



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)

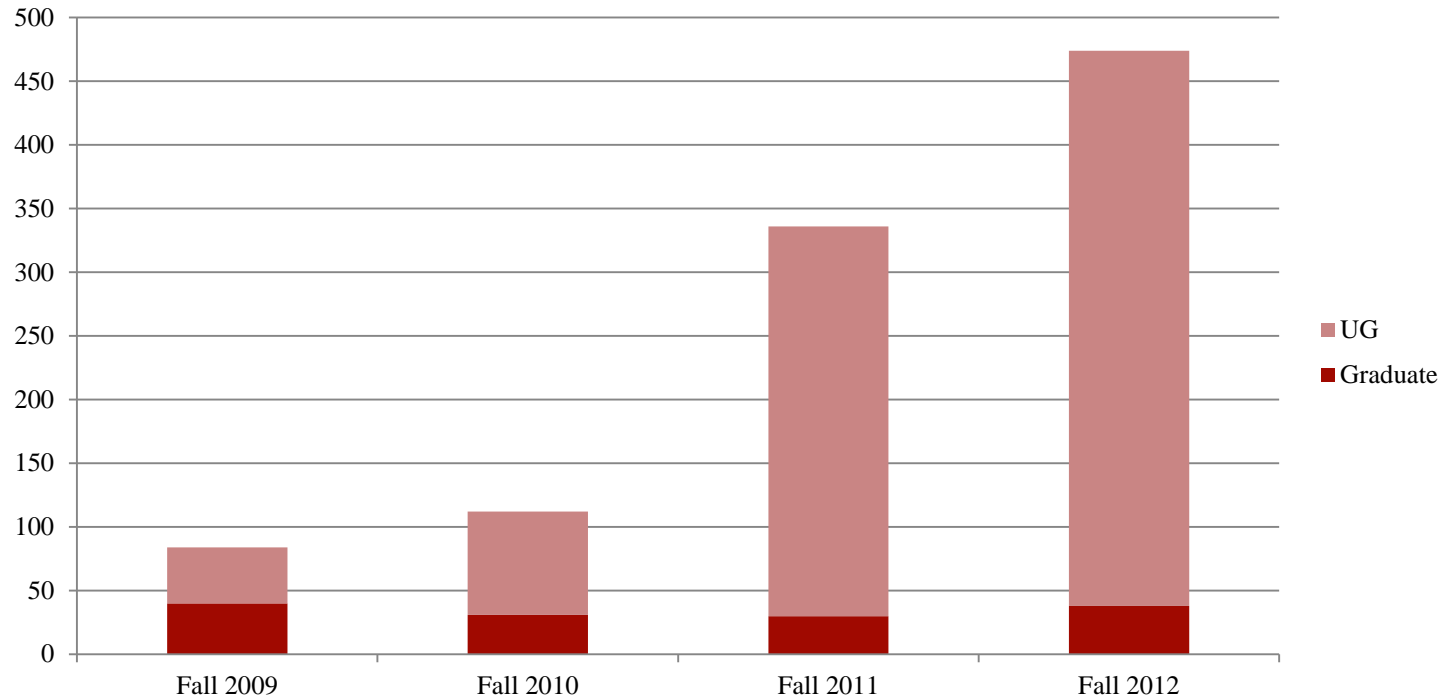


- **Bachelors of Science in Wind Energy**
 - **A Multi-disciplinary Program**
 - **Administered within a multidisciplinary Wind Institute**
 - **Program Includes Wind Energy Undergraduate Minor & Certificate**
 - *Both are available on-line*
- **110 BSWE majors, Fall 2013**
- *“The Bachelors of Science 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