



**TEXAS TECH UNIVERSITY**

# **“TTU-Educational Programs in Wind Energy”**

**“NAWEA Education and Curriculum Session”  
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# Texas Tech Wind Energy Workforce Initiative



***“The Texas Tech Wind Energy Workforce Initiative, a partnership between Texas Tech University and Texas State Technical College, with a focus on wind energy workforce development and education, was initiated with a grant from the Texas Workforce Commission.”***

<http://www.depts.ttu.edu/uc/windenergy/>

# TTU - Wind Energy Education Programs



**Ph.D. in Wind Science and Engineering (2007)**

*NSF-IGERT Initiated*

**Graduate Certificate in Wind Energy (2009)**

- *Both Technical and Managerial tracks*

**Bachelor of Science in Wind Energy (2011)**

- approved Fall 2011 as a Science and Technology degree
- Offer a Minor in Wind Energy
- Offer an Undergraduate Certificate in Wind Energy

**Under Consideration (2014)**

- Master of Science in Wind Energy

*Seven Years (2005 to 2012) & significant investment to grow wind energy programs to current level.*

# Bachelor of Science in Wind Energy (BSWE)

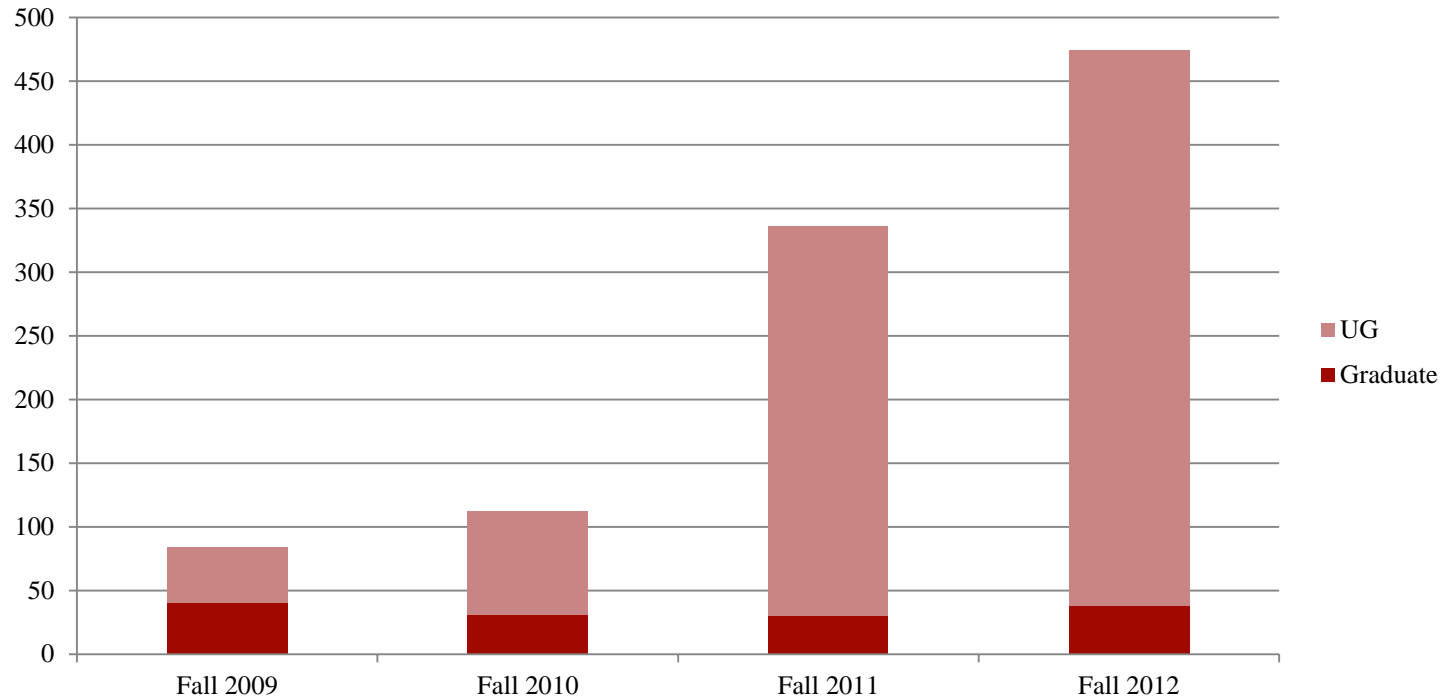


- **Bachelors of Science in Wind Energy**
  - **A Multi-disciplinary Program**
  - **Administered within a multidisciplinary Wind Institute**
  - **Program Includes Wind Energy Undergraduate Minor & Certificate**
    - *Both are available on-line*
- **110 BSWE majors, Fall 2013**
- *“The Bachelors of Science in Wind Energy will not only give students an in-depth understanding of renewable energy, particularly wind energy, but also equip them to fill any number of positions within the energy industry,”*

# TTU - Wind Energy Program Growth



## Wind Energy Course Enrollments



- **10% are Graduate Certificate Students**
- **35% are enrolled as Distance Education, on-line Students**
- **Additionally, 20 PhD Students Enrolled in Wind Science and Engineering**



# Engineering Jobs in the Wind Industry



**Tower and foundation design (CE)**  
**Road design (CE)**  
**Structural and blade design, testing  
(CE/ME)**  
**Surveyors (CE)**  
**Geotechnical engineer (CE)**  
**Geotechnical testing (GEOL/CE)**  
**Environmental management (CE /  
Env. Eng.)**  
**Construction-project mgmt. (CE)**  
**Product Development**  
**Safety and environmental health**

**Wind turbine design (rotor aero.,  
structural, acoustic, drive train)  
(ME)**  
**Site Suitability Engineer (ME)**  
**Power system integration and  
substation design (EE/ME)**  
**Utility interconnection design (EE)**  
**Lean manufacturing for components  
and assembly (IE/ME)**  
**Site operations managers (ME/EE)**  
**Predictive maintenance (ME/IE)**  
**SCADA Engineers (EE/CS)**  
**Safety Engineer (IE)**  
**Controls/Software (ECE)**

# Non-Engineering Jobs in the Wind Industry Related to University Education



- Resource assessment specialist
- Wind / power production data analyst
- Wind / wind power forecasting
- Technical sales and marketing
- Project development
- Utility liaison / interconnection experts
- Community liaison
- Regulatory / government liaison
- O & M management and supervision
- Risk management and assessment
- Supply chain management
- Manufacturing oversight/ mgmt.
- Energy analysis / energy auditing
- GIS specialists / Cartographers



# Non-Engineering Jobs in the Wind Industry Related to University Education



- Wind project finance and analysis
- Marketing wind power and projects
- Financial analysis / tax specialists
- Energy commerce; Land Use
- Property or ad valorem tax manager
- Legal and regulatory specialist
- Wind business tax specialist
- Permitting
- Contracting experts (turbine supply, construction, PPA's)
- Environmental / habitat specialists
- Visual impact assessment
- Ag. specialist / landowner liaison
- Architecture / visual impact simulation