply chain using local products and bio-based material will be addressed.

During the week students will address issues related to the production of building materials, their properties in use and their durability by conducting bibliographic research, implementing models and designing materials.

Students will work in small groups (4-5) on a particular issue. Each group will have to realize a material responding to some specifications, by combining experimental approaches (sample fabrication and characterization) and modeling tools.

At the end of the week, the result of this work will be presented to the whole group and evaluated by a jury.

Materials and equipments will be provided. Bibliographic researches can be conducted at the Lesage Library of École des Ponts ParisTech