



COURSE INFORMATION

SOLNET PhD Course **System Integration of solar thermal plants and** **Computational Thermal Engineering** February 4th – February 7th 2014

Deadline for Accommodation Reservation: more details in December 2013

Deadline for Application: November 20th 2013

About SOLNET

Shine 2 - Solar Heat Integration Network – is a coordinated international PhD education program on Solar Thermal Engineering. It is a Marie Curie Initial Training Networks under the European Union FP 7 from 2013 – 2017. Such a PhD School was held already twice and was a high success.

About this Course

This course will give 5 ECTS credit points and is offered within the official PhD courses of Innsbruck University. In order to get an official certificate for the course the student has to register as “außerordentliche Studierende”. Details on this procedure will follow.

The course is limited to 30 course-participants.

The course consists of two main elements:

- **System integration of solar thermal plants**
- **Computational thermal engineering**

The aim of the course on **system integration** is to show the interaction of different elements in a solar thermal system. The topics include components, guidelines, characterization, analysis of applications, hydraulics, control systems, dimensioning and optimization, design exercise and an excursion to built examples. The different elements are solar collector, solar loop and its components, storage, auxiliary heater, building and space heating system, domestic hot water demand, the climate and the control system. The course should give insight in how to optimize these elements with respect to their function in the system. “Very good components can be put together to a very bad system”.

In the **computational thermal engineering** lecture the following items will be addressed:

- Overview on the finite difference method and the stability of different procedures
- Simulation approaches to transient heat conduction and heat transport including boundary conditions
- Simulation of tubes, heat stores (Water and PCM materials)

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Der Stiftungslehrstuhl „Energieeffizientes Bauen mit spezieller Berücksichtigung des Einsatzes Erneuerbarer Energien“ wird von der Standortagentur Tirol und der Universität Innsbruck getragen

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- General description of modules for a simulation
- Preprocessing, processing, postprocessing, how to detect errors
- Exercise (simulation of the same plant with different simulation tools)

Dates and Timetables (tentative, not fixed yet)

SHINE PhD students are expected to arrive on Sunday-evening, February 2nd, or early Monday morning, February 3rd, students just visiting the course but out of SHINE 2 may arrive on February 3rd afternoon

Day	Morning	Afternoon	Evening
Monday 3rd February	Kick Off meeting of SHINE 2	Kick Off meeting of SHINE 2 Get together course participants	SOLNET Dinner
Tuesday 4th February	Excursion (options: TISUN, roboter based solar collector production, SICO: Solar collectors and PV plants company, large solar installations at Passive-Multifamily houses, PV-plant in the mountains)		
Wednesday 5th February	Seminar on Systems Integration (Part 1, Streicher)	Seminar on Systems Integration (Part 2, Streicher)	
Thursday 6th February	Seminar on Systems Integration (Part 3, Streicher)	Seminar on Systems Integration (Part 4, Streicher)	
Friday 7th February	Seminar Computational Thermal Engineering (Streicher)	Seminar Computational Thermal Engineering (Streicher)	Roundtrip through Labs of UIBK
Sat / Sun 8th / 9th	Voluntarily: Mountain tour (please bring mountain boots and cloth)		
10th to 15th	TRNSYS course with Chris Bales, SERC at the University of Innsbruck		

Course Application

Application deadline is November 20th 2013 (**check also deadline for accommodation reservation!**). In order to be able to participate in this course, all applicants (SOLNET PhD or not) must do the following steps in this order:

1. Send an email to silke.habel@uibk.ac.at with your name, email-address, name of Institute, stating that you would like to participate in this course
2. Complete the application form for SolNet courses, available at www.solar.uni-kassel.de/solnet.
3. If you managed to register properly, please send another mail to silke.habel@uibk.ac.at

Special Requirements for Applicants

Applicants must be in possession of a University or University of Applied science Master in a technical direction (preferably, physics, mechanical or chemical engineering). Please send a copy of your master's degree, electronic or hardcopy, to:

Univ. Prof. DI Wolfgang Streicher
 Institut für Konstruktion und Materialwissenschaften
 Arbeitsbereich Energieeffizientes Bauen

Technikerstrasse 13
6020 Innsbruck, Austria
wolfgang.streicher@uibk.ac.at

All accepted applicants will have to prepare a paper on a topic given at the course in order to get a certificate for their ECTS credits (PhD students present their work). Further information will be given after acceptance of your application.

SOLNET PhD should bring a Laptop with a licensed installation of solar thermal simulation tool (TSOL, POLYSUN, TRNSYS or similar). For Windows XP the free of charge Software SHWwin (in German language) can be installed. It will NOT run on Windows 7 Systems.

Accommodation

More detailed information in December 2013

Visa

Those who hold a Passport of the European Union or are in the possession of a valid Schengen-Visa do definitely not need an extra Visa to travel to Austria. Others please check the website <http://www.bmi.gv.at/einreise/> or call the embassy of your home country for Visa-requirements.

Cost

The registration fee at the University of Innsbruck is only the "ÖH-Beitrag": 18,- €. However, you must pay for your accommodation, meals, etc.