Course	**Solar Economy and Smart Grids, 3 ECTS credits**
Year and period	M.Sc. 1−2; 5−9 August 2019
Teacher(s)	Christian Breyer, Professor, LUT University Jarmo Partanen, LUT University Olli Pyrhönen, Professor, LUT University Pasi Vainikka, Docent, LUT University Jouni Keronen, Docent, CEO Climate Leadership Council
Person(s) in Charge	Christian Breyer, Professor, LUT University
Aims	After having passed this course the student will be able to: - understand the basic processes of Solar Economy and Smart Grids, - recognise the key properties of global climate challenges, solar economy, electricity market models, wind and solar power technologies, energy storage/ sector bridging technologies and the smart grid concept, - recognise the most important aspects, chances and challenges of transition from existing energy systems to sustainable energy systems.
Content	During the course the student will become familiar with the properties and application areas of: 1. Climate change 2. Solar economy 3. Wind power technology 4. Solar power technology 5. Energy Storages 6. Power-to-X (gas, fuels, chemicals) 7. New electricity market 8. Demand response 9. Smart Grid concept The course is also suitable for doctoral studies.
Modes of Study	- Introductory lectures and exercises 24 hours - Team work and a limited project work 20 hours - Presentations of the results of the team work/ project work 8 hours - Independent work is needed 26 hours Total workload 78 hours

Evaluation	Final grade 0 – 5. Evaluation: - project work 70 % - presentation 30 %
Study Materials	Lecture notes
Prerequisites	Previous studies either in electrical engineering, environmental engineering or energy engineering are recommended.