



College of Energy and Environment

Graduate Programs in Energy Technology and Policy

Deepen your knowledge and boost your credentials, in a way that fits your schedule

Why?

Convenient, interactive online classes
Renowned international faculty
Affordable Tuition

What?

Certificates include:

- Energy Technologies
- Energy and Environmental Policies
- Energy Security and Geopolitics
- Green Jobs, Innovation, and Entrepreneurship

When?

Starting Spring 2011

E: info@bridgingnations.org
P: 202-741-3870 | www.bridgingnations.org/energy



Bridging Nations

College of Energy and Environment

Bridging Nations' College of Energy and Environment offers top quality graduate programs designed to prepare students for the rapidly expanding green jobs sector.

Graduate Certificate Program

A graduate certificate is a great option for both recent college grads who want to stand out in the job market, and for professionals who want to take the next step in their careers. The green jobs industry has already begun to take off, and now is the time for students to get the knowledge and skills they need to take advantage of the exciting opportunities that are becoming available.

Applicants to the program should have an undergraduate degree with at least a 3.0 grade point average.



Flexible Schedule, Flexible Program

Certificate in Renewable Energy Technologies (C-RET)

Core Courses Renewable Energy: Tech, Economics, and Policy Q2
Nonrenewable Energy Tech & Supply Q1

Elective Courses Science of Energy Generation Q1
Energy Distribution Q2
Specialized Project (offered anytime)

Certificate in Energy & Environmental Policies (C-EEP)

Core Courses Climate Change Policy in a Globalizing World Q1
Environmental Impact and Economics Q2

Elective Courses Energy Analysis and Green Buildings Q1
Renewable Energy: Tech, Economics, and Policy Q2
Specialized Project

Certificate in Energy Security and Geopolitics (C-ESG)

Core Courses Energy Security and Geopolitics Q2
Energy and Environmental Policy in Developing Countries Q3

Elective Courses Nuclear Energy Policies Q3
Economics of Renewables Q3
Specialized Project

Certificate in Green Jobs, Innovation, and Entrepreneurship (C-GJ)

Core Courses Innovations, Entrepreneurship, Special Topics Q3
Economics of Renewables Q2
Leadership and Management of Green Economy Q4
Specialized Project

By taking classes on weekday evenings and Saturday afternoons, participants in the graduate programs retain the ability to work a full-time job.

The College of Energy and Environment will offer four Certificates. To earn any of the Certificates below, students must successfully complete four (4) courses.

- Certificate in Renewable Energy Technologies
- Certificate in Energy and Environmental Policies
- Certificate in Energy Security and Geopolitics
- Certificate in Green Jobs, Innovation, and Entrepreneurship

Masters in Energy Technology (M-ET)

- **Renewable Energy: Technology, Economy, and Policy**
- **Nonrenewable Energy Technology and Supply**
- **Science of Energy Generation**
- **Science of Energy Distribution**
- **Climate Change Policy in a Globalizing World**
- **Environmental Impact and Economics**
- **Energy Analysis and Green Buildings**
- **Energy Security and Geopolitics**
- **Energy and Environmental Policy in Developing Countries**
- **Nuclear Energy Policies**
- **Economics of Renewable Energies**
- **Innovations, Entrepreneurship, Special Topics**
- **Leadership and Management of Green Economy**
- **Specialized Project**

Students must complete 10 of the 14 courses offered for 30 credits to complete the requirements for a Masters in Energy Technology (M-ET).

Courses and Faculty

Renewable Energy: Technology, Economy, and Policy

Dr. Eric Martinot

Senior research director with the
Institute of Sustainable Energy, Tokyo
Taught at University of
Maryland and Tufts
Lead author of annually published
Renewables Global Status Report
M.A. and Ph.D. from University of
California-Berkeley, B.S. from MIT

The course is intended to provide an overview of sustainable energy concepts and issues relevant to understanding and analyzing the integration of renewable energy into global energy systems. By the completion of the course, students will be able to demonstrate an understanding of (a) key concepts in understanding energy technology, economics, and policy; (b) how to evaluate and compare renewable and fossil-fuel-based supply technologies and energy-efficiency options; (c) the need for public policy and different perspectives on policy solutions; and (d) how to think realistically about sustainable energy futures. This overview helps to prepare and guide students as they continue their further studies.



Courses and Faculty

Nuclear Energy Policies

Mr. Vijay Nilekani

Senior Project Manager at the Nuclear Energy Institute
Management positions at major energy companies
International consulting in South Africa, Canada, Japan, the Middle East, South America, India and the US.

This course will expand students' general understanding of nuclear energy in this course through a concise overview of the nuclear sector, including the interrelation between nonproliferation and waste disposal. Students' knowledge of nuclear power as a welldeveloped hydrocarbon alternative source will be enhanced by a study of how nuclear materials are extracted and controlled in reactor to produce electricity. Since natural supplies of fissile materials are finite and unevenly distributed throughout the world, alternatives to natural supplies will have to be explored in this course.



Courses and Faculty

Energy Security and Geopolitics

Dr. Robert Manning

Senior Advisor to the Atlantic Council
Former Senior Counselor for
the Energy, Technology and
Science Policy division of the
Department of State
Former Director of Asian Studies at
the Council on Foreign Relations
Written a vast array of
books and articles

This course will examine the role of energy access in shaping national security strategies and economic development over the course of the 20th century to the present day. Students will examine national energy policies, the private-public relationship between governments and energy companies, and the relationships between exporters and importers of hydrocarbons, biofuels and nuclear materials.



Courses and Faculty

Economics of Renewable Energies

Dr. Michael Trachtenberg

Founder, Chairman, CEO, and Chief Technical Officer of Carbozyme, a company in the final stage of its state-of-the-art carbon dioxide separation and capture system.

Held faculty positions at the Medical Schools of Harvard, Boston University, and the University of Texas

Earned his B.A. in Psychology and Biology from the City University of New York, and his Ph.D. in Anatomy and Neurobiology from UCLA.

In this course, students will examine the structure of energy markets and the environmental costs of current and future energy platforms. Students will learn how to conduct statistical analysis to understand and develop predictive models for future developments in power markets, such as price fluctuations and supply/demand curves. As energy conservation and clean energy policies have gained ground, energy producers have to consider the costs of converting fossil fuels to renewable sources



Courses and Faculty

Energy Analysis and Green Buildings

Dr. David Tilley

Associate Professor,
Ecosystem Engineering
Design Lab, UMD
President of the International
Society of Emergy Research
Received Ph.D. and Master's degrees
from the University of Florida's
Environmental Sciences program

This course provides an introduction to embodied energy theory (emergy), and its role in understanding the fundamental basis of energy use and production with an emphasis on the role of environmental systems



Courses and Faculty

Science of Energy Generation

Dr. Satish Kulkarni

Professor and Department Head of Engineering Science and Mechanics, Virginia Tech University replaces Professor and Department Head of Engineering Science and Mechanics, Virginia Tech University

This course focuses on mechanisms of energy conversion: the application of broader topics such as physics, engineering or chemistry in the energy sector. There are two foci in this course: properties of fuels and systems efficiency. The first focus is dedicated to the understanding of the energygenerating properties of fuel sources. These sources include coal, oil, natural gas, nuclear energy, solar energy, hydropower, hydrogen, wind, geothermal energy, and biomass. The energy efficiency of each of these fuels will be discussed in detail so that students will be able to take this knowledge and apply it to the economics of power generation. Chemical and physical properties of solid, liquid and nontraditional fuels will be examined in the context of demand for affordable energy and the growing emphasis on clean energy.



Courses and Faculty

Nonrenewable Energy Technology and Supply

Dr. Maria Papadakis

Professor, Coordinator of
Urban and Regional
Studies Program, James Madison
University
Former Analyst for the US
International Trade Commission
Research published in major
technology journals, including the
National Science Foundation
Ph.D. from Indiana University

This course will expand students' general understanding of fossil fuels through an in-depth study of the technological infrastructure used to maintain the global nonrenewable supply chain, from ground extraction to refinement and distribution. The geographic distribution of fossil fuel reserves, refineries, pipelines, and shipping infrastructures will be taught, particularly with regard to their implications for world energy geopolitics. Topics in geology will be incorporated to examine the technologies of fossil fuel exploration and extraction. The development of unconventional sources like tar sands and oil shale will be explored, as will the emergence of "clean coal" concepts and technologies.



Courses and Faculty

Science of Energy Distribution

Dr. Wolfgang Kröger

Professor at the University
ETH Zurich
Managing Director of the
ETH Zurich's Institute of
Energy Technology
Founder of International Risk
Governance Council
Ph.D. from the RWTHA
achenin Germany

This course explores the technology for the storage and transport of electricity as well as the infrastructure needed to transport energy resources between producers and consumers. Students will first learn the mechanism of energy storage and electrical distribution, building on their knowledge of energy generation for different types of fuel. Power grid systems used to manage energy distribution will be discussed to provide an understanding of how electricity is priced and consumed.



Courses and Faculty

Climate Change Policy in a Globalizing World

Dr. Yda Schreuder

Associate Professor of Geography,
University of Delaware
Senior Policy Fellow at the Center for
Energy and Environmental Policy at
the University of Delaware
Also taught at the University
of Wisconsin and the
University of Maryland
Ph.D. from the University of Wisconsin

This course will provide students with an understanding of the scientific techniques used to predict and measure climate change as well as the policy debates over the implementation of climate change legislation. Resource driven-conflicts will then be examined in order to demonstrate the direct links between climate change and global instability, including the possibility of resourcedriven conflicts in the near future.



Courses and Faculty

Energy and Environmental Policy in Developing Countries

Dr. Carla Freeman

Associate Director of the
China Studies program at
Johns Hopkins SAIS
Former Director of Global Studies and
International Affairs at Alverno
College in Milwaukee, Wisconsin
Author of numerous papers on
China and Asia
Ph.D. from Johns Hopkins SAIS

With particular focus on the world's largest developing economies, China and India, this course examines policy responses to addressing the tradeoff between economic development and related energy consumption for sustainable development. The course will consider the roles of national and local governments, international agencies and regimes, and also that of international and local nongovernmental organizations in shaping these responses, placing emphasis on the issues of state capacity to implement effective policies, sources of innovation in these societies, and the role of pluralism in effecting change.



Courses and Faculty

Industry Project

Various Professors will be involved in the instruction of this course.

This course constitutes the solutions component of the Graduate Certificate program. Students will be able to select topics they feel are relevant to advancing the development of cleaner energy technologies and policies and will choose a firm or agency with which to pursue their research.

Over the course of one semester, the student will work with an organization partner to analyze energy issues/problems within the industry or agency and develop solutions to them. Students will not be required to work on-site with their organization partner, but will be graded by a supervisor in the organization partner upon completion of their project. This course provides students with the professional experience to analyze problems and develop solutions to them that will work in a professional environment.



Courses and Faculty

Innovations, Entrepreneurship, Special Topics

Dr. Prakash
Ambegaonkar

Globally active entrepreneur
and philanthropist
Established several internationally
competitive high tech companies.
Founded Bridging Nations
Foundation as a nonprofit policy
and advocacy organization in
Washington, D.C. (2002).
Active for many years in philanthropic
and policy affairs.

This course focuses on the role of innovation as a driving factor of economic growth and progress. Guest lecturers will provide students with instruction relating to a specific topic relating to alternative energy and innovation. The goal of this course is to provide students with the knowledge and inspiration needed to think as entrepreneurs and innovators. Students will get a better understanding of how to think creatively and develop new solutions which break down existing barriers to advancement. Possible topics include: Clean Technology Start-ups; Clean Technology Venture Capital; Hybrid & Electric cars; Space-Based Solar Power; Green/Sustainable Architecture; and many more.



Mentorship Program

One of the most unique aspects of the Energy Technology and Policy program is our Corporate Mentorship Program. Mentorship is a proven learning enhancement technique that will help guide students towards prospective career paths in clean energy applications by linking them with skilled experts in the professional world.

Our mentorship coordinators will connect students with a mentorship organization. The mentorship organization will then assign students to one of their employees to serve as a student's mentor.

We envision a learning methodology in which the mentor will become like a "Big Brother" to the student mentee. Mentors and mentees will be in contact via phone and email, and in person whenever possible through face-to-face appointments. The mentors and mentees will first meet at our Meet-and-Greet Session prior to the beginning of an academic year. This will help ensure mentees' academic success at BNU, as well as give them invaluable access to the "insider" view of the corporate structure.



Contacting Bridging Nations

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