SELECT
Y2 Specialization

Offshore Energy Systems
Instituto Superior Técnico (IST)

The Instituto Superior Técnico (IST) was created in 1911 from the division of the Industrial and Commercial Institute of Lisbon. Alfredo Bensaúde, an Engineer.

First Engineering courses at IST:
- Mining
- Civil
- Mechanical
- Electrical
- Chemical-Industrial
IST – Facts & Numbers

- Foundation: 1911
- Students:
  - 1st cycle: 56%
  - Masters and PhD: 44%
  - International (M.Sc): 13%
  - International (PhD): 21%
- Teaching Language (M.Sc, PhD): Eng
- Faculty: 853
- Staff: 515
- Budget:
  - Total (52% own resources): 108 M€
## IST – Facts & Numbers

<table>
<thead>
<tr>
<th>Employability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>43%</td>
<td>of students get a job before graduation</td>
</tr>
<tr>
<td>86%</td>
<td>of students get a job within six months after graduation</td>
</tr>
<tr>
<td>79%</td>
<td>of 2nd cycle students who found a job in their field of expertise.</td>
</tr>
</tbody>
</table>

# Academic Networks

<table>
<thead>
<tr>
<th>Network</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLUSTER</td>
<td>Consortium Linking Universities of Science and Technology for Education and Research</td>
</tr>
<tr>
<td>TIME</td>
<td>Top Industrial Managers for Europe</td>
</tr>
<tr>
<td>CESAER</td>
<td>Conference of European Schools for Advanced Engineering Education and Research</td>
</tr>
<tr>
<td>CINDA</td>
<td>Centro Interuniversitario de Desarrollo</td>
</tr>
<tr>
<td>SEFI</td>
<td>European Society for Engineering Education</td>
</tr>
<tr>
<td>MAGALHAES</td>
<td>European, Latin America and Caribbean Universities consortium</td>
</tr>
<tr>
<td>ATHENS</td>
<td>Advanced Technology Higher Education Network</td>
</tr>
</tbody>
</table>
Partnerships

TU/e, Technische Universität Eindhoven, University of Technology

TÉCNICO LISBOA

KIT, Karlsruhe Institute of Technology

Aalto University

Universitat Politècnica de Catalunya

École Polytechnique Fédérale de Lausanne

Grenoble INP

Istituto Superiore di Sanità

TRINIITY COLLEGE DUBLIN

Université catholique de Louvain

Georga Institute of Technology

Poli-USP

Tsinghua University

École Polytechnique Montréal

Institute of Technology

KIC InnoEnergy

Associate Members
Joint degrees

MIT
(Massachusetts Institute of Technology)

CMU
(Carnegie Mellon University)

UT/Austin
(University of Texas at Austin)

EPFL
(Ecole Polytechnique Federale de Lausanne)

TIME
Politecnico di Milano; Università Padova; Università Trento; Moscow; Écoles Centrales Paris, Lille, Lyon, Nantes.

CLUSTER
KTH (Sweden), UPC (Spain), AALTO (Finland), UCLouvain (BE)

and MORE ..... 
Universidade de São Paulo, TUDelft, EP Montreal, SupAero, UFRJ, UniCAMP, KIC Rene, KIC CleanCoal, KIC ENTECH, KIC Select

10/6/2016 Indigenous Superior Técnico
Research@IST

- Production Engineering and Technologies
- Information & Communication Technologies
- Energy, Environment and Mobility
- Technology Management & Entrepreneurship
- Materials Microtechnology Nanoscience
- Applied Life Sciences
- Basic Sciences
Topics - Energy, Environment and Mobility

- Energy and Environmental Engineering
- Sustainable Development
- Territorial Management
- Transportation Systems
- Urban Planning and Construction
Technology Transfer
SELECT specialization offered by IST

OFFSHORE ENERGY SYSTEMS

MSc in Energy Engineering and Management (MEGE)
KIC Masters

https://fenix.tecnico.ulisboa.pt/cursos/mege
Specializations (MEGE)

- Fuels
- Energy Conversion
- Energy Efficiency
- Nuclear Energy
- Renewable Energy

SELECT Y2 Specialization @IST
OFFSHORE ENERGY SYSTEMS
MSc in Energy Engineering and Management

Total of 120 ECTS

120 ECTS

- Harmonization: 18-24 ECTS
- Propaedeutic: 0-18 ECTS
- Common: 16.5 ECTS
- Complementary: 6-18 ECTS
- Specialized: 24-36 ECTS
- Free: 0-9 ECTS
- Project in Energy Eng. and Management: 12 ECTS
- Master Dissertation: 30 ECTS

OFFSHORE ENERGY SYSTEMS

SELECT Y2 Specialization @IST
MSc in Energy Engineering and Management

Departments involved:

- Chemical Engineering
- Civil Engineering
- Electrical and Computer Engineering
- Engineering & Management
- Mechanical Engineering
- Physics
MSc in Energy Engineering and Management

Provides cross training in *Energy Engineering and Management*, ensuring a sound scientific basis for the competences required for professional qualification in the energy field.

☑ This course is fully approved by the accreditation authorities.
MSc in Energy Engineering and Management

• More than 120 students currently enrolled
• ~75% are international students
## OFFSHORE ENERGY SYSTEMS – Core courses

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offshore Wind Energy</td>
<td>Decision Support Models</td>
</tr>
<tr>
<td>Biofuels</td>
<td>Hydromineral and Geothermal Resources</td>
</tr>
<tr>
<td>Photovoltaic Solar Energy</td>
<td>Wave Energy</td>
</tr>
<tr>
<td>Hydropower</td>
<td>Marine Current &amp; Tidal Energy</td>
</tr>
<tr>
<td>Solar Thermal Energy</td>
<td>Electrochemistry and Energy</td>
</tr>
<tr>
<td>Waste to Energy</td>
<td></td>
</tr>
</tbody>
</table>

| &                                              |                                          |
|**Free Optional** (1st or/and 2nd semest.)     | 4.5-7 ECTS                                |
|**MSc Thesis** (1st or 2nd semest.)            | 30 ECTS                                   |
SELECT Y2 Specialization @IST OFFSHORE ENERGY SYSTEMS

<table>
<thead>
<tr>
<th>Optional 1</th>
<th>Semester</th>
<th>Credits</th>
<th>Mark Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable Sources and Distributed Power Generation</td>
<td>S</td>
<td>6.0</td>
<td>C - 63.00 - AW - 105.0 - T - 165.0</td>
</tr>
<tr>
<td>Renewable Energies</td>
<td>S</td>
<td>4.5</td>
<td>C - 49.00 - AW - 77.0 - T - 126.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Optional</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Biofuels</td>
<td>S</td>
<td>6.0</td>
<td>C - 63.00 - AW - 105.0 - T - 165.0</td>
</tr>
<tr>
<td>Photovoltaic Solar Energy</td>
<td>S</td>
<td>6.0</td>
<td>C - 56.00 - AW - 112.0 - T - 165.0</td>
</tr>
<tr>
<td>Solar Thermal Energy</td>
<td>S</td>
<td>6.0</td>
<td>C - 56.00 - AW - 112.0 - T - 165.0</td>
</tr>
<tr>
<td>Hydropower</td>
<td>S</td>
<td>6.0</td>
<td>C - 63.00 - AW - 105.0 - T - 165.0</td>
</tr>
<tr>
<td>Electrical Machines</td>
<td>S</td>
<td>6.0</td>
<td>C - 63.00 - AW - 105.0 - T - 165.0</td>
</tr>
<tr>
<td>Electrochemistry and Energy</td>
<td>S</td>
<td>6.0</td>
<td>C - 56.00 - AW - 112.0 - T - 165.0</td>
</tr>
<tr>
<td>Marine Current &amp; Tidal Energy</td>
<td>S</td>
<td>6.0</td>
<td>C - 47.60 - AW - 112.0 - T - 159.6</td>
</tr>
<tr>
<td>Wave Energy</td>
<td>S</td>
<td>6.0</td>
<td>C - 54.60 - AW - 112.0 - T - 166.6</td>
</tr>
<tr>
<td>Offshore Wind Energy</td>
<td>S</td>
<td>6.0</td>
<td>C - 49.00 - AW - 113.0 - T - 167.0</td>
</tr>
<tr>
<td>Pump and Hydro Power Systems</td>
<td>S</td>
<td>6.0</td>
<td>C - 42.00 - AW - 126.0 - T - 167.0</td>
</tr>
</tbody>
</table>
Courses taken so far by SELECTers@IST

- Offshore Wind Energy
- Energy Storage
- Hydromineral and Geothermal Resources
- Public Policies for Energy
- Power Systems Network Analysis
- Economics and Energy Markets
- Engineering Economics

- Hydropower
- Waste to Energy
- Sustainable Development, Energy and Environment
- Biofuels
- Ambient Intelligence
- Electrochemistry and Energy
- Photovoltaic Solar Energy
- Solar Thermal Energy
SELECTers@IST

• 2012/2013
  - Felix Diawuo
  - Linkesh Diwan
  - Pooja Vijay
  - Rachel Walsh
SELECTers@IST

• 2013/2014
  - Davide Lora
  - Johannes Georges
  - Judith Hartl
  - Tillman Laux
  - Scott Bryant
SELECTers@IST

• 2014/2015
  - Seren Coşkun
  - Martina Longhini
  - Maximillian Isensee
SELECTers@IST

- 2015/2016
- Francesco Guzzi
- Ida Mannoh
- Marco Merante
- Robin Merl
SELECTers@IST

• 2016/2017

- Alex Stark
- Alex Kritikos
- Carmine Piparo
- Greg Zamojski
- Taka Ueda
- Anna Reeves
- Simon Hoffmann
- Davide Liviero
- Rachel Sadok

10/6/2016
Instituto Superior Técnico
Thesis

THE INCLUSIVE ENERGY SYSTEMS

Fraunhofer

AGH

SOLARUS

SWECO

IRENA

TÉCNICO LISBOA

idMEC

endeva

WavEC

Sustainable engineering and design

International Renewable Energy Agency

Offshore Renewables

enterprise solutions for development
Thesis

- “Design and Construction of a Test Rig Prototype to Execute the Full-Battery Runtime Test for Pico-PV Systems”
- “WindFloat design for different turbine sizes”
- “Road to Renewables. Comparing the future of renewable energy deployment in the context of national development levels”
- “Phase change material product design. Market and business development assessment in the food industry”
- "Plasma-Based Recycling of Carbon Dioxide“
- “Next generation of refrigerants for residential heat pump systems”
KAVAs@IST

- “Entrepreneur in a week” (September)

- “Alqueva Dam” – Technical visit (December)

- “Solar platform” – Technical visit & seminars (March)

- “WindFloat” (offshore solution) – Technical visit (May/June)
Contacts

• Local SELECT coordinator: Duarte de Mesquita e Sousa (duarte.sousa@tecnico.ulisboa.pt)

• MSc in Energy Engineering and Management coordinator: Prof. José Falcão de Campos (falcao.campos@tecnico.ulisboa.pt)

• IST/KIC Educational management: Marta Abrantes (marta.abrantes@tecnico.ulisboa.pt)

• Administrative support (NMCI): Graça Pereira (gracapereira@tecnico.ulisboa.pt)
Instituto Superior Técnico (IST)

**INSTITUTO SUPERIOR TÉCNICO** was established with the objective of providing the country with Engineers with know-how and the necessary skills to succeed in their professional lives, while simultaneously contributing to the economic development of Portugal.

*Alfredo Bensaúde*

*First Director of IST, 1911*
IST video
https://www.youtube.com/watch?v=EGue8EwE3ml
2017/2018
You are welcome to Lisbon & IST!
LINKS

Master in Energy Engineering and Management (MEGE):
https://fenix.tecnico.ulisboa.pt/cursos/mege

MEGE courses (all):
https://fenix.tecnico.ulisboa.pt/cursos/mege/curriculo

IST webpage:
https://tecnico.ulisboa.pt/en/