Energy transition and renewable energies

Component
École Nationale Supérieure d'Électrotechnique d'Électronique

In brief

- **Code:** N9EM12A
- **Open to exchange students:** No

Presentation

Objectives

The aim of this course is to present as comprehensive an overview as possible of the societal, technological and environmental issues associated with the energy and ecological transition, including the concepts of life cycle analysis, energy sobriety, digital responsibility and geo-engineering, as well as the state of the art in energy production and storage technologies (renewable solar, wind, marine, power to gas, biomass, biofuels, geothermal, etc.).

Description

- The challenges of energy and ecological transition (6 x 1h45)

Key words: energy transition, climate change, global resources, life cycle analysis

Speakers: Stéphane Amant (Carbone 4): 1 session François Xavier Dugripon: 4 sessions

- Mobility (1 x 1h45) Key words: transport (cars, planes, etc.) Speaker: Stéphane Amant (Carbone 4)

-Life cycle assessment: application to aeronautics (1 x 1h45) Key words: life cycle assessment

Speaker: Laure Couteau (Airbus) Laure Couteau (Airbus)

- Sobriété énergétique (1 x 1h45)

Key words: NégaWatt project

Speaker: Paul Neau (Solagro / Airbus) Paul Neau (Solagro / Asso. NégaWatt / Abies)

- Digital responsibility (1 x 1h45)

Key words: life cycle assessment, environmental impact, data center, corporate social responsibility

Speaker: Emmanuel Laroche (Airbus)

- Geo-engineering (1 x 1h45)

Key words: Earth-scale engineering, actions on the carbon cycle, solar radiation I

speaker : Paul Duru (IMFT)

- Osmosis - blue energy (1 x 1h45) Keywords: electricity generation through osmotic processes Speaker: Olivier Liot (IMFT)

- Wind power (2 x 1h45)

Key words: onshore + offshore wind energy Speaker: Paul Neau (Solagro / Asso. NégaWatt / Abies)

- Solar photovoltaics (2 x 1h45)

Key words: solar panels, storage Speaker: Henri Schneider (Laplace)

- Hydroelectricity (2 x 1h45) Key words: dams, turbines, STEP Speaker : Lionel Dumond (EDF)

- Waves, currents, swell (1 x 1h45)

Key words: wave energy recovery, tidal turbines, wave-motor systems Speaker: Jérôme Mougel (IMFT) Jérôme Mougel (IMFT) 2 / 2

- Concentrated solar power (1 x 1h45) Key words: solar furnace, heat concentrator Speaker: Gilles Flamant (PROMES)

- Biomass, biogas, biofuel (3 x 1h45)

Key words: high-temperature heat treatment, biomass, biogas, biofuel Speakers: Mehrdji Hemati (LGC) : 2 session Marion Alliet (LGC) : 1 session

- Energy storage, power to gas (2 x 1h45) Keywords: electrical or other energy storage, Power to Gas processes Speaker: Amine Jaafar (Laplace)

- Geothermal energy (2 x 1h45)

Key words: geothermal energy/heat recovery

Speaker: Olivier Liot (IMFT) Olivier Liot (IMFT)

- Nuclear power (2 x 1h45)

Key words: current technologies, uranium vs thorium, fission vs fusion

Speaker: Daniel Caruge, Bernard Boullis Daniel Caruge, Bernard Boullis (CEA)