Electrochemical Engineering and Power Sources (CENG0028)

Description

Aims:
The module will introduce and develop the fundamental concepts of Electrochemical Engineering and explore their application to real world problems in chemical processing and electrochemical power sources.

The module will provide an opportunity for students to gain theoretical, practical and techno-economic knowledge of electrochemical technology.

Learning Outcomes:

On completion of this course students will be able to:
Describe a range of electrochemical technologies from theory through to application and compare the benefits of a range of electrochemical technologies;

Apply qualitative analysis techniques to understand electrochemical phenomena, analyse these results and use modeling tools to explain them;

Evaluate electrochemical technologies based on sound technical and techno-economic judgment;

Design and develop experiments to gain practical understanding of elements of electrochemistry and electrochemical engineering;

Identify problems in electrochemical technologies and construct a toolbox of theory and practice to produce solutions;

Understand the ethical and environmental dimensions of problems and issues facing chemical engineers;

Synopsis:

Standard potentials;

The Governing Equations:
Faraday Nernst and Butler Volmer;
Chlor Alkali and Electrolysis;

Key information

Year: 2018/19
Credit value: 15 (150 study hours)
Delivery: PGT L7, Campus-based
Reading List: View on UCL website
Tutor: Dr Paul Shearing
Term: Term 2
Timetable: View on UCL website

Assessment

Coursework: 10%
Coursework: 20%
Written examination (main exam period): 70%

Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk

Disclaimer: All information correct as of December 2018. Please note that aspects of the module may be subject to change. UCL will make best efforts to inform applicants of major changes.
Corrosion;
Pourbaix diagrams;

**Batteries:**
Pb, Ni cad, NIMH and Lithium batteries;

**Fuel cells:**
PEMFC and SOFC;
Fuel cells as electrolysers;
Electro-catalysis;
Capacitors and other power sources;
Modelling electrochemical power sources;
Advanced electrochemical characterization;
Chemical Engineering

Electrochemical Engineering and Power Sources (CENG0028)

Aims:
The module will introduce and develop the fundamental concepts of Electrochemical Engineering and explore their application to real world problems in chemical processing and electrochemical power sources.
The module will provide an opportunity for students to gain theoretical, practical and techno-economic knowledge of electrochemical technology.

Learning Outcomes:
On completion of this course students will be able to:
Describe a range of electrochemical technologies from theory through to application and compare the benefits of a range of electrochemical technologies;
Apply qualitative analysis techniques to understand electrochemical phenomena, analyse these results and use modeling tools to explain them;
Evaluate electrochemical technologies based on sound technical and techno-economic judgment;
Design and develop experiments to gain practical understanding of elements of electrochemistry and electrochemical engineering;
Identify problems in electrochemical technologies and construct a toolbox of theory and practice to produce solutions;
Understand the ethical and environmental dimensions of problems and issues facing chemical engineers;

Synopsis:
Standard potentials;

The Governing Equations:
Faraday Nernst and Butler Volmer;
Chlor Alkali and Electrolysis;

Disclaimer: All information correct as of December 2018. Please note that aspects of the module may be subject to change. UCL will make best efforts to inform applicants of major changes.
Corrosion;
Pourbaix diagrams;

**Batteries:**
Pb, Ni cad, NIMH and Lithium batteries;

**Fuel cells:**
PEMFC and SOFC;
Fuel cells as electrolysers;
Electro-catalysis;
Capacitors and other power sources;
Modelling electrochemical power sources;
Advanced electrochemical characterization;