The ESB Master Program is about Energy and Buildings with a special focus on Solar Energy, from fundamental concepts to applications, modelling and optimization. Courses are conducted in English.

OBJECTIVES

- Train scientists capable of solving complex problems relating to the management, design and optimization of multiple-input technological systems.
- Develop the expertise and skills needed to carry out research into energy management, environmental protection, the use of innovative materials and the production of innovative structures as part of a global policy of sustainable development.

SKILLS AND EXPERTISE

- Design and implement complex technological systems that are self-regulating (or autonomous) and that protect the environment improved energy efficiency and the use of specific methods, processes and materials.
- Expertise in associated tools (modeling, simulation, measurement, information management).
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<thead>
<tr>
<th></th>
<th>Master ESB</th>
<th>ECTS</th>
<th>Lectures</th>
<th>Tutorials</th>
<th>Labs</th>
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<tbody>
<tr>
<td>S7</td>
<td><strong>UE1 : Mathematics</strong>&lt;br&gt;Data analysis and reliability of numerical models, Numerical Methods</td>
<td>7</td>
<td>16.5</td>
<td>37.5</td>
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<td></td>
<td><strong>UE2 : Building Science and Technology</strong>&lt;br&gt;Combustion, Heat transfer in buildings, HVAC</td>
<td>11</td>
<td>34.5</td>
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<td></td>
<td><strong>UE3 : Experimental methods and Bibliography research</strong>&lt;br&gt;Measurements (flows, temperature, pressure...) and experimental methods (database), Thematic bibliographic work (self-study)</td>
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<td>S8</td>
<td><strong>UE1 : Energy</strong>&lt;br&gt;Energetics (advanced thermodynamics and heat transfers), Fluid engineering applied to energy (hydraulic and marine)</td>
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<td><strong>UE2 : Systems</strong>&lt;br&gt;Control for building applications, Innovative energy systems (Fuel cell, CHP)</td>
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<td><strong>UE3 : Project</strong>&lt;br&gt;Group research project</td>
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<td>S9</td>
<td><strong>UE1 : Solar Energy</strong>&lt;br&gt;Solar thermal energy, Solar Photovoltaic</td>
<td>8</td>
<td>36</td>
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<td><strong>UE2 : Building and renewable energies</strong>&lt;br&gt;District heating and smart grids / practical work, Energy issues, labels, regulation and transient simulations</td>
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<td><strong>UE3 : Modeling and optimization</strong>&lt;br&gt;Advanced building modeling (heat and mass transfer), Numerical tools (CFD, systems, optimization)</td>
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<td><strong>UE4 : Project</strong>&lt;br&gt;Technical or R&amp;D Project</td>
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<td>S10</td>
<td><strong>UE1 : Internship</strong>&lt;br&gt;Master thesis (Research or Industrial)</td>
<td>30</td>
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