

Introduction to the power grid and market of electricity

Electricity is central to many parts of life in modern societies, and will become even more so as its role in transport and heating expands through technologies such as electric vehicles and heat pumps. The current global energy crisis has placed electricity security and affordability high on the political agenda in many countries; its relevance goes beyond energy and climate issues, since electricity supply impacts economies, regional development, the budgets of businesses and households, and many other areas.

Period:	Period 1
Course coordinator:	Prof. David Sanchez - University of Seville - email: ds@us.es
Lecturer:	To be decided
Educational management portal:	moodle.unitus.it
Objectives:	Familiarise the students with the characteristics of the power grid in different regions worldwide as well as with the mix of power generation technologies. Familiarise the students with the characteristics of the electricity market. Familiarise the students with different incentive schemes to accelerate the adoption of renewable energy technologies for power generation.
Programme:	<ul style="list-style-type: none"> ● Characteristics of the power grid: topology, requirements, operation of the system ● Variability of the energy mix in different regions worldwide ● Operation of the electricity market: wholesale market of electricity, ancillary services ● Using incentives to promote the installation of renewable energy technologies for power generation
Pre-requisites:	<p>i) Fundamentals of Thermodynamics, in particular energy conversion systems for power generation.</p> <p>ii) Fundamentals of fluid dynamics (turbomachinery would be useful, though not mandatory)</p>
Study material:	<ul style="list-style-type: none"> ● Lecture slides; ● Reading material; ● Additional literature handed out during the course / made available via Blackboard/Moodle.