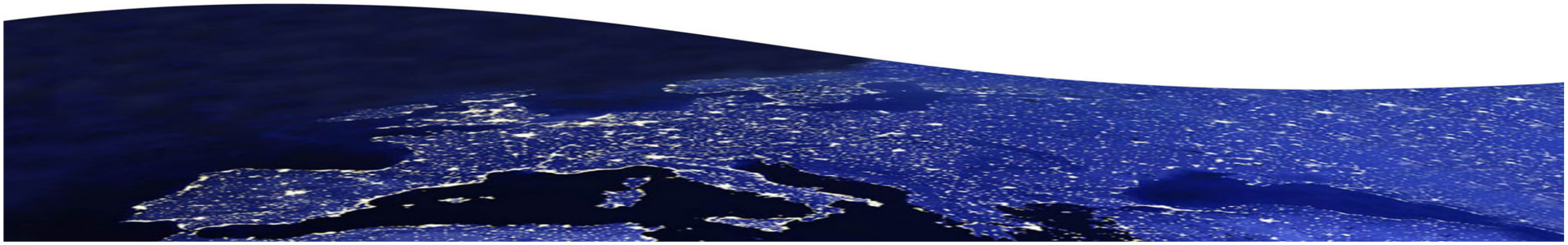
# KIC InnoEnergy

## Master School



# Who is this for?

Bachelor's Students:

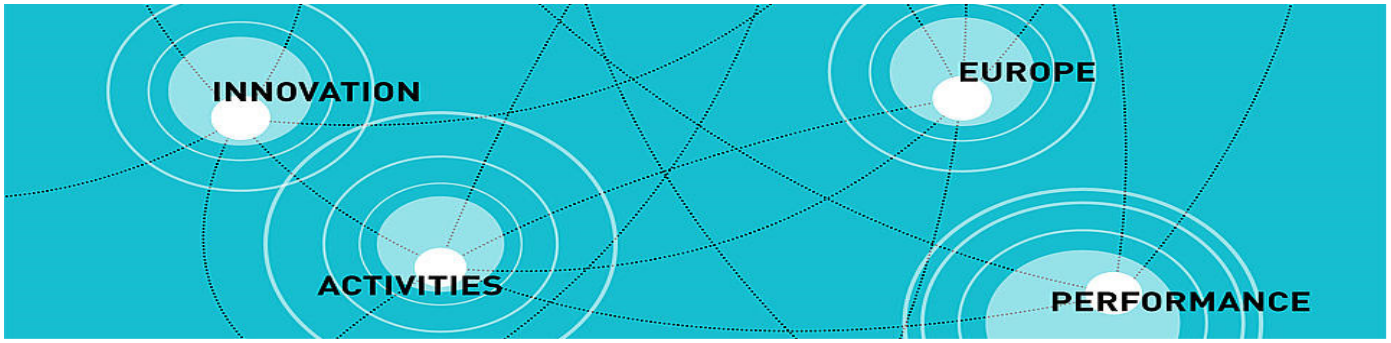
- From electrical, mechanical, chemical or energy engineering
- Who want to develop their skills in the field of sustainable energy
- Who want to become entrepreneurs or work with research and development
- Who are looking for an international career
- Who want to contribute to a more sustainable future

# KIC InnoEnergy

**KIC InnoEnergy** SE (Societas Europaea) is a European company fostering the integration of education, technology, business and entrepreneurship and strengthening the culture of innovation in the field of sustainable energy.

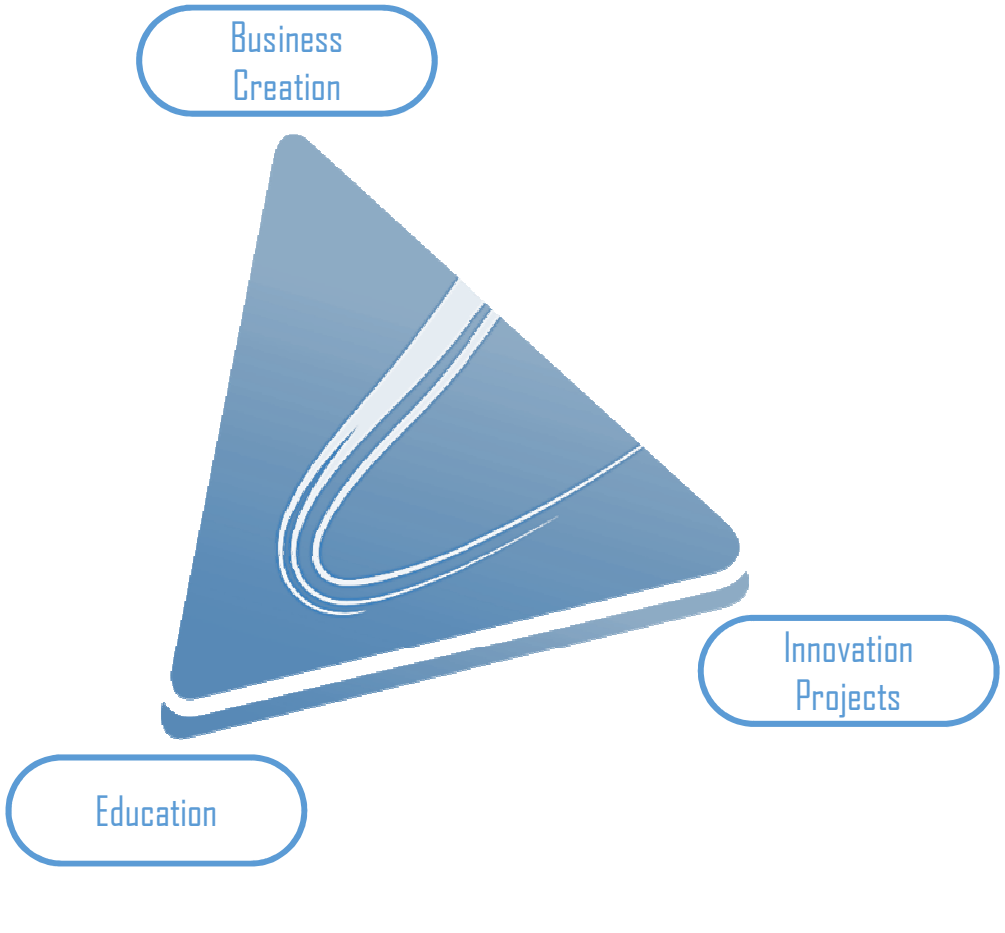
**Our vision** is to become the leading engine of innovation in the field of sustainable energy.

We are a world class alliance of top European players with a proven track record. The Consortium consists of 30+ shareholders and additional 50+ partners - companies, research institutes, universities and business schools covering the whole energy mix.



## How we work:

# The Knowledge Triangle




KIC InnoEnergy Master School

# Our Programmes

- **MSc Clean Fossil and Alternative Fuels Energy**
- **MSc EMINE** – European Master in Innovation in Nuclear Energy
- **MSc ENTECH** – Energy Technologies
- **MSc RENE** – Renewable Energy
- **MSc SELECT** – Environomical Pathways to Sustainable Energy Systems
- **MSc SENSE** - Smart Electrical Networks and Systems
- **MSc Energy for Smart Cities** – Efficient Energy for Smart Cities

# Where you will study

1. **Aalto University School of Science and Technology**, Finland
2. **Eindhoven University of Technology** (TU/e), The Netherlands
3. **ESADE Business School**, Spain
4. **Grenoble Ecole de Management**, France
5. **Grenoble Institute of Technology** (INP), France
6. **Instituto Superior Técnico** (IST), Portugal
7. **Karlsruhe Institute of Technology** (KIT), Germany
8. **KU Leuven** (KUL), Belgium
9. **Paris Institute of Technology** (Paris Tech), France
10. **Politecnico di Torino** (PoliTo), Italy
11. **Royal Institute of Technology** (KTH), Sweden
12. **Silesian University of Technology**, Poland
13. **Technical University of Catalonia** (UPC), Spain
14. **AGH University of Science and Technology** (AGH), Poland
15. **Uppsala University** (UU), Sweden

# Our Uniqueness

- ✓ **Top Ranked Universities** – gathering of the best technical universities and business schools in Europe.
- ✓ **Industry Involvement** – close connection to and involvement of energy industry.
- ✓ **Double degree** – one from KIC InnoEnergy and one from partner university.
- ✓ **International mobility** – a unique mobility programme that allows the students to travel and learn during two entire years.
- ✓ **Sustainable Energy Focus** – all our masters are designed to give the student the latest insight in conventional and alternative energy sources.
- ✓ **Entrepreneurial Approach**– close connection between engineering skills, innovation and entrepreneurship.

# MSc SELECT

## MSc SELECT

Environomical Pathways for Sustainable Energy Systems

MSc SELECT's focus on sustainable energy technologies attracts engineering students and teachers who are true enthusiasts.

Fortum

# MSc SELECT
# Outcomes

**The programmes promise is that SELECT's students will:**

- ✓ Obtain training in multidisciplinary problem analysis and solving.
- ✓ Practise advanced team building in a multinational setting.
- ✓ Experience a novel and multidimensional way of learning involving real and virtual classrooms.
- ✓ Have close collaboration with industry during thesis work.
- ✓ Be part of a unique network of fellow students, SELECT alumni and industry specialists in the field of sustainable energy.

# MSc SELECT
# Programme Content

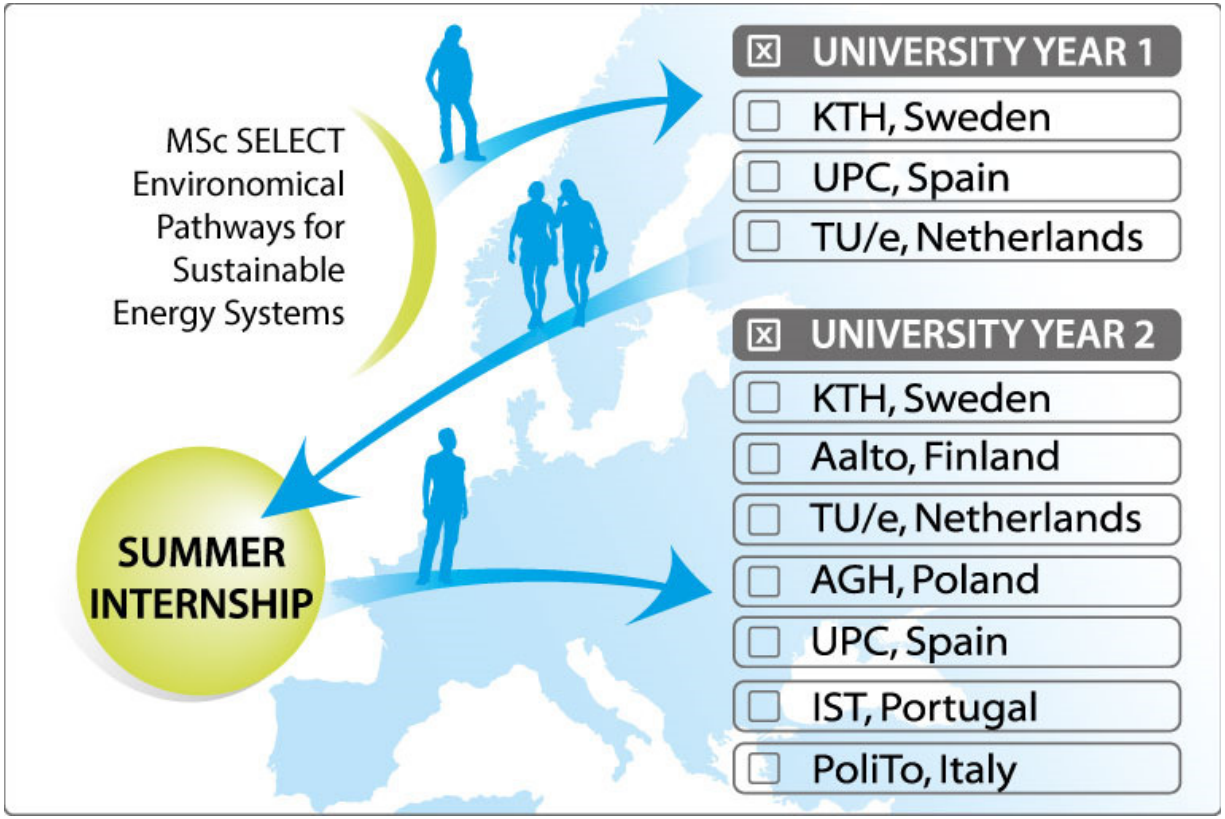
**First year** (KTH or TU/e or UPC)

- Advanced Renewable Energy Systems Technology
- Environomical Pathways
- Sustainable Energy Conversion and Utilization

**Second year**

- Biomass & Biofuels (Aalto)
- Biomass (KTH/UPC)
- Bio refinery (Aalto)
- Electrical Systems (TU/e)
- Energy Efficiency (PoliTo)
- Fuel Cells (PoliTo)
- Polygeneration (KTH or UPC)
- Renewable Energy (IST)
- Solar Systems (UPC/Tu/E)
- Sustainable Fuel Economy (AGH)

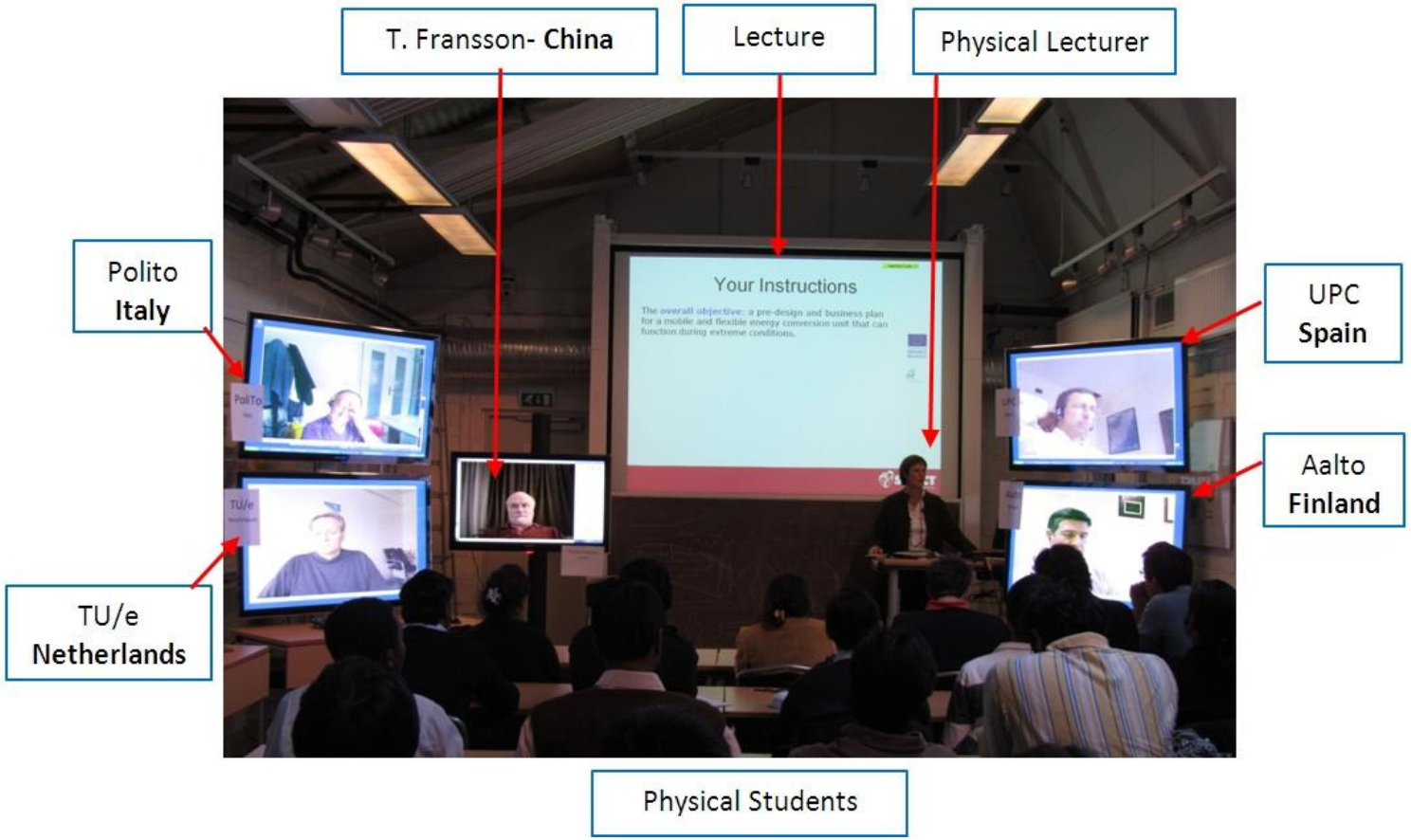
# MSc SELECT
# Mobility Plan



# **SELECT** Project of the Year 2010

## *1. Emergency Energy Module*

# MSc SELECT
# Learning Experience



# MSc SELECT
# Industry Cooperation


CHP plant visit in Torino


Photo by: Anna Fransson

ENVIRONMENT PARK
Parco Scientifico Tecnologico per l'Ambiente

HEAT power

VATTENFALL

SOFCPOWER
SOLID OXIDE FUEL CELLS

Agbar

WE LEAD. WE LEARN. UPM

IRIDE SERVIZI

Fortum

ENEA Ambiente Innovazione Energia

Golder Associates

SCARAB DEVELOPMENT AB

FOSTER WHEELER

ABB

# Visit
## Politecnico di Torino, Italy

# Skiing
## Italian Alps

# Spring seminar
## Instituto Superior Técnico, Portugal

# MSc SELECT
# Job Opportunities

The first graduated students from the intake 2010 have e.g. acquired the following positions:

- PhD students
- Environmental consultant
- Market analyst in power markets
- Business developer in power systems
- Associate design engineer
- Sustainability project engineer
- Design engineer in electrical and control systems

# MSc SENSE

## MSc SENSE

Smart Electrical Networks and Systems

MSc SENSE develops your skills in electrical power engineering, innovation processes and entrepreneurship in the emerging field of Smart Grids.

# MSc SENSE
# Programme Content

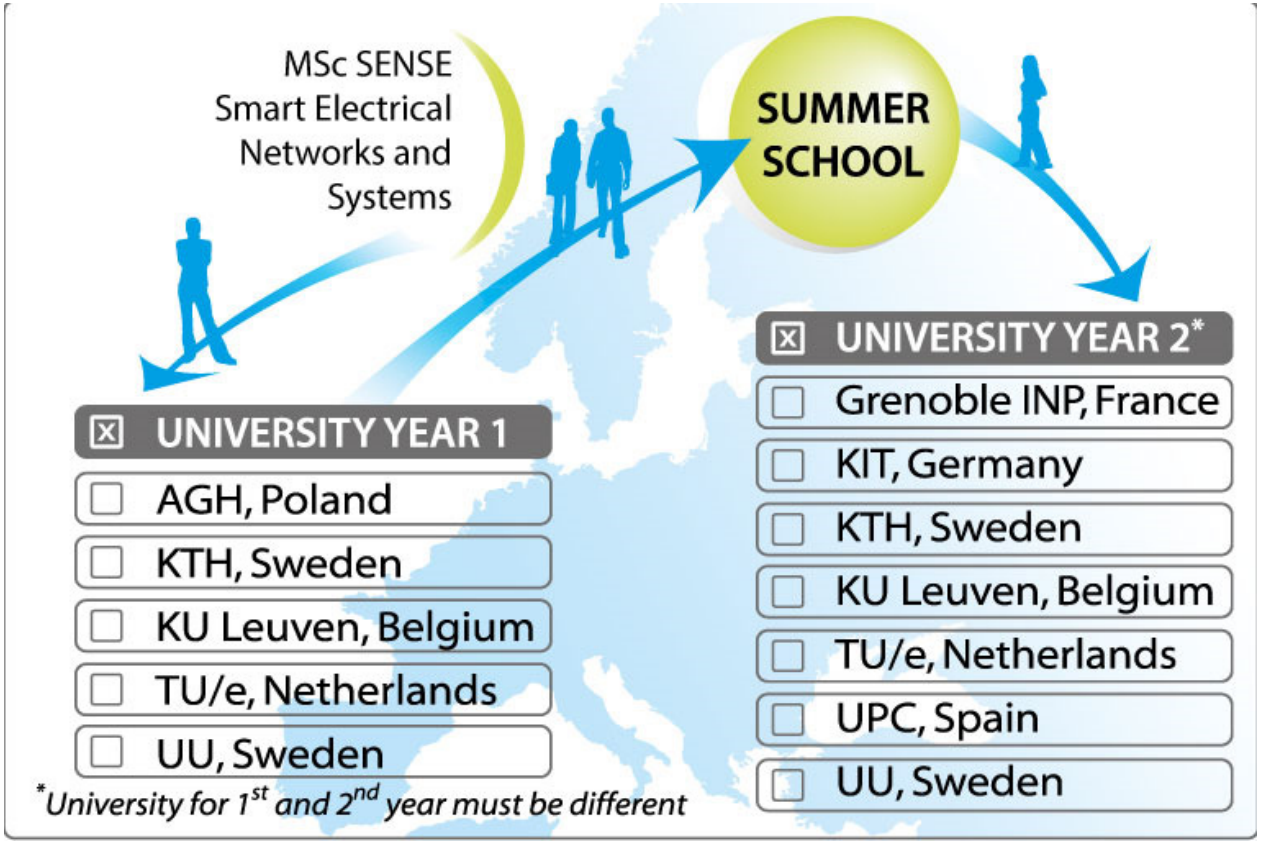
## First year courses

- Power System Analysis
- Power Electronics
- Electrical Machines
- High Voltage Engineering
- Smart Electrical Networks and Systems

## Second year specializations

- Energy Management in Buildings and Power Grids (INP)
- Electrical Energy Systems and Electricity Market (KIT)
- Intelligent Transmission Networks (KTH)
- Power Distribution (KUL)
- Power Electronics as Enabling Technology for Renewable Integration
- Energy Storage (UU)
- Sustainable Electrical Energy Systems (TU/e)

# MSc SENSE
# Mobility Plan



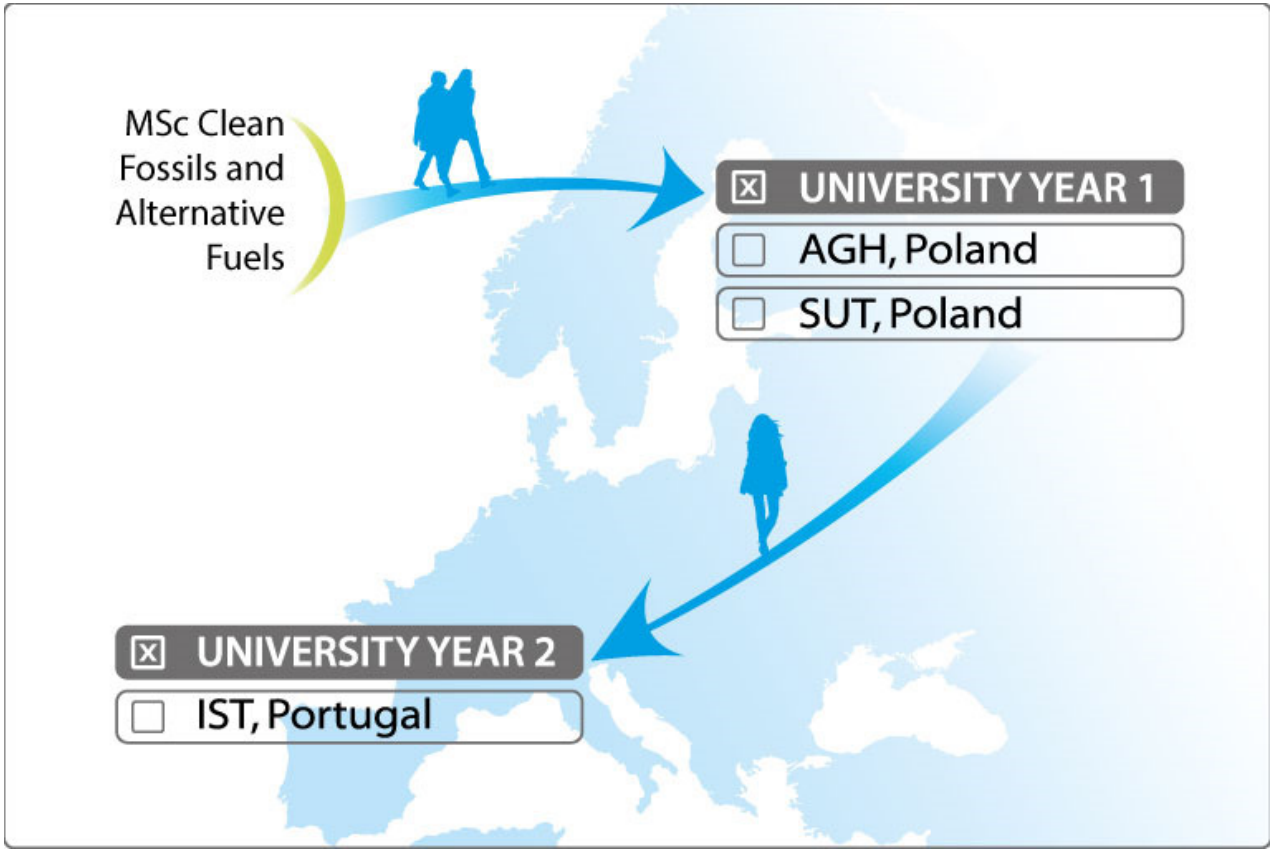
# MSc SENSE
# Job Opportunities

The programmes industrial partners ABB and Vattenfall has indicated a strong need to recruit new employees with the competences provided by the programme.

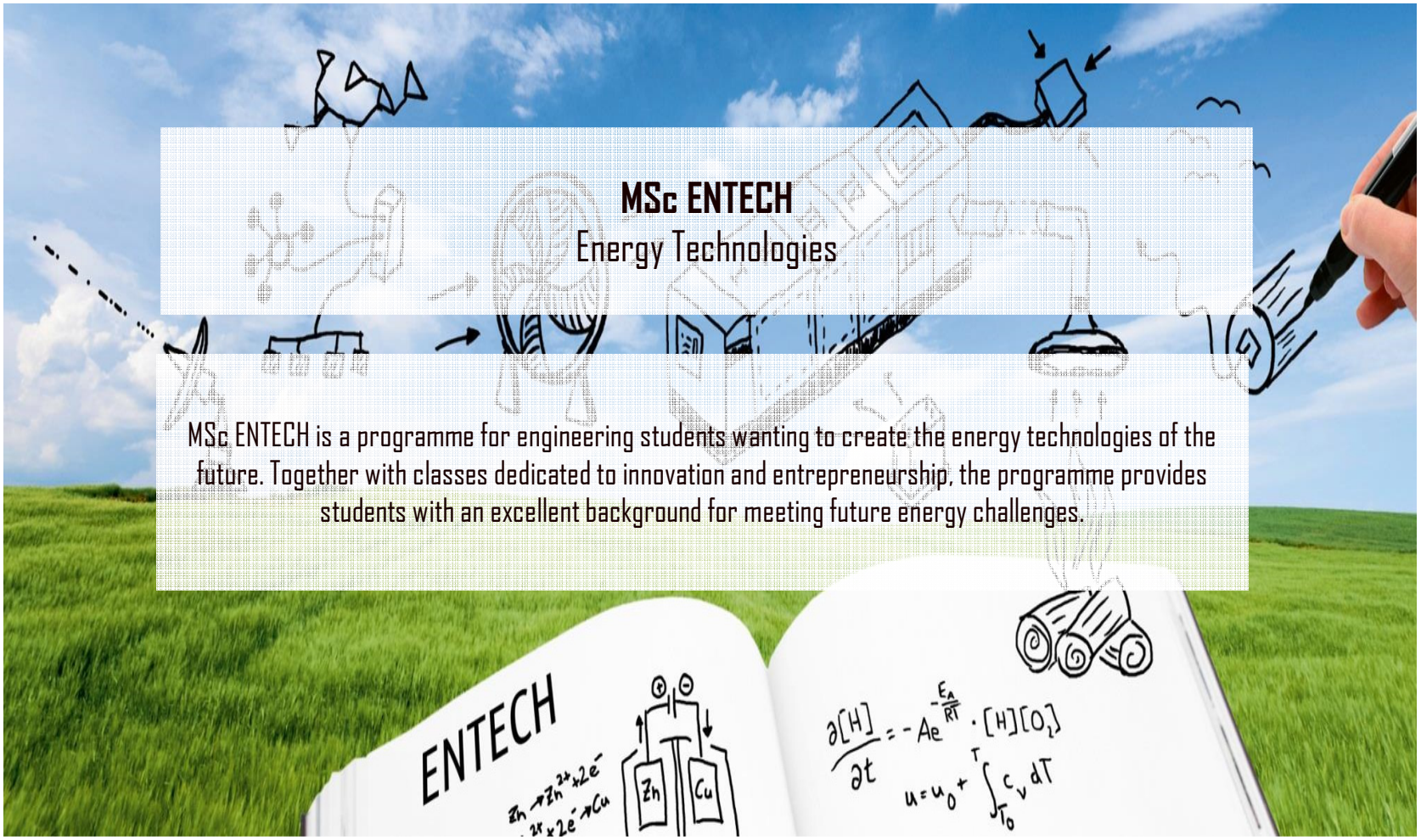
The first MSc SENSE students will graduate in 2014.

# MSc Clean Fossils and Alternative Fuels Energy

# MSc Clean Fossils and Alternative Fuels Energy
## Mobility



# MSc ENTECH

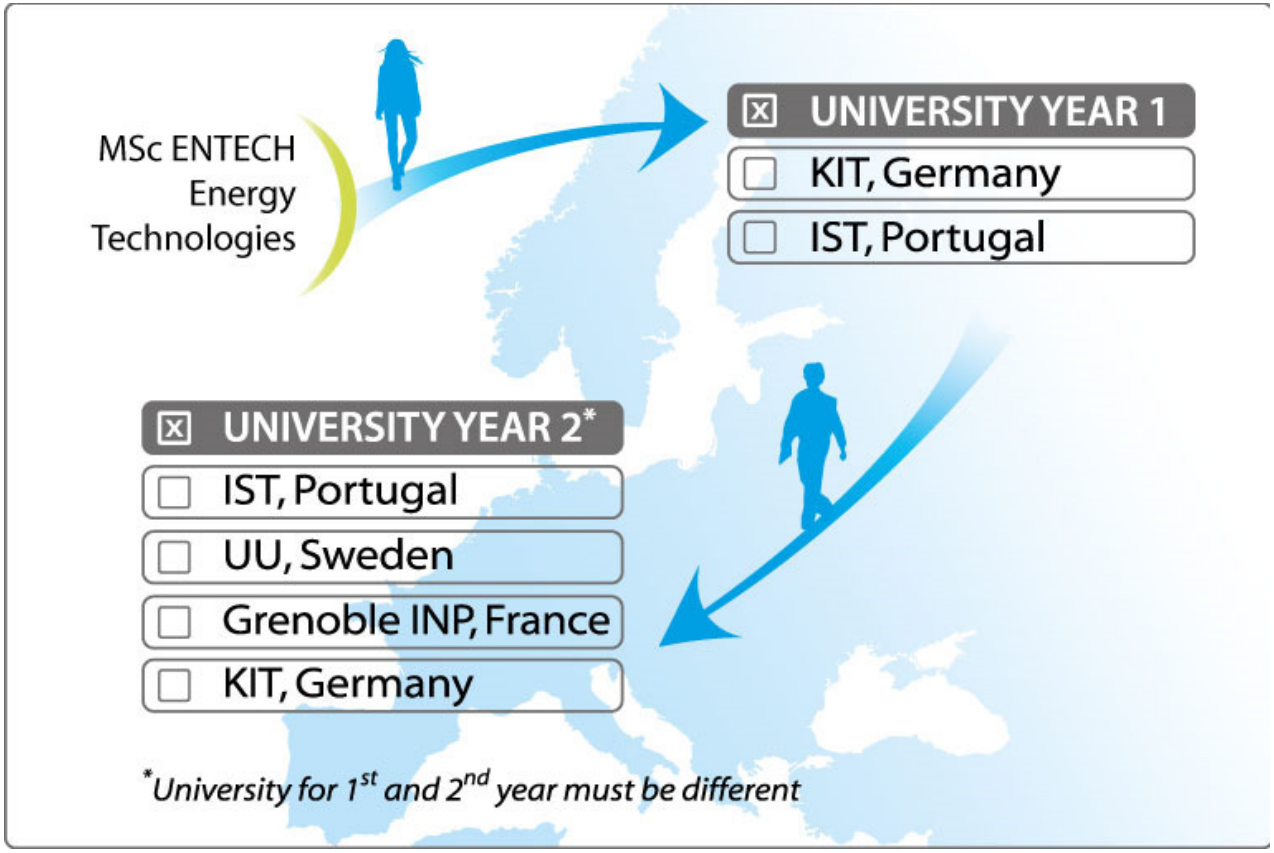



**MSc ENTECH**

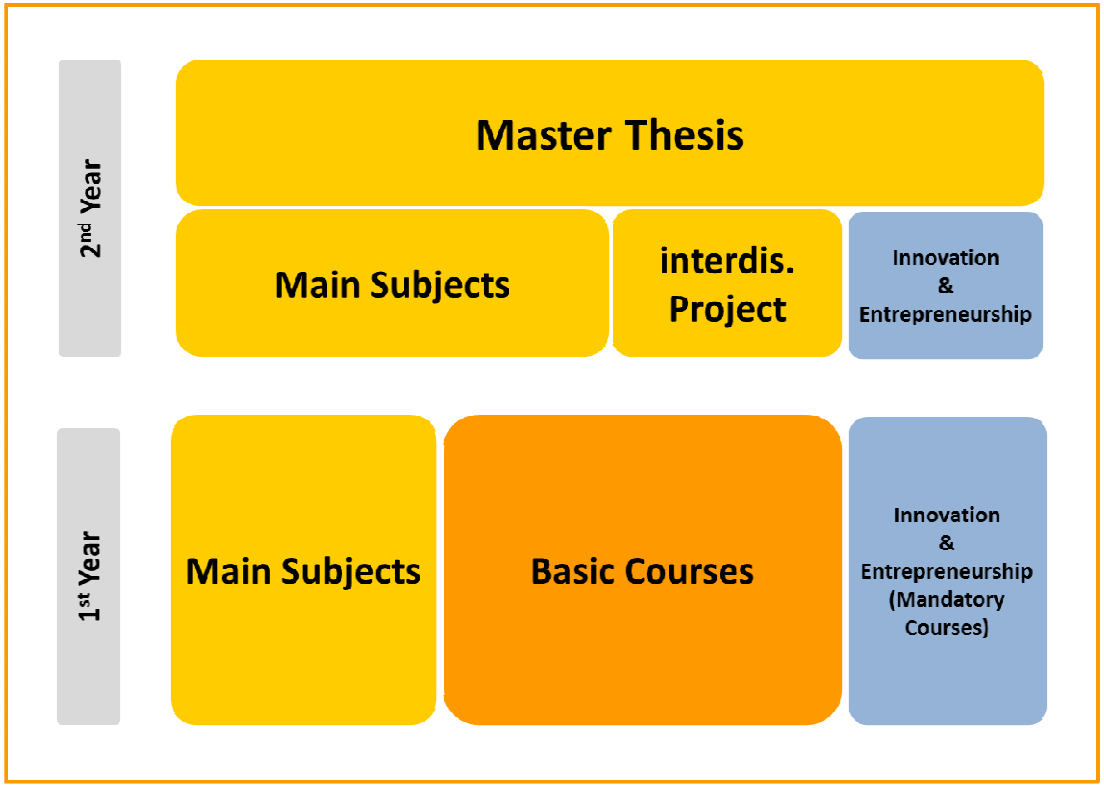
Energy Technologies

MSc ENTECH is a programme for engineering students wanting to create the energy technologies of the future. Together with classes dedicated to innovation and entrepreneurship, the programme provides students with an excellent background for meeting future energy challenges.

# MSc ENTECH
# Mobility Plan



# MSc ENTECH
# Programme Outline



# MSc ENTECH
# Programme Content

## Second year specializations:

- Thermal Power Plants
- Energy in Buildings
- Chemical Energy Carriers
- Decentralised Power Supply and Grid
- Integration
- Nuclear and Fusion Technology
- Energy Economics and Informatics
- Renewable Energy and Energy Storage
- Utility Facilities

# MSc RENE

**MSc RENE**
Renewable Energy

MSc RENE develops engineering students skills in research, innovation, entrepreneurship and leadership, enabling them to meet key challenges and goals in renewable energy. With this know-how, graduates can better understand the world's energy challenges and speed the transition to a low-carbon economy.

# MSc RENE
# Programme Content

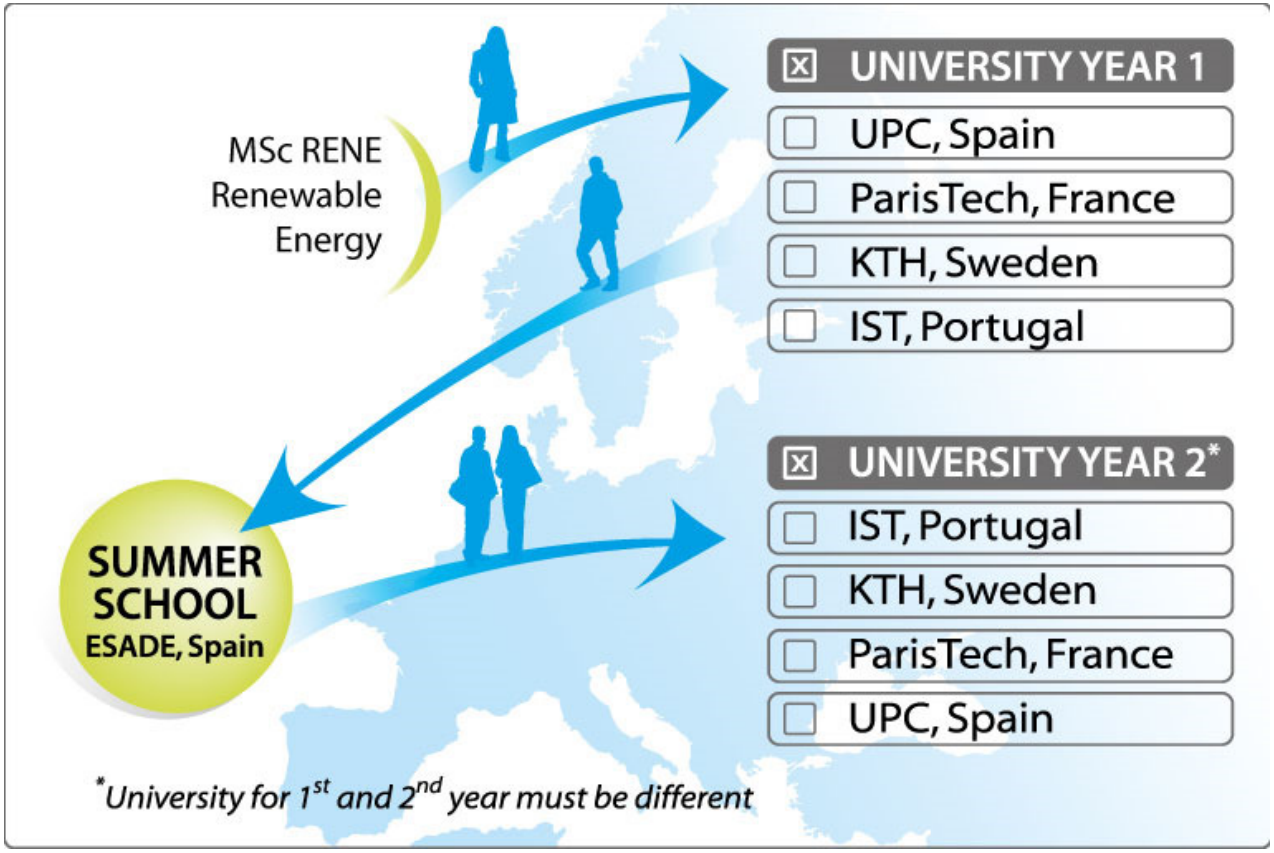
## First year

Includes engineering courses in advanced technology concepts and methods, as well as in sustainable energy production and utilization. Project courses are introduced from the start to offer advanced training in problem solving and group dynamics for mastering complex energy systems analyses.

## Second year

- Sustainable energy, hydropower and grid engineering (IST)
- Energy utilization and power generation (KTH)
- Solar photovoltaic, grid engineering, hydropower, wind-power and energy vectors (ParisTech)
- Solar photovoltaic, solar thermal, polygeneration and wind-power (UPC)

# MSc RENE
# Mobility Plan



# MSc EMINE

**MSc EMINE**

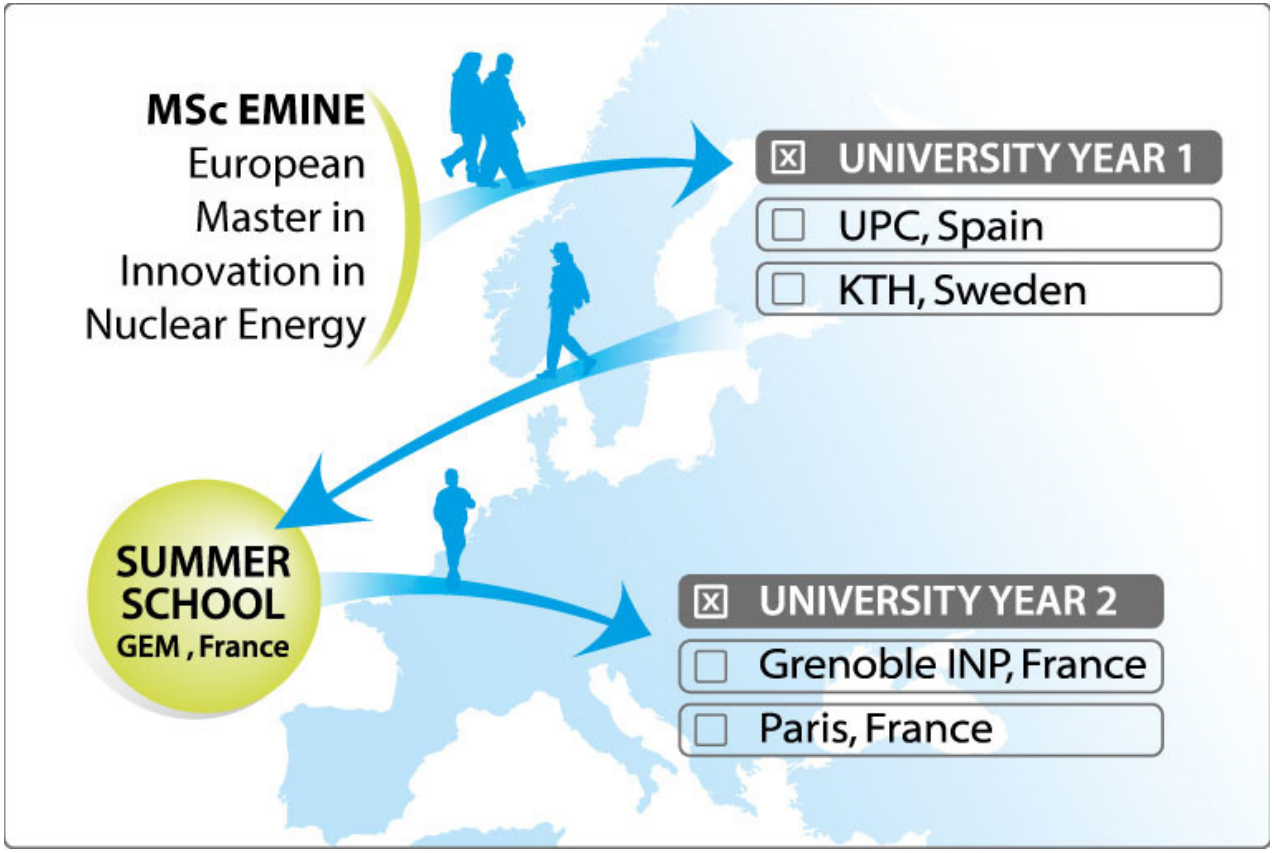
European Master in Innovation in Nuclear Energy

MSc EMINE helps tomorrow's nuclear engineers take up the challenges that the nuclear energy industry faces in terms of safety, social acceptability and waste management. By offering outstanding technical training
and addressing the economic, social and political issues of nuclear energy, the programme broadens the scope of traditional nuclear education.

**Industrial partners**

AREVA, EDF, ENDESA, Vattenfall and CEA

# MSc EMINE
# Mobility Plan



# MSc EMINE
# Programme Content

**First year**

Students learn the fundamentals of nuclear engineering plus safety and radiation protection as well as the design and management of power plants.

**Second year**

Grenoble INP offers specialization in Materials Science for Nuclear Energy with two options: Fuel or Components.

ParisTech offers specialization in::

- Nuclear Reactor Physics and Engineering
- Nuclear Plant Design
- Operations
- Fuel Cycle
- Decommissioning and Waste Management

# MSc Energy for Smart Cities

**MSc Energy for Smart Cities**

Focus on Energy and Entrepreneurship

MSc Energy for Smart Cities is for internationally-oriented engineering students wanting to implement modern energy technologies and entrepreneurial activities in the smart city environment.

BASF The Chemical Company
eandis altijd in uw buurt
Electrabel GDF SUEZ
elia Powering a world in progress
imec
INFRABEL Right On Track
LABORELEC GDF SUEZ
vito vision on technology
vreg Vlaamse Reguleringsinstantie voor de Elektriciteits- en Gasmarkt

# MSc Energy for Smart Cities
# Programme Content

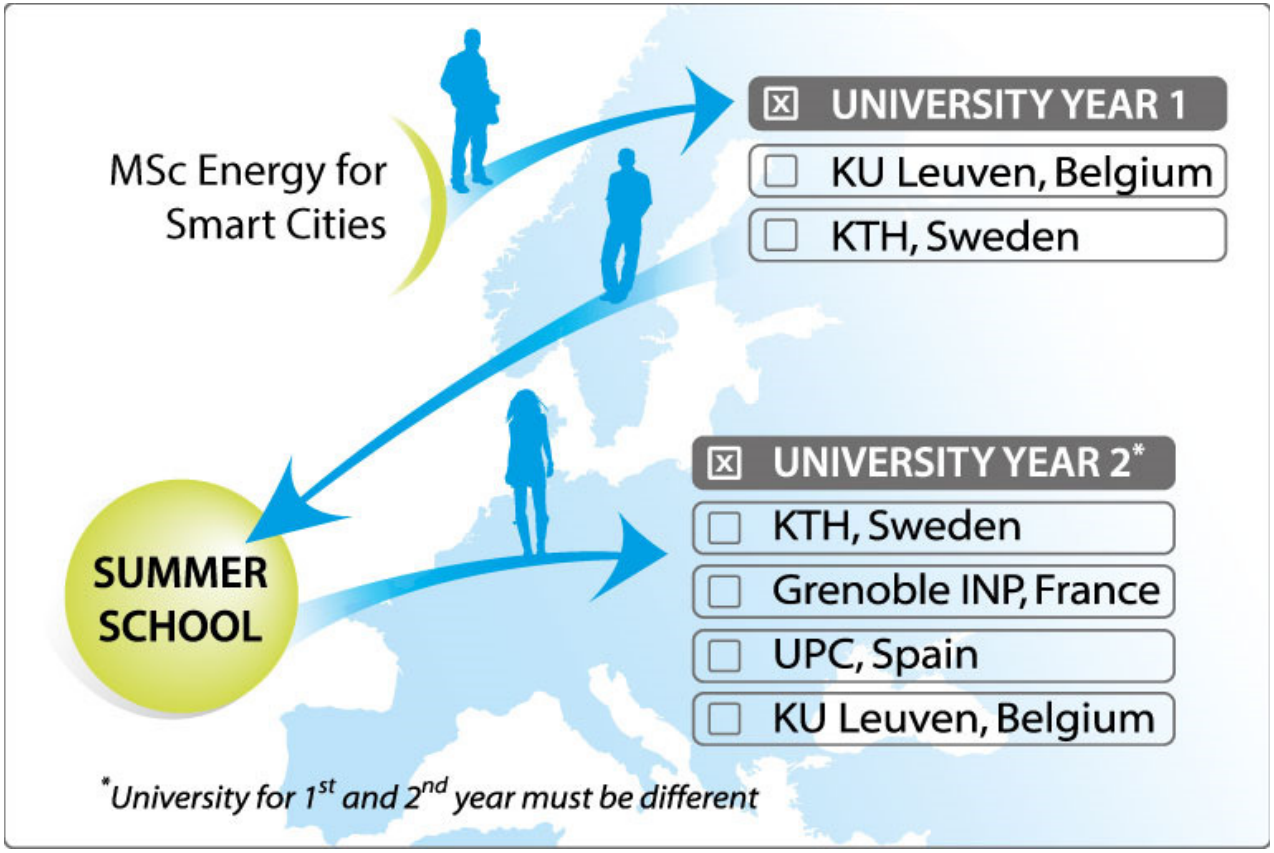
## First year

Focuses strongly on technologies relevant to energy supply and distribution in built-up environments.

## Second year

Further specialization into smart city energy networks, sustainable mobility and energy-efficient buildings.

# MSc Energy for Smart Cities
# Mobility Plan



# Application Requirements

**A completed Bachelor's Degree**

**Programme specific requirements** - See website

**Conditional Acceptance**

**English Proficiency**

- IELTS Academic test (www.ielts.org). An overall band score of at least 6.5, with no section lower than 6, is required.
- TOEFL Internet-based test, iBT . A total score of at least 92 (with writing section 22) is required.
- University of Cambridge / University of Oxford Certificates
- Certificate in Advanced English (CAE): grades A- C are accepted.
- Certificate of Proficiency in English (CPE): grades A- C are accepted

**Last application date 2013** - April 30th

# Scholarships

| For European* Students applying to programmes | For Non-European* Students applying to programmes |
|---|---|
| • For admitted students, there is a participation fee waiver, courtesy of InnoEnergy.<br>• InnoEnergy covers the costs related to events integrated in the curriculum, e.g. kick-off, innovation seminars or summer schools. | • The participation fee is 8000 €/year.<br>• InnoEnergy covers the costs related to events integrated in the curriculum, e.g. kick-off, innovation seminars or summer schools.<br>• Excellent students can be nominated for a tuition fee waiver, courtesy of InnoEnergy. |
| Scholarship possibility: Excellent students can be nominated for a monthly allowance of 750 €/month for a maximum of 24 months.<br>You can be nominated for this scholarship independently of your application being received during either the first or the second application period | Scholarship possibility: Excellent students can be nominated for a scholarship including one-time travel and installation support of up to 1000 €**, and a monthly allowance of 750€ for a maximum of 24 months. You can be nominated for this scholarship only when applying in the first application period. |

# www.kic-innoenergy.com/masterschool