2025 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

2025 Host:

University of Maryland

College Park, Maryland, USA

July 21 - August 1, 2025

Monday-Friday, 8 am-5 pm

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

（Please find below information for 2024 for your reference）

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, Shanghai Jiao Tong University
Dr. Zhenyuan Xu, Shanghai Jiao Tong University
Dr. Baowen Zhou, Shanghai Jiao Tong University
Dr. Tao Ma , Shanghai Jiao Tong University
Dr. Reinhard Radermacher, University of Maryland
Dr. Gerhard Schmitz, Hamburg University of Technology
Dr. Hoseong Lee, Korea University
Dr. Niccolo` Giannetti, Waseda University/The University of Electro-Communication

Course Subjects / Outlines

（Please find below the course information for 2024 for your reference ）

- 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.

International Joint Graduate Course in Sustainable Energy Conversion & the Environment

ENME 701: Summer 2025

July 21- August 1

This intensive graduate-level engineering course brings together students from five countries to develop solutions to globally important issues.

- **Collaborate with students from Technical University of Hamburg (Germany), Shanghai Jiao Tong University (China), Waseda University (Japan), and Korea University.**
- **Understand technologies for sustainable energy production, conversion and utilization.**
- **Explore challenges in designing sustainable energy systems.**
- **Develop your own vision for a sustainable energy future.**

For more information, click here or contact Reinhard Radermacher, raderm@umd.edu