

1. ECE 566: Grid Integration of Wind Energy
2. 3 credits: 2-75 minute lecture sessions/week
3. Siddharth Suryanarayanan
4. None – class notes/slides provided by instructor
 - a. Relevant articles from public domain and electronic databased accessible via CSU libraries
5. Course Information
 - a. Aspects of integration of wind energy conversion systems (WECS) to electric power transmission
 - b. Prerequisites: (ECE 461 and ECE 462) or ECE 565
 - c. Selected Elective: Electrical Engineering; Computer Engineering
6. Goals for the Course
 - a. Course Learning Objectives
 - i. Examine and illustrate the basic concepts of wind energy power plans and conversion systems
 - ii. Describe concepts of generators and power electronics for designing WECS
 - iii. Analyze the grid impacts of WECS including need for storage
 - iv. Apply concepts of controls associate with WECS
 - b. Student Outcomes
 1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
 3. An ability to communicate effectively with a range of audiences
 4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
 7. An ability acquire and apply new knowledge as needed, using appropriate learning strategies
7. Topics Covered
 - Introduction to wind power plants, history of wind energy, and growth of WECS
 - Characteristics of wind power generation and basic integration issues
 - Wind power forecasting
 - Generators for wind energy conversion
 - Overview of WT topologies and grid codes
 - Grid connection of a WT
 - Power quality for wind energy conversion systems
 - Energy storage for WECS
 - Power system stability and wind energy