

MIE1240 - Wind Power

Fall 2024

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Contents	Date	Notes
Introduction to Wind Power	Sep. 09	
Measurement of Wind resource	Sep. 16	
Wind Data Analysis and WRA	Sep. 23	A1
Energy production estimation for wind farms	Sep. 30	
Aerodynamics of Wind Turbines	Oct. 07	Q1
No class - Thanksgiving Day	Oct. 14	
Furow – Wind Energy Software Seminar	Oct. 21	
Fall Term Reading Week	Oct. 28	
Forces in Wind Turbines, Load Cases, Standards in Wind Power	Nov. 04	A2
Wind Turbine Components	Nov. 11	
Civil Engineering aspects of Wind projects	Nov. 18	A3/Q2
Wind Power Projects - Design, Construction, Economics	Nov. 25	
In-Class Project (in groups of three students max.)	Dec. 02	

Tentative Mark Composition:

- Assignments (3) / Quizzes (2) 50%
- Research Project 25% (Topics provided on September 25th, confirmation due October 16th)
- Final In-Class Project 25%

Recommended Bibliography

1. **Wind Energy Handbook**, by Burton, Jenkins, Sharpe and Bossanyi. 3rd Edition (2021). John Wiley and Sons. ISBN: 978-1119451099.
2. **Wind Turbines: Fundamentals, Technologies, Application, Economics**, by Erich Hau. 3rd Edition (2013). ISBN 978-3642271502. Springer.
3. Innovation in Wind Turbine Design, by P. Jamieson. 2nd Edition (2018), John Wiley and Sons. ISBN 978-1119137900
4. **Wind Energy Explained: Theory, Design and Application**, by Manwell, McGowan, and Rogers. Second Edition (2010). John Wiley and Sons. ISBN: 978-0470015001

5. Understanding Wind Power Technology: Theory, Deployment and Optimisation, Alois Schaffarczyk (2014), ISBN: 978-1118647516
6. Introduction to Wind Turbine Aerodynamics, Alois Schaffarczyk (2014), Springer. ISBN: 978-3642364105
7. Wind Resource Assessment – A practical guide to developing a wind project. by Michael Brower (Ed., 2012). John Wiley and Sons. ISBN: 978-1118022320

Assignments

1. Understanding Meteorological Data and Wind Resource Assessment (10%)
2. Energy Estimation using Numerical Models (10%)
3. Wind Turbine Aerodynamics and Wind Farm Performance (10%)

Additional Notes

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