KTH Electrical Engineering

EG2040 Wind Power Systems
Course Schedule 2012

The latest news related to the course is announced on Bilda and the course webpage at the following address: https://www.kth.se/social/course/EG2040/.

Examinations

- Ordinary exam: Saturday, 2 June, 9:00–13:00, V32, V33, V34, V35
- Re-exam: August. Details to be announced

Bookings must be made in advance through Mina Sidor. Please check the course webpage for updates about exam registration.

Home Assignments

Course assignments must be submitted in the blue box marked EG2040, outside the student room at Teknikringen 33 by 5pm (17.00). Each assignment can give a maximum of 2 points.

Assignment	Due date
1. Wind Data Analysis	Wednesday 15 February
2. Grid Integration of Wind Power Systems	Wednesday 29 February
3. Power Generation Technology	Friday 23 March
4. Wind Turbine Design Concepts	Monday 16 April
5. Small scale Wind Power Systems	Friday 18 May

Project

The reports summarising the results of the project should be submitted in the blue box marked EG2040, outside the student room at Teknikringen 33 by **5pm (17.00), Tuesday, 1 May**. An electronic copy should also be submitted to Bilda. Each project group should also register for a project presentation time, see the end of this document.

Preliminary Schedule

Lectures (with Reading Instructions) and Assistance

The reading instructions refer to chapters in the course book, *Wind Energy Explained: Theory, Design and Application, Second edition*.

Monday, 16 January, 13-15, ***B2***
History and Current Status of Wind Power, Market Regulations, and Crash Course of Wind Power, Part 1 (T. Ackermann)
Reading instructions for parts 1 + 2 (given Thursday, 19 January):
Chapter 1.
Chapter 11: 11.1, 11.2, 11.3.3.1, 11.3.3.3, 11.3.4, 11.4, 11.5.1 – 11.5.3, 11.5.4.3, 11.5..4.4, 11.7.

Thursday, 19 January, 13-15, ***B2***
History and Current Status of Wind Power, Market Regulations, and Crash Course of Wind Power, Part 2 (T. Ackermann)
Reading instructions: see part 1 (given Monday, 16 January).

Friday, 20 January, 10-11, ***H1***
Overview of the course (F. Edström & C.Hamon)

Monday, 23 January, 13-15, ***B2***
Meteorology (H. Bergström)
Chapter 2: 2.1, 2.2, 2.3 (skip 2.3.3), 2.4.3, 2.4.4, 2.6.
Chapter 9: 9.1, 9.2.

Thursday, 26 January, 13-15, ***B2***
Introduction to Aerodynamics, Part 1 (S. Ivanell)
Reading instructions for parts 1 + 2 (given Thursday, 9 February):
Chapter 2: 2.2.3, 2.3.5.
Chapter 3: 3.1, 3.2, 3.3, 3.4.1 – 3.4.6, 3.6.3, 3.7, 3.9, 3.10, 3.12.

Thursday, 2 February, 13-15, ***B2***
Introduction to Electric Systems, Part 1 (L. Söder)
Reading instructions for parts 1 + 2 (given Thursday, 16 February):
Chapter 5: 5.1 – 5.3.
Chapter 9: 9.5.1.

Friday, 3 February, 10-12, ***H1***
Wind Measurement and Data Analysis (C. Hamon)
Introduction to the project
Chapter 2: 2.2.1, 2.2.3, 2.3.4, 2.3.5, 2.4 – 2.6, 2.8.
Chapter 9: 9.3, 9.4.1 – 9.4.2.5.
Chapter 11: 11.5.2.2.

Tuesday, 7 February, 13-15, ***Seminarierummet, Teknikringen 33 (H building)***
Assignment 1 assistance (C. Hamon)

Thursday, 9 February, 13-15, ***B2***
Introduction to Aerodynamics, Part 2 (S. Ivanell)
Reading instructions: see part 1 (given Thursday, 2 February).

Friday, 10 February, 08-10, ***H1***
Assignment 1 assistance (C. Hamon)

Thursday, 16 February, 13-15, ***B2***
Introduction to Electric Systems, Part 2 (L. Söder)
Reading instructions: see part 1 (given Thursday, 26 January)

Friday, 17 February, 10-12, ***H1***
Assignment 2 assistance (Y. Huang)

Thursday, 23 February, 13-15, ***Seminarierummet, Teknikringen 33 (H building)***
Project Plan Presentations (C. Hamon)

Friday, 24 February, 13-15, ***H1***
Assignment 2 assistance (Y. Huang)

Tuesday, 28 February, 13-15, ***B2***
Power Generation Technologies, Part 1: Introduction to the Induction Machine (K. Elkington)
Reading instructions for parts 1 + 2 (given Thursday 1 March):
Chapter 5: 5.1 – 5.7.

Thursday, 1 March, 13-15, ***B2***
Power Generation Technologies, Part 2: Wind Power Generators (K. Elkington)
Reading instructions: see part 1 (given Thursday, 1 March).

Friday, 2 March, 10-12, ***H1***
Assignment 3 assistance (A. Samadi)
Project assistance (C. Hamon)

Tuesday, 6 March, 10-12, ***H1***
Wind Turbine Concepts, Part 1 (K. Elkington)
Reading instructions for parts 1 + 2 (given Friday, 9 March):
Chapter 3: same as Introduction to Aerodynamics (Thursday, 26 January) + 3.5, 3.6, 3.8, 3.14.1.
Chapter 4: 4.1, 4.2.
Chapter 5: 5.6.
Chapter 6: 6.5.2, 6.5.4, 6.5.5.
Chapter 7: 7.3.1, 7.7. Chapter 8: 8.1 – 8.3.

Thursday, 8 March, 13-15, ***B2***
Wind Turbine Concepts, Part 2 (K. Elkington)
Reading instructions: see part 1 (given Tuesday, 6 March).

Wednesday, 21 March, 13-15, ***B2***
Offshore Technology and Vertical Wind Turbine Generators (T. Ackermann)
Chapter 1: 1.2.5.
Chapter 3: 3.14.1.
Chapter 7: 7.3.1.
Chapter 10: 10.4 (skip 10.4.4).
Chapter 12: 12.1.

Friday, 23 March, 08-10, ***H1***
Assignment 3 assistance (A. Samadi)
Project assistance (C. Hamon)

Monday, 26 March, 13-15, ***Seminarierummet, Teknikringen 33 (H building)***
Assignment 4 assistance (F. Edström)

Project assistance (C. Hamon)

Wednesday, 28 March, 13-15, ***B2***
Wind Power and the Environment (K. Grip)
Chapter 12: 12.1, 12.2 (skip 12.2.4), 12.3.1, 12.3.2, 12.4.1, 12.5.1, 12.7.2.

Wednesday, 11 April, 13-15, ***B2***
How to design a wind turbine: a challenge for the mechanical engineer (S. Engström)
Chapter 3: 3.14.1.
Chapter 6: 6.3.2, 6.3.3 (skip 6.3.3.5).
Chapter 7: 7.1 – 7.4.

Friday, 13 April, 13-15, ***H1***
Assignment 4 assistance (F. Edström)
Project assistance (C. Hamon)

Tuesday, 17 April, 13-15, ***B2***
Wind turbine noise (K. Bolin)
Chapter 12: 12.4.1 – 12.4.3, 12.4.5, 12.4.6, 12.7.

Thursday, 19 April, 13-15, ***B2***
Planning landscapes (K. Hammarlund)
Chapter 12: 12.3.

Wednesday, 25 April, 13-15, ***B2***
Electric Network Integration of Wind Power (L. Söder)
Chapter 9: 9.5.4, 9.5.5.
Chapter 11: 11.5.

Friday, 27 April, 13-15, ***B2***
Balancing Wind Power Variations: the value of wind power (L. Söder)
Chapter 9: 9.5.4, 9.5.5.
Chapter 11: 11.5.

Wednesday, 2 May, 13-15, ***B2***
Power Quality of Wind Turbines (K. Elkington)
Chapter 5: 5.5.4.
Chapter 9: 9.5.1 – 9.5.5.

Monday, 7 May, 13-15, ***B2***
Small Wind Turbines and Wind Pump Systems (T. Ackermann)
Chapter 10: 10.1 – 10.3, 10.6.1.

Wednesday, 9 May, 13-15, ***B2***
Stand-alone and Hybrid Systems (e.g. Wind-Diesel) (S. Ruin)
Chapter 10: 10.1 – 10.3 (skip 10.3.4).

Monday, 14 May, 13-15, ***B2***
Small Wind Turbines (S. Ruin)
Chapter 10: 10.1 – 10.3 (skip 10.3.4).

Tuesday, 15 May, 15-17, ***H1***
Assignment 5 assistance (P. Grahn)

Project Presentations

Each project group should register for a project presentation time through the electronic booking system at https://www.ee.kth.se/lab?course=EG2040.

Tuesday, 15 May, 13-15, ***H1***

Wednesday, 16 May, 15-17, ***H1***

Monday, 21 May, 08-10, ***H1***

Tuesday, 22 May, 13-15, ***H1***

Thursday, 24 May, 08-10, ***H1***

Friday, 25 May, 08-10, ***H1***

Friday, 25 May, 13-15, ***H1***

Study Trip

Participation in the study trip is not compulsory. Costs for the study trip are shared between the students and the department. Typically the costs for each student are around 500–700 SEK. More information will be given during the course.

Possible dates (these have not been confirmed yet): *Thursday–Friday, 3–4 May,* ***Germany***