



3RD YEAR PROFESSIONAL OPTION

ENGINEERING FOR ECOLOGICAL TRANSITION

This option aims to train responsible engineers in order to tackle today's environmental challenges. They must be capable of imagining and designing new ways of consuming, producing, working and living together. In order to meet this objective several concepts are covered:

- > Circular economy
- > Eco-design and Life cycle analysis
- > Low-Tech and Sobriety



COURSE CONTENT

- > **Challenges and stakeholders in ecological transition:** climate change, global limits, ecological thinkers, politics, environmental law, Corporate Social Responsibility, Social and Solidarity Economy.
- > **Low-tech - building a resilient and sober world:** Introduction to low-techs, exploration, low-tech approach and experimentation
- > **Circular economy - the fundamental principles:** responsible purchasing, green logistics, industrial ecology, functional economy, responsible consumption, longer life cycle, recycling, regulations, business models.
- > **Eco-design - reducing carbon footprint and life cycle considerations:** environmental impact assessment, carbon footprint, tools and approaches, life cycle analysis, recycled materials, recycling processes, eco-innovation.
- > **Ecological Transition Mornings with expert speakers.**

The teaching programme comprises lectures, company visits, speakers from industry, participatory workshops, case studies and industrial projects.



SECTORS OF ACTIVITY

- > Industrial, commercial and service company; Eco-industry
- > Consulting and technical design office; Research and innovation centre;
- > Business group or association; Economic development agency;
- > Local authority; Hospital
- > Repair workshop; Resource centre; Recycling centre; Activities in the reuse or recycling of materials and construction waste;
- > Project management; Construction and waste recovery; Waste disposal, collection and treatment;
- > Environmental protection associations; NGO
- > Alternative economy

CAREER PROSPECTS

- > Eco-design engineer
- > Local planning coordinator
- > Strategy Manager
- > Responsible buyer (public and private)
- > Company director
- > Architect and environmental engineer
- > Consultant
- > Low-tech and degrowth engineer

TEACHING STAFF

HEAD OF OPTION

Jean-Marc Benguigui

CENTRALE NANTES LECTURERS

Bertrand Huneau, Emmanuel Rozière

EXTERNAL SPEAKERS

University of Nantes, Nantes Métropole, Pays de la Loire Region

Véolia, Séché Groupe, Armor, WigWam, Toovalu, UpCyclea, EY France

Envie, Relais 44, La Ressourcerie, Solilab

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EXAMPLES OF PAST PROJECTS

- > Organising the Ecological Transition Mornings
- > Participation in the Pays de la Loire Sustainable Development Trophy panel
- > Eco-design of a mushroom farm
- > Life cycle analysis of catering packaging (Nantes Métropole)
- > Carbon balance of a foundry (Lemer)
- > Low-tech goods assessment tool (University of Nantes)
- > Functional economy: student furniture in Nantes (Pays de la Loire Region)
- > Implementation of a self-diagnostic tool on the circular economy
- > Creation of educational materials on the circular economy

EXAMPLES OF PAST INTERSHIPS

- > Rethinking the business model around an eco-designed folding bike (Decathlon)
- > 'Cradle to Cradle' - a step towards the resource paradigm - application to building (Upcyclea)
- > Carry out a complete carbon balance for the Sonceboz Group (Switzerland)
- > Create a decision support tool to define the optimum time to refurbish or dismantle material handling equipment (Manitou)
- > Consulting and assistance with project management in waste management (Sage Services)
- > Development of decision support tools for the development of anaerobic digestion (Akajoule)
- > Inert waste from construction sites and the circular economy: Study of a recycling sector (Nantes Métropole)
- > Study of the parameters influencing the choice of sustainability of public infrastructure (Polytechnique Montreal)
- > Rethinking the role of the engineer in a degrowth society (Cargonomia - Hungary)

