FEI3364 Tillförlitlighetsbaserad värdevård av kraftsystem 9,0 hp

Reliability Centred Asset Management for Power Systems

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

Fastställande

Kursplan för FEI3364 gäller från och med VT19

Betygsskala

P, F

Utbildningsnivå

Forskarnivå

Särskild behörighet

Doctoral student

Undervisningsspråk

Undervisningsspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

Lärandemål

The course is aimed to you that want to perform power system reliability assessment. The goal for the course is to give the participants deeper knowledge on how to use reliability analysis as a tool for decision support during design, operation and maintenance of electric power systems.

The student should after passed course have reached such level in their understanding of power system reliability that they are able to contribute to the research field. Specifically being able to use reliability assessment as a tool for decision support for planning and operation of the electric power system. After completed course the participants shall achieved knowledge to:

* Describe the fundamental definitions and concepts for reliability assessment

* Analyze a system using the following techniques for reliability assessment:

  - Network modeling

  - Component importance techniques

  - Markov modeling

  - Lifetime models

* Analyze an electrical distribution system using software tools.

* Formulate a Life cycle cost model (LCC).

* Discuss power system regulatory issues.

After completed course the participants shall be able to publish results (conference level) on one of the topics:

(1) Reliability data assessment and modeling,

(2) Reliability centered maintenance for maintenance optimization,

(3) Condition monitoring and diagnostics methods and

(4) Computer tools supporting techniques for maintenance planning.

(5) Control system reliability.

Kursinnehåll

Lifetime models

Software tools

Maintenance optimization techniques and problem formulation

Life cycle cost and Life cycle cost analysis

Power system regulatory methods.

Project work on reliability

Peer review of paper (fellow student)

Kursupplägg

Lectures (40h), software exercises (16h), project work 120h, paper review and presentation of project (24h), homework problems and exam (40h).

Kurslitteratur

Lecture notes and papers handed out at lectures.

Rausand Höyland: System Reliability Theory, 2nd ed.

Examination

- EXA1 - Examination, 9,0 hp, betygsskala: P, F

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.

Övriga krav för slutbetyg

- Exam
- Oral presentation
- Review of peer-paper
- Project approved and delivered before deadline

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.