Partnership Approaches
to Renewable Energy
and Sustainability Education

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Today’s Topics:

• Why a Partnership Model?
• Green Technology Grants
• Cross Campus Curricula Group
• Outcome Examples at Dutchess
• Summary
Why a Partnership Model?

• Make best use of a variety of competencies within various partner organizations
• Maximize deployment of new courses and curricula across the campus
• Reach as many students as possible
• Foster community involvement
• Only possible way to accomplish certain projects
• Spread the workload –
  “Many hands make light work.”
Green Technology Grants

- SUNY GREENS NY College Consortium
- SUNY Clean Energy Tech Training (CETT) Consortium
- DOE Northeast Photovoltaic Instructor Network
- Hudson Valley Green Talent Pipeline
“Energy-Related Curricula Group”

• Formed in Fall 2009 with faculty and staff from across campus.
• Goal: research educational initiatives and identify those that can be implemented immediately with existing on campus academic expertise
• Met informally at intervals for several months
• Recommendations Report submitted to College’s Office of Academic Affairs in Spring 2010
# Energy-Related Curricula Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Dept.</th>
<th>Academic Expertise</th>
<th>Related Expertise and Interest</th>
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<tbody>
<tr>
<td>Leah Akins</td>
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<td>Dan Barbuto</td>
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<td>Chemistry, Physics</td>
<td>Curriculum Development</td>
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<td>Jeff Cavalieri</td>
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<td>Chemistry</td>
<td>Physical Sciences</td>
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<td>Photovoltaic, Building Envelope, LED</td>
<td>Photovoltaic and LED non-credit</td>
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<td>Physics</td>
<td>New Course Development</td>
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<tr>
<td>Mikko Manner</td>
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<td>Economics &amp; Environment</td>
<td>Environmental Economics</td>
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<td>Petroleum Engineering, Physics</td>
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<td>Catherine McGuire</td>
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<td>LEED AP, Green Buildings/Sustainability</td>
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<tr>
<td>Paul Pilon</td>
<td>ENACT</td>
<td>Architecture</td>
<td>Building Science, Geothermal</td>
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<td>Virginia Stoeffel</td>
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<td>Non-credit renewable training</td>
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<td>John Trosie</td>
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<td>PV &amp; Geothermal</td>
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<td>Tony Zito</td>
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<td>Physics, Math</td>
<td>Curriculum Development</td>
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Energy-Related Curricula Group

Recommendations Report

New credit courses:

• *Sustainability Concepts and Applications (SUS101)*
• *Fundamentals of Electricity*
• *HVAC*
• *Renewable Energy Systems*
• *Energy Economics and Policy*

• Possible first step to create Academic Credentials in *Sustainable Buildings, Sustainable Heating and Ventilation, Renewable Energy Technology, Sustainable Business*
Office of Community Services:
Administration of equipment and training grants; non-credit renewable energy training courses
Dutchess Community College

Dept of History, Government, and Economics:
Environmental Economics ECO121
Energy Economics and Public Policy ECO 902
Dept of Mathematics, Physical and Computer Sciences:
PHS107 Technology and Energy
PHS115 Fundamentals of Electricity
Example Outcomes

- Photovoltaic Systems Education
- Non-Credit Renewable Energy Education
- Sustainability 101 Course
- Student Sustainability Club
- Community Involvement
Photovoltaic Systems

Credit
• ELT231 Photovoltaic (PV) Systems
  Technical Elective in existing
  Electrical Engineering Technician Program (ELT)

Non-Credit
• Introduction to Photovoltaics (NABCEP)
• NABCEP Entry Level Exam
• PV Site Assessor
• PV Sales (Fall 2012)
Photovoltaic Systems

DCC “Solar Shed”
Photovoltaic Systems

Students Construct the PV Grid-Tie Demonstration System
Photovoltaic Systems

Permanent Pole Mounted Campus PV Demonstration System and Public Data Portal
Community Services Non-Credit
Renewable Energy Education

Introduction to Photovoltaics (NABCEP)

Solar Hot Water Design (NABCEP)

Geothermal Installer (IGSHPA)

Building Analyst/Envelope Professional (BPI)
Sustainability 101

• Sustainability can be an exceptionally broad topic: environment & ecology, economics, resource usage, building science, energy production, social equity, etc.

• Would a single faculty member have a knowledge and experience base of meaningful depth spanning the entirety of the material?
Sustainability 101

- SUS 101 @ DCC team taught by three instructors:
  - Architecture Faculty - LEED AP
  - Engineering Faculty - Solar Engineer, P.E.
  - Outside Professional – Social/Environmental

Books:
- The Sustainability Revolution
- Natural Capitalism
- Sustainable Energy – Without the Hot Air
- Fundamentals of Integrated Design for Sustainable Building
Student Sustainability Club

• Formed Spring 2012 Semester
• Budget – Student Activities Fee
• Club Projects Agenda:
  • “Clean-Up Poughkeepsie”
  • Campus Garden
  • Sustainability & New Dorms
Community Involvement

• Hudson Valley Clean Energy (Hudson Solar)
  • Local PV installer – consultant for credit PV course

• Atlantis Energy Systems
  • Local BIPV Manufacturer: Engineering Internships

• Prism Solar
  • Student Research Projects
Community Involvement

• **Nubian Directions**
  - local technology training resource center supporting job readiness training for the underserved community in the City of Poughkeepsie

• **County Transportation Council**
  - SUS101 Class – public feedback to “Moving Dutchess”, the county’s 30 year Transportation Plan
Summary

• Only three years ago, little if any curriculum and support existed for sustainability / renewable energy curriculum at Dutchess Community College

• Grant partnerships outside the campus and collective faculty partnerships within the campus have significantly improved our sustainability curriculum portfolio

• Active involvement with the community and the student body can pay rich dividends

• This is just the beginning ... ! ☺