

# ELECTROCHEMICAL ENGINEERING, MINOR

Requirements for a minor may be completed at any campus location offering the specified courses for the minor. Students may not change from a campus that offers their major to a campus that does not offer their major for the purpose of completing a minor.

## Program Requirements

Requirement	Credits
Requirements for the Minor	35

### Requirements for the Minor

For the minor in Electrochemical Engineering, a minimum of 35 credits is required.

A grade of C or better is required for all courses in the minor, as specified by Senate Policy 59-10 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/#59-10>). In addition, at least six credits of the minor must be unique from the prescribed courses required by a student's major(s).

Code	Title	Credits
<b>Prescribed Courses</b>		
<i>Prescribed Courses: Require a grade of C or better</i>		
CHEM 112	Chemical Principles II	3
EGEE 441	Electrochemical Engineering Fundamentals	3
ESC 455	Electrochemical Methods Engineering and Corrosion Science	3
MATH 251	Ordinary and Partial Differential Equations	4
MATSE 421	Corrosion Engineering	3
PHYS 212	General Physics: Electricity and Magnetism	4
<b>Additional Courses</b>		
<i>Additional Courses: Require a grade of C or better</i>		
Select 6 credits of the following:		6
CHE 330 or ME 300	Process Fluid Mechanics Engineering Thermodynamics I	
EME 301	Thermodynamics in Energy and Mineral Engineering	
EME 303 or CHE 220	Fluid Mechanics in Energy and Mineral Engineering Introduction to Chemical Engineering Thermodynamics	
MATSE 402	Materials Process Kinetics	
ME 320 or MATSE 403	Fluid Flow Thermodynamics of Materials	
Select 9 credits of the following:		9
EGEE 420	Hydrogen and Fuel Cells	
EGEE 436	Modern Thermodynamics for Energy Systems	
EGEE 437	Design of Solar Energy Conversion Systems	
EME 407	Electrochemical Energy Storage	
ME 403	Polymer Electrolyte Fuel Cell Engines	