

MIE 1240 - WIND POWER - FALL 2024

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Hours: TBD (in person)

TA: TBD

Contents	Week	Date	Notes
Introduction to Wind Power	1	Sep. 9	
Measurement of Wind Resource	2	Sep. 16	
Wind Data Analysis and WRA	3	Sep. 23	A1
Energy production estimation for wind farms	4	Sep. 30	
Aerodynamics of wind turbines	5	Oct. 7	Q1
****Thanksgiving (no class)	6	Oct. 14	
Furrow - Wind Energy Software Seminar	7	Oct. 21	
Aerodynamics of wind turbines	8	Oct. 28	A2
Forces in Wind Turbines, Load Cases, Standards in Wind Power	9	Nov. 4	
Wind Turbine Components	10	Nov. 11	Q2
Civil Engineering aspects of Wind Turbines	11	Nov. 18	A3
Wind Power Projects - Design, Construction, Economics	12	Nov. 25	
In-Class Project (in groups of three students max.)	13	Dec. 2	

Tentative Mark Composition:

- Assignments (3) / Quizzes (2) 50%
- Research Project 25% (Topics provided on September 25th, confirmation due October 16th)
- 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 Furow (10%)
3. Wind Turbine Aerodynamics and Wind Farm Performance (10%)

Additional Notes

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