

MIE 1240H – WIND POWER

Fall 2015

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Course Outline

1. Introduction to Wind Power
2. Wind resource assessment
3. Introduction to aerodynamics of wind turbines
4. Wind turbine performance
5. Structural design and loads on Wind Turbines
6. Mechanical and civil engineering aspects of wind turbines
7. Energy production estimation for wind farms
8. Wind farm design and constructability
9. Introduction to offshore wind power
10. Economics of wind power, environmental impact and regulations

Tentative Mark Composition

Assignments	40%
Midterm Exam	40%
In-Class Assignment	20%

Recommended Bibliography

Wind Turbines: Fundamentals, Technologies, Application, Economics, by Erich Hau. 3rd Edition (2013). ISBN 978-3-642-27150-2. Springer

Wind Energy Explained: Theory, Design and Application, by Manwell, McGowan, and Rogers. Second Edition (2010). John Wiley and Sons. ISBN: 978-0470015001

Understanding Wind Power Technology: Theory, Deployment and Optimisation, Alois Schaffarczyk (2014), ISBN: 978-1-118-64751-6

Wind Energy Handbook, by Burton, Jenkins, Sharpe and Bossanyi. 2nd Edition (2011). John Wiley and Sons. ISBN: 978-0470699751

Introduction to Wind Turbine Aerodynamics, Alois Schaffarczyk (2014), Springer. ISBN: 978-3-642-36410-5