Wind Energy Education
University of Wyoming Experience

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Workforce Needs at Many Levels

• Wind energy education – the need
  ▫ Many reports document the need for a trained workforce for the U.S. wind energy industry
  ▫ Hubs of activity will require workforce at all levels
  ▫ Educational programs provide the training environment to allow the individual to pursue the level of education desired
Wyoming Educational Programs

- **Wind Energy Technology**
  - Laramie County Community College (LCCC), Cheyenne, WY
  - Focus is on developing technical professionals by meeting industry standards

- **B.S. in Engineering or Science**
  - Energy Systems Engineering
  - Degree focused on energy conversion
  - Energy electives taken during years 3&4
  - Wind and tidal energy
    - **30 students in course each yr**
  - Solar and geothermal energy

- **Graduate Degrees in Wind Energy**
  - M.S. and Ph.D. in traditional disciplines
  - Research focus has application to wind energy
  - About 20 students have participated to date with > 10 graduates
University of Wyoming
DOE Grant for M.S. in Wind Energy

• DOE Workforce Grant to explore feasibility
• 6 students selected in 2 groups
• Undergraduate degrees
  ▫ 3 Mechanical Engineers
  ▫ 1 Electrical Engineers
  ▫ 1 Physicist
  ▫ 1 Earth System Science and Engineering
• Graduate degrees
  ▫ 5 Mechanical Engineering
  ▫ 1 Electrical Engineering
  ▫ 5 of these chose to write a thesis – surprise!

• 3 students are currently employed
  ▫ High Performance Computing
  ▫ Wind Resource Specialist
  ▫ Ph.D. in Wind Energy Science
• 3 students will complete degree Summer/Fall 2013

• Program considered a success
  ▫ Interdisciplinary degree trains students for working in a wide range of fields including wind
  ▫ Wind energy provides a context for complex systems

August 7-9, 2013
NAWEA Symposium 2013
Naughton
## Proposed Interdisciplinary M.S. in Wind Energy

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<td>Core Course 1</td>
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<td>Core Course 2</td>
<td>Wind Integration Course 1</td>
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<td>Core Course 3</td>
<td>Wind Integration Course 2</td>
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<td>Elective</td>
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<th>Semester 3–Option 1</th>
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<td>Thesis Research</td>
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Proposed Interdisciplinary M.S. in Wind Energy

- **Core Courses (12 credits)**
  - Chosen from a list of courses available at home institution
    - Fluid Mechanics
    - Boundary Layer Meteorology
    - Control Theory
    - Power Systems
    - Structural Analysis
  - Chosen from 2 or more traditional areas
  - Provide a strong technical foundation

- **Electives (6 credits)**
  - Provides additional study in one or more technical areas available at home institution

- **Integration Courses (6 credits)**
  - Chosen from 6 mini-courses on wind turbine applications
    - Wind Resource Modeling,
    - Wind Turbine Aerodynamics and Aeroelastics
    - Wind Turbine Dynamics and Control
    - Wind Turbine Foundations and Towers
  - Taught by academic, gov’t & industry experts

- **Options**
  - Provides flexibility
    - 2 Additional courses
    - Approved internship
    - Research project + thesis