2024 International Joint Graduate Course on Sustainable Energy

Participants:

Shanghai Jiao Tong University, China (Host)

Waseda University, Japan

Korea University, South Korea

University of Maryland, U.S.A.

Hamburg University of Technology, Germany

Date: July 22 – August 04, 2024

Location:

Minhang Campus, Shanghai Jiao Tong University

Shanghai, China

Course Objectives: Sustainable Energy Production, Conversion, Utilization, and Recovery

- Gain understanding of production, storage, conversion and utilization of sustainable energy.
- Understand limitations, challenges, and opportunities.
- Gain experience in designing sustainable energy systems.
- Develop own vision for a future sustainable energy scenario and a strategic plan.
- Learn about assessing and enhancing sustainability of current energy resources.

Main instructors

Instructors from Shanghai Jiao Tong University, Waseda University, Korea University, Hamburg University of Technology, University of Maryland, as well as visiting experts from Chinese industry, will guide the students.

Dr. Ruzhu Wang (rzwang@sjtu.edu.cn)
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Course Subjects / Outlines

- Solar thermal and sorption systems
- Solar PV
- Renewable synthetic fuels
- Wind energy
- Ocean energy and Nuclear energy
- Air as ultimate medium for power, cooling, heating, and storage cycles
- Heat storage
- Battery
- Fuel cell
- Air-conditioning demand and energy efficiency
- Desiccant-assisted Air Conditioning systems
- Heat pumps for heat decarbonization
- Net-zero-energy building
- Energy systems
- Waste heat recovery
- Carbon capture
- Other subject developments presented by visiting members from the industry.

These topics will be then developed in group work by the students. Grading is based on homework projects and presentations, for two assignments (Final selection of topics will be made jointly in class).

Grading

Final presentation (70%)
Homework reports (30%)

While in the course:

The students will attend classes for 8-hours per day, for 10 days. A typical class day will have lectures, in-class projects, and homework assignments.

East Gate, Minhang Campus, Shanghai Jiao Tong University

School of Mechanical Engineering, Shanghai Jiao Tong University