

CHEG 632: Electrochemical Energy Engineering

Lecture: TR 3:30 pm-4:45 pm

Room: TBD

Instructors & Office Hours:

Professor Feng Jiao, Office: CLB 331, jiao@udel.edu, Office Hours: TBD, and by appointment

Teaching Assistants:

TBD

Course Objectives:

Renewable electricity from solar and wind will be the primary energy source for our future distributed energy and mobility system. At the foundation of that energy system are the electrochemical energy devices including fuel cells, electrolyzers and batteries. The objectives of this course are to introduce these devices and the electrochemical energy engineering principles behind them. The chemical engineering fundamentals from previous CHEG courses (e.g., mass & energy balances, thermodynamics, and mass & heat transport) will be applied to describe in mathematical terms the catalytic and mass transport processes. A particular emphasis of the course is the fundamental of electrocatalysis at the electrochemical interfaces.

Textbook:

Lecture notes and no formal textbooks are required

Grading: (tentative, the content of the midterms and final may change)

Homework (30%)

Midterm (paper + presentation, team) (30%)

Final (paper + presentation, individual) (35%)

Attendance and class participation (5 %)

The midterm exam if applicable will be given during class time in the assigned classroom. The final if applicable will occur during finals week according to the university schedule or at a specially scheduled time and location mutually agreeable.

Much of the graded material in this course is out-of-classroom. For all graded material (group or individual), any case of academic dishonesty will be dealt with strictly, following the University of Delaware's policy on Academic Dishonesty (e.g., as described at <http://www.udel.edu/judicialaffairs/ai.html>) It is the responsibility of each student to be aware of the UD policy on Academic Dishonesty, and the associated penalties for anyone violating that policy. If you have any uncertainty or question as to what constitutes academic dishonesty, please inquire with the instructors *ahead of time* so as to assure there is no confusion.