

INSA INSTITUT NATIONAL
DES SCIENCES
APPLIQUÉES
LYON

Energy & Environmental Engineering

INSA Lyon

GEn department



CETHIL
UMR 5008

deep



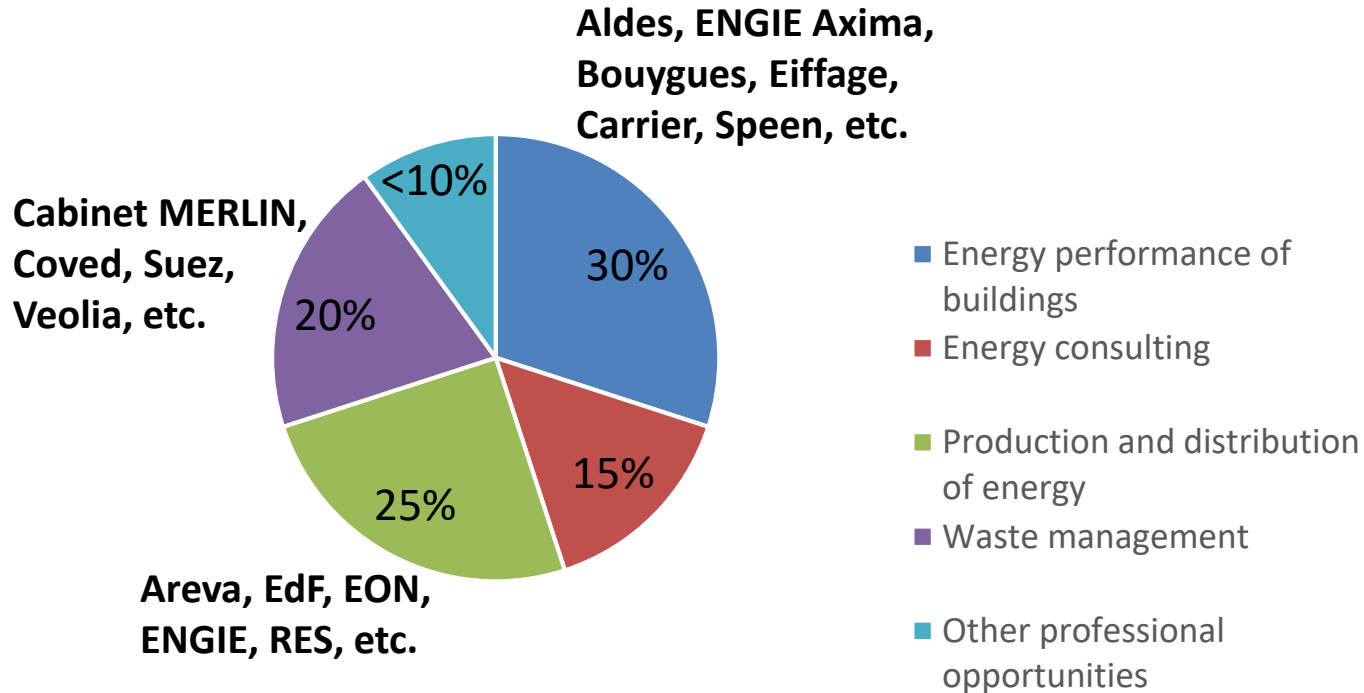
<https://gen.insa-lyon.fr/>

70 graduate engineers each year



Job opportunities

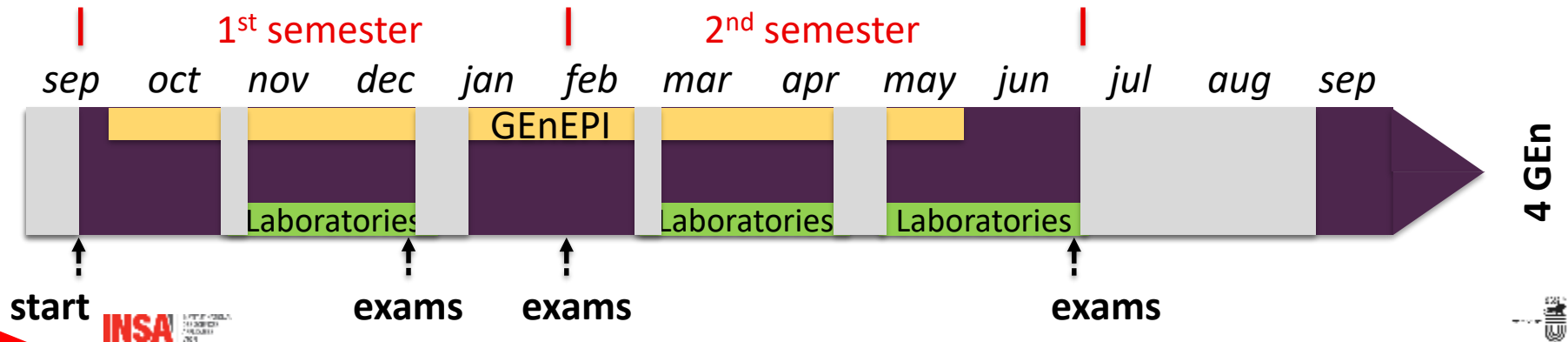
A broad-based engineering education in the field of Energy and Environmental sciences



A three year academic program

The first year: fundamentals of energy and environmental sciences

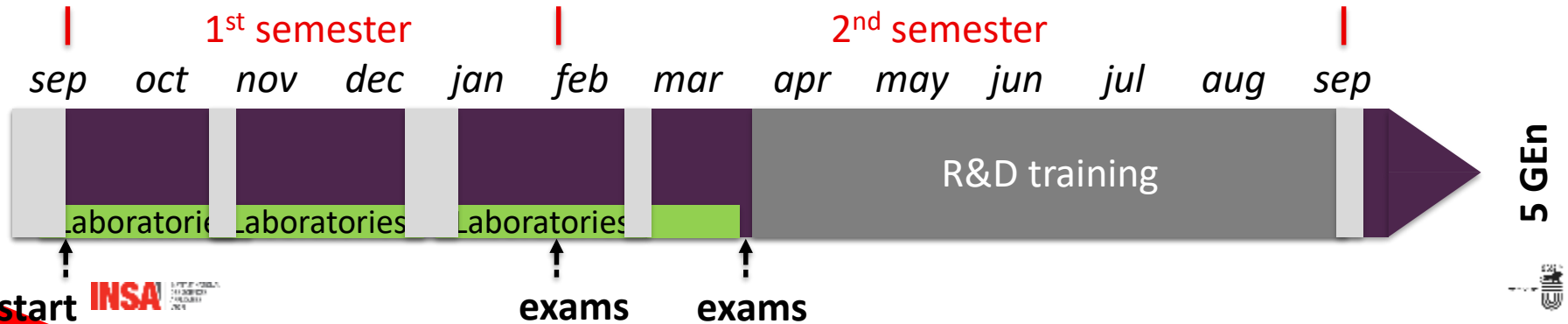
- **Energy & Process engineering**
combustion, hydraulics, fluid dynamics, thermodynamics, heat and mass transfer
- **Environmental sciences**
key issues and concepts, treatments of solid waste, liquid and gas treatment, climate and energy
- **Engineering tools**
mathematical and numerical tools, statistics, physical measurements, regulation
- **Social sciences and humanities**
GEnEPI project, foreign languages, sports



A three year academic program

The second year: application to systems

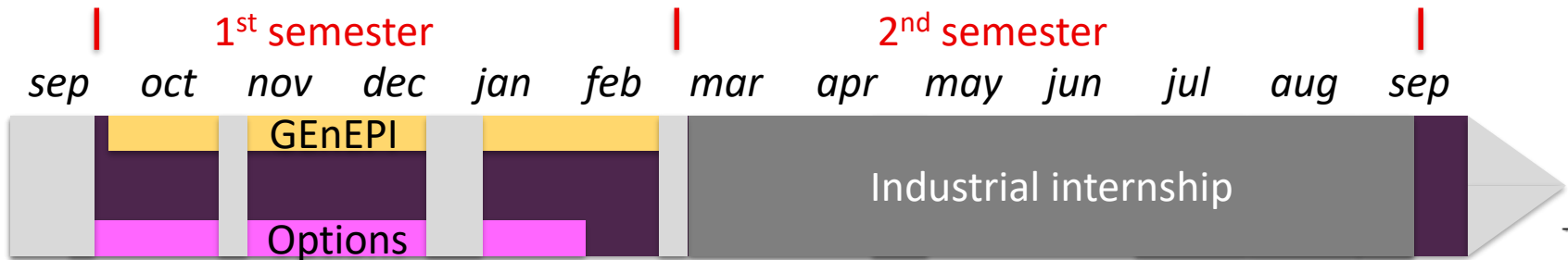
- **Energy systems**
thermal machines, HVAC, building energy performance, electrical machines
- **Chemical engineering for energy and environment**
separation processes, heat exchangers, chemical reaction engineering, biological processes
- **Engineering tools**
numerical modelling, CFD software, advanced regulation systems, process simulation software
- **Social sciences and humanities**
Human and social sciences, foreign languages, sports
- **Research and development training period**



A three year academic program

The third year: towards professionalization

- **Energy sources**
nuclear and fossil energies, renewable energies, network & optimization, energy markets and energy law
- **Tools and methods for energy and environmental analyses**
carbon balance, LCA , quality management systems, environmental economics, steering and financing of projects
- **Social sciences and humanities**
GENEPI project, sports, study project in humanities, professional project
- **Options**
intelligence and energy efficiency / advanced project management / advanced waste manage.
- **Industrial internship**

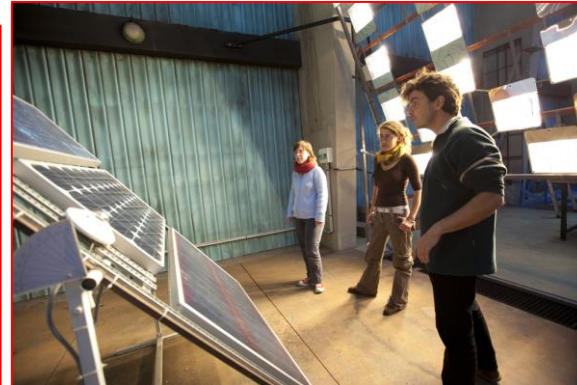


Practical applications

Education



40 experimental benches on 5 labs:
electrical machines, energy, heat engines, regulation,
unit operations of chemical engineering



Incoming exchange students

About 35-40 incoming exchange students / year

+ about 20 students coming from other departments to take one or two courses

- Europe (Germany, Spain, Italy, the Netherlands, Sweden, UK, Finland, etc.): ~ 25
- Latin America (Mexico, Chile, Colombia, Brazil, Argentina, etc.): ~ 10
- Others: Burkina Faso, India, China, Republic of Korea: ~ 5

Incoming exchange students

International

Courses taught in English

Fall semester

Challenges & opportunities in environmental management: 4 ECTS

Wastewater treatment: 3 ECTS

Energy transition and circular economy: waste & biomass resources: 5 ECTS

Energy transition: from fossil fuel to renewable energy: 8 ECTS

Energy optimization: 2 ECTS

Numerical analysis using EXCEL/VBA: 5 ECTS

Numerical methods using Matlab: 3 ECTS

Spring semester

Computational fluid dynamics software: 2 ECTS

Chemical engineering simulation software: 2 ECTS

Numerical analysis using Matlab: 2 ECTS

Fall or Spring semester

Research and development project: 25 or 30 ECTS