2016 International Joint Graduate Course on Sustainable Energy

Participants:
  Shanghai Jiao Tong University, China (Host)
  University of Maryland, College Park, U.S.A.
  Hamburg-Harburg, Germany
  Korea University, South Korea

Date:       July 18th-29th, 2016

Location:   School of Mechanical Engineering
            Minhang Campus, Shanghai Jiao Tong University
            Shanghai, China
COURSE SYLLABUS

INTERNATIONAL JOINT GRADUATE COURSE
JULY 18-29, 2016

SCHOOL OF MECHANICAL ENGINEERING
SHANGHAI JIAO TONG UNIVERSITY

Course Objectives:

a) Understanding of technologies for sustainable energy production, conversion and utilization

b) Understanding of limitations and opportunities

c) Gain experience in challenges and opportunities in designing sustainable energy systems

d) Develop your own vision for a future sustainable energy scenario and for the path that gets us there.

Time & Place: July 18-29, 2016
School of Mechanical Engineering
Minhang Campus, Shanghai Jiao Tong University
Shanghai, China, details to be announced.

Course Language: English

Textbooks

1. David J.C. MacKay, Sustainable Energy – without the hot air. Free on Internet

Recommended Texts:

Course Outline

- Impact of Energy Conversion on Environment
- Energy Systems Overview
- Energy and Economics
- Efficiency Measurement
- Solar Energy
- Wind-turbines
- Bio-fuels
- Energy Storage Options
- Net-Zero-Energy House Design
- Ocean Energy
- Current energy situation in China

The above topics will be taught and/or developed by student groups and be graded based on quizzes and homework projects

- Student Presentations (Final selection of topics will be made jointly in class)
- Laboratory exercise
- Excursion to a renewable energy plant and smart energy building in Shanghai

Grading:
Quizzes (30%)
Presentations (20%)
Homework Reports (50%)

Due Dates:
The course has no final exams. Each assignment including report and presentation must be submitted through email to the instructor and uploaded to the Blackboard no later than 20:00 (8 p.m.) on the due date.

Expectations for Students:
Each student is expected to be actively involved in group work including writing reports and presentations. A peer evaluation will be conducted to determine the participation and contribution of each member to the group work. Peer evaluation results will be applied to each student’s grade.
**SJTU campus**

**Method for Communication with Students Outside of the Classroom**

Any cancellation of class, change of classroom or other timely announcement will be provided to students through email as early as possible.

**Emergency Protocol**

Classes will be cancelled in case of an emergency that closes the University. If the emergency lasts for an extended period of time, means of continuing or completing the course will be sent to students via email.

**Copyright Notice**

Course material may be under copyright protection. Students may not copy and distribute such materials except for personal use and with the instructor’s permission.

**Accommodations**

All participated students will pay their own accommodations by themselves. SJTU will help to get student dormitory which will reduce the cost significantly, detailed information will be provided in the near future. The food in SJTU is usually very cheap, about 30 RMB Yuan per day.

**Students with Disabilities**

The course will provide appropriate accommodations for students with disabilities. To receive the accommodations, students must first have to inform us about the disabilities...
Main instructors

The following instructors from Shanghai Jiao Tong University, Hamburg University of Technology and University of Maryland will mainly instruct students. Each instructor will teach a part of the lectures. Additional some lectures from other departments of SJTU and from the partner universities of this course will be involved.

- Dr. Ruzhu Wang (rzwang@sjtu.edu.cn) (Teaching date to be determined)
- Dr. Gerhard Schmitz (schmitz@tuhh.de) (Teaching date to be determined)
- Dr. Reinhard Radermacher (raderm@umd.edu) (Teaching date to be determined)

Dr. WANG Ruzhu (R. Z. Wang), is a professor in Mechanical Engineering, Shanghai Jiao Tong University. He holds PhD in Refrigeration and Cryogenics, with 25 years teaching and researching experiences. He has published 9 Books and about 260 international journal papers, his h index is 40 at the moment. His contributions include adsorption refrigeration, heat pumps, CCHPs and solar energy systems, heat transfer to superfluid helium, and green building energy systems. Prof. Wang is currently the vice president of Chinese Association of Refrigeration, Deputy Editor-in-Chief of Energy, Regional editor-International Journal of Refrigeration. He had been awarded as model teacher of China, and National Labor Model.

Dr. Reinhard Radermacher is a Professor in Department of Mechanical Engineering, University of Maryland, U.S.A. He holds a Ph.D. in Physics. He is an internationally recognized expert in working fluids for energy conversion systems; in particular heat pumps, air-conditioners and refrigeration systems. His work has resulted in over 150 publications, including three books he co-authored, numerous invention records and 10 patents. He was a visiting scientist and NATO scholar at the National Institute of Standards and Technology before joining the University of Maryland. He currently serves as the Editor for the ASHRAE HVAC&R Research Journal.

Dr. Gerhard Schmitz is Professor for Thermodynamics in the Department of Mechanical Engineering at Hamburg University of Technology. He holds a Ph.D. in Mechanical Engineering and has 30 years of research experience in energy engineering, including 11 years of industrial R&D experience. His research focuses on modeling of complex energy systems with Modelica, air conditioning systems for buildings and vehicles and humidity transport phenomenons. Publications of Dr. Schmitz are listed under http://www.tuhh.de/tt/veroeffentlichungen/wv-schmitz.de.html

6. Grading and Credit

- Number of credits for each course in UM: Three credits according the European Transfer Credit System (ECTS)
- Other students: Students from other universities should contact their advisor Study Abroad Office for detailed information.
What work is expected of the student before the course?
Will be given later.

While in the course: Students will attend class for 8 hours a day for 10 days. A typical class day will have four hours of instruction and four hours of in-class projects in mixed teams. It is expected that students will use an hour or two in the evening for private study.

In-country transportation

Pudong Airport (Shanghai, China)
Upon arrival at Pudong Airport, after collecting your luggage, proceed to the Metro line 2, transfer to line 1 at People Square station, transfer to line 5 at Xinhuang station and go off at Dongchuan road station and then take a taxi following the map which will be delivered on time before the course starts. Now there is also a shuttle bus between PVG and SJTU Minhang campus. In case of troubles please call: +8613671601963 for assistance.

Taxis
Taxis are available at the exits of each terminal of Pudong air port, the trip to SJTU Minhang campus is around 180 RMB Yuan.

Visitor Information

For visitor information in regard to Shanghai and environment look to

http://www.meet-in-shanghai.net/