Energy – Study Guide

What is energy?

- Understanding the meaning of the first and second law of thermodynamics in energy production
- Knowing the concepts of energy, power, energy vectors, energy balances and energy systems

Thermic energy sources

- Recognizing primary and secondary sources of energy
- Understanding the link between energy production and climate change
- Knowing the principles of combined cycle power (CCPP) and combined heat and power (CHP)
- Having an idea of orders of magnitude and efficiency of the different production technologies
- Knowing the different types of gas used in the energy system

Renewable energy sources

- Understanding the basic principles of renewable energy production

Energy cost

- Knowing the concepts LCOE, dunkleflaute and duck-curve
- Understanding the consequences of unbalances between production and consumption

Energy networks

- Understanding the difference between the meshed high voltage grids and local radial distribution grids.
- Understanding the added value of adding a communication layer to the energy networks.

Energy efficiency

- Having an idea of the relative parts of industry, transport and built environment in energy consumption
- Understanding the direct and indirect rebound effects of energy saving measures

Energy consumption

- Understanding how the energy cconsumption can be organized more sustainable
- What might be the role of hydrogen?

Energy storage

- Understanding the key role of lithium batteries in the energy transition
- Knowing different storage technologies

Energy markets

- Understanding the difference between old and new tarriff schemes for energy

Energy policies

- What is the emission trading system?