ISyE 4803 EGE Energy and Green Economy

Summer, 2026, ISyE Asia Study Abroad Program

Days: MTWR, June 3 – June 18

Time: 9:30 – 11:30, 1:00 – 3:00.

Instructors: Beng Wah ANG, Chen Zhou

Prerequisite: ISYE 3030

Course Description

The United Nations Environment Program (UNEP) defines a green economy as low carbon, resource-efficient and socially inclusive. This course focuses on the first two dimensions and, more specifically, the role of energy in a green economy transition. The needed energy system transformation and decarbonization, including the strategies to achieve them, are discussed. Fundamentals of energy demand and supply, energy efficiency, energy security, climate change, net zero emissions and sustainability are introduced. Relevant cases and examples on the application of systems analysis concepts and tools in problem formulation, analysis and solving are presented.

Course Learning Outcomes

The students, upon completion of this course, will be able to

1. Perform energy accounting, analyse energy balances, and calculate energy-related carbon emissions.
2. Analyse and evaluate energy demand and supply systems, and related low carbon and resource efficiency issues.
3. Appreciate the complexity of energy, green economy and sustainability issues, including the need to manage trade-offs.
4. Apply selected Systems Engineering and Management concepts and tools to energy, green economy and sustainability studies.

Required Course Materials

Course Notes, to be available on Canvas.

Grading Policy

This course is graded on a letter grade basis. $A \geq 90, B \geq 80, C \geq 70, D \geq 60$. The weights of graded components are below. The cut-offs may be lower but not higher.

- Test (20%)
- Two group projects (2 × 16%)
- Final examination (48%)

Description of Graded Components

Assignments: There will be 2 group projects, equally weighted at 16% each.

The test and final examination are open book and all printed materials. However, no computers or communication devices, including mobile phones.

Final: final examination is comprehensive.

USG required Course Policies

Attendance and/or Participation

You are encouraged to join the class during class if you are in a similar time zone and join the discussion.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Please review Georgia Tech's Honor Code, the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Core IMPACTS

Not applicable

Additional Georgia Tech Required Policies

Accommodation for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment

to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Collaborations, Group Work

You are allowed to work in groups on assignments, but any submission must be written in your own work. The assignments are for learning so that you can demonstrate your understanding on the test without these assistances.

Use of Generative AI

Generative Artificial Intelligence (Gen AI, or AI) has changed how we learn and work in the human-in-the-loop decision or design process. You can use Chatbots to achieve better results and to develop your own intellectual capabilities. You can also take the path of minimum effort to achieve plausible result without learning. Your own contribution during your career will depend on your own capabilities in asking good questions, solid command of fundamentals, critical thinking of the AI generated results, logical thinking to link the fundamentals to the results, and the ability to judge your final submission. The discussion in human cognition, cognitive capacity, human behavior, human decision and intellectual development in this class will help you be more conscientious about how to use these tools to improve results and your intellectual development.

In this course, you can use any AI tools for learning. However, you must report

1. Which tool and how you used to tool on which problem in what way.
2. How the use of tools helped you to better understand the fundamentals, critical and logical thinking.