



FEG3221 Systemplanering, doktorandkurs 10,0 hp

System Planning, Graduate Course

När kurs inte längre ges har student möjlighet att examineras under ytterligare två läsår.

Fastställande

Kursplan för FEG3221 gäller från och med HT11

Betygsskala

Utbildningsnivå

Forskarnivå

Särskild behörighet

The course is intended for Ph.D. students in electric power systems, but can also be interesting for students from other fields of electrical engineering.

Undervisningsspråk

Undervisningsspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

Lärandemål

After the course, the student should be able to

- describe the principles of how an electricity market can be organised,

- perform rough estimations of electricity prices,
- identify factors that have a large importance for the electricity pricing, and to indicate how these factors affect for example producers and consumers,
- explain how the balance between production and consumption is maintained in an electric power system, and calculate how the frequency is affected by various events in the power system,
- determine if the frequency control of an electric power system has sufficient margins, and if necessary be able to choose between various measures to increase the margins,
- formulate short-term planning problems of hydro-thermal power systems,
- create specialised models for short-term planning problems,
- apply both probabilistic production cost simulation and Monte Carlo simulation to calculate expected operation cost and risk of power deficit in an electricity market,
- create specialised models both for probabilistic production cost simulation and Monte Carlo simulation, and to use the results of an electricity market simulation to judge the consequences of various actions in the electricity market,
- reflect on different methods and models for operation and planning of power systems and electricity markets.

Kursinnehåll

Structure of electricity markets, electricity pricing, frequency control, linear programming, short-term planning of hydro-thermal systems, simulation of electricity markets, probabilistic production cost simulation, Monte Carlo-simulation.

Kursupplägg

Lectures, home assignments, 5 h exam, project assignments.

Kurslitteratur

L. Söder & M. Amelin, “Efficient Operation and Planning of Power Systems”.

Examination

Examinator beslutar, baserat på rekommendation från KTH:s handläggare av stöd till studenter med funktionsnedsättning, om eventuell anpassad examination för studenter med dokumenterad, varaktig funktionsnedsättning.

Examinator får medge annan examinationsform vid omexamination av enstaka studenter.

The project assignments are chosen by students in agreement with their supervisors and the examiner of the course.

Övriga krav för slutbetyg

- Approved home assignments.
- Passed the exam.
- Approved project assignments.

Etiskt förhållningssätt

- Vid grupparbete har alla i gruppen ansvar för gruppens arbete.
- Vid examination ska varje student ärligt redovisa hjälp som erhållits och källor som använts.
- Vid muntlig examination ska varje student kunna redogöra för hela uppgiften och hela lösningen.