

School of Management, Engineering and Technology
Department of Electrical Engineering and Renewable Energy
REE 335: Hydrogen

Catalogue Description (2009/2010):	This course will cover hydrogen production, storage, distribution, and use. Specific energy scenarios such as renewable hydrogen cycles will be explored focusing on transportation applications. The concept of hydrogen economy will be discussed in the context of global energy crisis.		
Hours/Credits: (Lecture-Lab-Total)	(2-3-3)		
Class Schedule:	Once weekly, two hour lectures, one term		
Lab Schedule:	Weekly three hour meetings, one term		
Prerequisites:	CHE 260		
Required Text:	None. Readings directed by instructor.		
Reference Text:	None		
Course Coordinator:	Slobodan Petrovic, Ph.D.		
Regular Instructors:	Slobodan Petrovic, Ph.D.		
Course Objectives:	<p>Upon completion of the course, a student should be able to demonstrate:</p> <ul style="list-style-type: none"> • Knowledge of hydrogen chemistry • Hydrogen production methods • Hydrogen storage • Hydrogen uses 		
Topics Covered:	<ul style="list-style-type: none"> • The hydrogen economy • Basic chemistry of hydrogen and hydrogen safety • Hydrogen production from natural gas • Water electrolysis and chlor-alkali electrolysis • Hydrogen storage methods • Hydrogen distribution • Hydrogen fuel cells, ICE, and gas turbines 		
Relevant Program Outcomes:	<p>(a) an ability to apply knowledge of mathematics, science, and engineering (b) an ability to design and conduct experiments, as well as to analyze and interpret data (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability (d) an ability to function on multi-disciplinary teams (e) an ability to identify, formulate, and solve engineering problems (f) an understanding of professional and ethical responsibility (g) an ability to communicate effectively (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (i) a recognition of the need for, and an ability to engage in life-long learning (j) a knowledge of contemporary issues (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (l) an ability to apply the fundamentals of energy conversion and applications (m) an understanding of the obligations for implementing sustainable engineering solutions</p>		
Required or Elective:	Elective		
Criterion 5:	Engineering Topics		
Prepared By:	S. Petrovic, Ph.D.	Updated:	April 30, 2010