

School of Management, Engineering and Technology
Department of Electrical Engineering and Renewable Energy
ENV/REE 427: Greenhouse Gas Accounting/Footprints

Catalogue Description (2010/2011):	Course topics include US and international greenhouse gas (GHG) management policies, GHG assessment methods and tools, emissions trading programs, climate risk and risk management, data and information sources, measurement standards and protocols, and related sustainability concepts and policies.
Hours/Credits: (Lecture-Lab-Total)	(3-0-3)
Class Schedule:	Weekly three hour lectures or online, one term
Prerequisites:	MTH 361, WRI 227
Required Text:	none
Reference Text:	<ul style="list-style-type: none"> World Resources Institute and World Business Council, "The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition", WRI/WBC, 2004 The Climate Registry, "General Reporting Protocol for the Voluntary Program", TCR, May 2008 Association for the Advancement of Sustainability in Higher Education, "Climate Action Planning Guide", AASHE, 2009 US Global Change Research Program, "Global Climate Change Impacts in the United States", Cambridge University Press, 2009 Stern, Nicholas, "The Economics of Climate Change: The Stern Review", Cambridge University Press, 2006 World Wildlife Federation, "Living Planet Report 2008", WWF, 2008
Course Coordinator:	Cody Jones, Ph.D.
Regular Instructors:	Cody Jones, Ph.D.
Course Objectives:	<p>Upon completion of the lecture, a student should be able to:</p> <ul style="list-style-type: none"> Define relevant terms and concepts such as externalities, tradeable credits, carbon taxes, mitigation, adaptation, offset, exchange, accounting, inventory, footprinting and so forth as they apply to greenhouse gas management. Explain the basics of current and evolving regulations in the US and other countries, which agencies are involved, and how to participate in the rulemaking processes in the US. Know the standard and evolving protocols and methodologies for measuring and reporting greenhouse gases, particularly in carbon equivalents. Explain available tools for measuring greenhouse gases and information and data sources for standard equivalents. Explain the various aspects of the carbon market and motivations for footprinting and accounting, as well as different programs that support different needs. Conduct a basic carbon footprint analysis for some aspect of an organization's operations and suggest mitigation strategies, and understand the overall process. Report on and communicate a carbon footprint analysis effectively to a client.
Topics Covered:	<ul style="list-style-type: none"> Greenhouse gases and the carbon cycle Climate change science and the climate change science and policy debates Relevant environmental regulation and policy, environmental management systems, environmental aspects and impacts and their assessment Ecological, water, and carbon footprinting science and techniques, national

	<p>footprint data</p> <ul style="list-style-type: none"> • International and US climate change policy and greenhouse gas accounting protocols and standards • Emissions scopes, boundaries, accounting and estimating formulas, factors, data sources, and calculation tools • Climate risk assessment • Carbon markets, taxes, offsets, and mitigation strategies • Greenhouse gas inventories and carbon footprint reports, climate action plans, supporting documentation, audit trails, and recordkeeping • Project and inventory verification 		
Relevant Program Outcomes:	<p>(a) an ability to apply knowledge of mathematics, science, and engineering (f) an understanding of professional and ethical responsibility (g) an ability to communicate effectively (i) a recognition of the need for, and an ability to engage in life-long learning (j) a knowledge of contemporary issues (m) an understanding of the obligations for implementing sustainable engineering solutions</p>		
Required or Elective:	Elective		
Criterion 5:	Math & Basic Science or Engineering Topics		
Prepared By:	Cody Jones, Ph.D.	Updated:	4/28/2010