Architecture of Planetary Boundaries

Architectural practice and research in the face of ecological upheavals

An Ensa Paris-Est, University Gustave Eiffel's postgraduate programme in partnership with the École nationale des Ponts et Chaussées

The Architecture of the Planetary Boundaries postgraduate programme is an intensive one-year training dedicated to equipping students with the knowledge and skills to design architecture that operates within planetary boundaries. While these boundaries impose constraints on societal development, they also provide a framework for thought and action, opening up a vast field of exploration for architectural practice and research.

The programme aims to accompany graduate architects and engineers in this exploration through an interdisciplinary curriculum that brings together engineering sciences, life and earth sciences, environmental humanities, and the history and theory of architecture. It builds on a long-standing partnership with the École nationale des ponts et chaussées (ENPC) and on sustained exchanges with recognised institutions such as the École des hautes études en sciences sociales (EHESS) and the Chair of Sustainable Construction at the Swiss Federal Institute of Technology in Zurich (ETH Zurich). It thus offers unique conditions for developing a scientific culture, technical knowledge, and critical thinking necessary for integrating ecological considerations into architectural design and research.

Launched in 2013 under the name DPEA Post-Carbon Architecture, the programme benefits from more than a decade of experience and has gained international recognition. It prepares students for a reflective and engaged practice within architectural offices, design consultancies, public institutions, local authorities, and associations. Rooted in academic research, it also provides a privileged framework for developing a doctoral research project addressing environmental issues in architecture.

Programme's Structure

After a month in September devoted to building a shared foundation of fundamental knowledge, the programme is organised over two teaching semesters (from October to February, then from March to June).
During these two semesters, a multidisciplinary teaching team of renowned practitioners and researchers imparts knowledge and engages in discussions with students around five main teaching themes:

- **Thermodynamics of Buildings**
- **Knowledge and Practices of Repair**
- **Production Chains and Territorial Ecology**
- **Architecture and its Ecosystems**
- **Environmental Humanities**

Architectural projects

In parallel, students collaborate on a group project based on real commissions from public institutions, research organizations, or private companies. These projects address real situations, allowing students to contextualize the teachings of the programme. Combining research and design, they focus on the transformation, renovation, and repair of the building stock.

These architectural projects are structured around two main themes:

- **Regenerative architecture**
which explores architectural forms whose material regimes help strengthen the connection between the built environment and sustainable agricultural and forestry practices;
- **The architecture of energy bifurcations**
which examines the impact of climate change and decarbonisation policies on buildings, energy infrastructures, and ways of living.

Regular site visits enable an in-depth investigation, which forms the basis for a proposal to address the issues raised by local stakeholders and institutions. The final output consists of a report, models and an oral presentation.

These projects are supervised by Pierre Dufour (Antoine Dufour Architectes), Jean Souviron (Ensa Paris-Est) and Claire Vernhes (Ensa Paris-Est, MEAT), with contributions from Camille de Gaulmyn (degré·), Laureline Guilpain (Ville ouverte), Yohann Hubert (BC architects), Romain Mège (Patrimoine & Structure) and Emmanuelle Raoul-Duval (ROOM Architecture).

Research seminar

Every Tuesday, a seminar provides a space for discussion based on common readings that support in-depth training in environmental research within architecture. Students undertake original research, culminating in an academic paper. Those interested in pursuing a PhD receive dedicated support throughout the year, helping them define a research topic, identify funding opportunities, and establish necessary connections with laboratories and institutions likely to host their project. The strong links between the postgraduate programme and research laboratories at the Ensa Paris-Est (OCS), ENPC (Navier and LATTS), ETH Zurich, and Université Libre de Bruxelles (ULB) offer future doctoral candidates privileged access to a network of researchers highly engaged in environmental research.

Thematic weeks

Finally, five thematic weeks are organised throughout the year, offering opportunities to bring together the Ensa Paris-Est community and an external audience. With a panel of French and international guests, these weeks explore five themes central to the programme:

- **Architecture of Energy Bifurcations**
- **Regenerative Materials**
- **Agriculture, Forestry and Architecture**
- **Representing Architecture and its Ecosystems**
- **Biodiversity and Human Infrastructures**

Postgraduate programme directed by Jean Souviron, architect, civil engineer and PhD in architecture and urban planning

with Alia Bengana (EPF Lausanne, HEIA Fribourg), Laurens Bekemans, Yohann Hubert and Jasper Van Der Linden (BC architects & studies & materials, Brussels), Paul Bouet (Ensa Paris-Est), Florencia Collo, Rafael Alonso Candau and Olivier Dambron (Atmos Lab, London), Pierre Dufour (Antoine Dufour Architectes, Paris), Camille de Gaulmyn (degré·, Paris), Laureline Guilpain (Ville ouverte, Paris), Guillaume Habert (ETH Zurich), Emmanuel Keita (ENPC, Paris), Sébastien Marot (Ensa Paris-Est, EPFL), Romain Mège (Patrimoine & Structure, Paris), Brian Padilla (Muséum national d'histoire naturelle), Emmanuelle Raoul-Duval (ROOM Architecture, Paris), Claire Vernhes (Ensa Paris-Est, MEAT architectures et territoires), etc.

Language

Postgraduate courses are taught in English or French. A minimum level of B2 is required in both languages. In French, this corresponds to a minimum score of between 400 and 499 points on the TCF language level test. In English, this corresponds to a TOEIC score of between 785 and 944 points.

Registration fees

1800 euros. For employees, the programme is approved by funding organisations such as France Travail and OPCO.

Admission

The postgraduate programme is open to French and international architects and engineers holding a graduate degree. Candidates are selected between May and July based on a letter of application, CV, portfolio and interview. The programme welcomes both initial and continuing professional training.

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