

Renewable Energy Courses for Master's in Global Sustainability

George Philippidis, Ph.D.

Associate Professor

Patel College of Global Sustainability

University of South Florida (USF)

Why RE?

- Cornerstone of green economy
- Drivers:
 - Energy security
 - Environmental quality
 - Climate change
- Energy demand to increase dramatically
- Generates employment, investment, trade, and tax revenue

Florida's Role

- Strategic geopolitical location
- 3rd most populous state
- Rich in natural resources
 - Solar, Ocean
 - Biomass
- Need **well-educated** Floridians to run and manage green economy (green workforce)

College Status

- Only US Sustainability College
- MA program in Global Sustainability
 - Integrates principles, economics/finance, systems thinking, and communication of sustainability
 - 1-2 years
 - On-campus and on-line
 - Students with diverse backgrounds and work experience
- Concentration areas:
 - Renewable Energy
 - Water
 - Entrepreneurship
 - Eco-Tourism
- Future: MS, Certificate Programs, and Ph.D.

RE Courses

- Create new *Renewable Energy* concentration for the MA program
- Offer two new graduate courses:
 - [Renewable Transportation Fuels \(Fall\)](#)
 - [Renewable Power Portfolio \(Spring\)](#)
- **On-campus** and **on-line** for:
 - MA program students
 - USF students as electives
 - Florida SUS students and others
- Guest speakers from energy industry with international experience
- Course assessment based on student and energy expert feedback
- Coupled with R&D in algae, biomass, solar, and energy storage at USF labs
- First year evaluations: 4.9/5.0 (on-campus), 5.0/5.0 (on-line)
- Spring enrollment up 65% over Fall

Course Content

Renewable Transportation Fuels

- Market status and prospects
- Conventional biofuels
 - Corn and sugarcane ethanol and butanol
 - Oil-seed and used-oil biodiesel
- Biomass resources
- Advanced biofuels and bioproducts
 - Biochemical conversion of biomass
 - Thermochemical conversion of biomass
 - Algae technologies
- Economics & finance
- Environmental & sustainability aspects
- Real-world integrative case study
- Guest speakers from industry
- Research project

Renewable Power Portfolio

- Market status and prospects
- Technologies
 - Energy efficiency & conservation
 - Solar (PV, CSP)
 - Wind (onshore, offshore)
 - Bioenergy
 - Geothermal
 - Ocean
 - Energy storage
 - Smart grid
- Policy and regulatory framework
- Economics & finance
- Project development and financing
- Environmental & sustainability aspects
- Integration into existing infrastructure
- Guest speakers from industry
- Research project

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Contact Information

George Philippidis, Ph.D.
Associate Professor, Sustainable Energy
Patel College of Global Sustainability
University of South Florida (USF)
Tampa, Florida

(813) 974-9333
gphilippidis@usf.edu

psgs.usf.edu/patel-center/sustainable-energy/