

ENG-634

## Field-Based Insights into the Implementation of Renewable Energies (Summer School Mont-Soleil)

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Cursus	Sem.	Type
Energy		Opt.

Language of teaching	English
Credits	2
Session	
Exam	Project report
Workload	60h
<b>Hours</b>	<b>30</b>
Courses	27
Exercises	3
<b>Number of positions</b>	<b>50</b>

### Frequency

Every year

### Remark

Postponed to Summer 2021

### Summary

The PhD/Summer school Mont-Soleil is dedicated to Advanced Methods and Technologies for intergrated Renewable Energies. The extra-muros organisation of the course will include Field-Based Insights into the Implementation of renewable Energies. Total 19 lecturers 28 hours of lectures.

### Content

- Climate change and the 1.5 goal of the Paris agreement - Stocker
- Solar energy and its grid integration
- Swiss Energypark, Mont-Soleil PV plant, and airborne measuring techniques - Haussmann/Minder/Lanz, Schott
- Components for the grid integration of renewable energies - Haussmann
- Planning and control of active power distribution networks - Paolone
- Power electronic converters for Renewable Energy Sources - Dujic
- Power quality in distribution grids related to RES and power electronics - Hoeckel
- Wind energy and hydropower
- Introduction to wind energy in Switzerland - Vollenweider
- Advanced methods in the project development of wind power plants - NN ETHZ
- Wind assessment in complex terrain - Koller
- Visit of Juvent windpark - Vollenweider
- Introduction to small hydropower in Switzerland - Bölli
- Excursion and visit to a hydropower plant at the Doubs river
- Energy storage and advanced technologies for RES
- Energy storage – systems and components - Rufer
- Battery modeling - Hutter

- Advanced technologies for High Efficiency PV Generators - Boccard
- Solar vessel - Ochsenbein
- Data analysis in the field of renewable energies - Ghorbel
  
- Closing session of the summer school
- Summary and results of the summer school (with diploma ceremony)
  
- Post-conference program
- Visit to High Altitude Research Station Jungfrauoch
- High Altitude PV technology, visit of the plants on Jungfrauoch

### **Keywords**

Renewable energy and its grid integration, Planning and control of Active Power Distribution Networks, Energy Storage, Advanced Technologies (PV+Wnd)

### **Learning Prerequisites**

#### **Required courses**

General knowledge on energy and systems at Master level

### **Teaching methods**

By the end of the course, the student must be able to understand the most important issues and field constraints on the integration of renewable sources and storage. The integration includes the energy management interface (power electronics) the storage and the control methods of the power of Active Power Distribution Networks.

### **Resources**

#### **Websites**

- [http://www.societe-mont-soleil.ch/summer-phd-school-mont-soleil.html?file=tl\\_files/content/Dokumente/190201\\_Program\\_PhD\\_Sum](http://www.societe-mont-soleil.ch/summer-phd-school-mont-soleil.html?file=tl_files/content/Dokumente/190201_Program_PhD_Sum)