



2ND AND 3RD YEAR SPECIALISATION

RENEWABLE ENERGIES AND GRID INTEGRATION

[ENRRES]

Energy transition is key to reducing GHG emissions and is strategic from an energy independence perspective. Renewable energies are an important part of the solution to these problems. Currently undergoing rapid development, renewable energies have technological, regulatory and economic characteristics that are driving transformation in the energy sector in terms of both production and management of the distribution network.

The specialisation in Renewable Energy and Grid Integration is based on the core disciplines taught at Centrale Nantes covering mature renewable energy technologies (wind, solar, hydropower) and emerging technologies (biomass, geoenery, marine renewable energy) and their connection to the grid. Broadly speaking, the course will provide future engineers with the tools to understand all the challenges in the emerging renewable energy sector so that they can play an active role in this sector.



COURSE CONTENT

- > Major challenges of energy transition
- > Socio-economic, regulatory and environmental issues
- > Wind energy I
- > Wind energy II
- > Solar energy
- > Hydropower
- > Project 1 - Call for tender response
- > Emerging technologies
- > Control of electrical machines
- > Power grid operation (taught in English)
- > Power grid control
- > Smart grids for renewable energy
- > Digital environments for the energy sector
- > Project 2 - Call for tender response
- > Internship



INDUSTRY SECTORS

- > Energy conversion technology
- > Renewable energy production/operation (EDF, ENGIE)
- > Energy management
- > Research and development
- > Design office

CAREER PROSPECTS

- > Design office / consultancy
- > Research and development
- > Logistics
- > Production
- > Business, finance
- > Project development

TEACHING STAFF

HEAD OF SPECIALISATION:
Boris CONAN

LECTURERS:

S. Aubrun, JM Benguigui, B. Conan, M. Ghanes, A. Leroyer, B. Marinescu, P. Marty, B. Michel, L. Stainier, external speakers (EDF, RTE)

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EXAMPLES OF PAST R&D PROJECTS

- > Simulation of responding to a call for proposals for an electricity production project by a local authority (mixed production of wind power, photovoltaic energy, etc.). Response on different aspects: technical, managerial and commercial performance.

EXAMPLES OF INTERNSHIPS UNDERTAKEN BY PREVIOUS STUDENTS

- > Pre-projet analysis of resources for a wind energy operator
- > Technical-financial comparison of power generation solutions in a consulting firm
- > Optimisation of an electricity distribution network



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