Ansökan om medel för fakultetsgemensam forskarutbildningskurs 2013–2014

Kursnamn  Applied Mathematics
Name of course

Omfattning (högskolepoäng) 10
ECTS credits

Tidsperiod  September-October 2013
Course period

Antal platser  40
Maximum number of participants

Undervisningsspråk  English
Language of instruction

Kursens syfte samt motivering till varför den bör vara fakultetsgemensam (max 150 ord)
Aim of course and motivation as to why it should be considered “multidisciplinary” to the extent that the faculty should allocate extra financing.
The aim of the course is to introduce modern mathematical methods within applied mathematics to doctoral students and advanced undergraduate students majoring in other areas than mathematics. Students from more than 30 different areas have taken the course so far. It is also available for master students.

Kursinnehåll, kursens uppläggning samt examinationsform (max 150 ord)
Contents, study format and form of examination
The course consists of 20 two hour-lectures on the following rather independent topics:
1. Dimensional analysis and scaling,
2. Introduction to perturbation methods,
3. Introduction to calculus of variations,
4. Introduction to the theory of partial differential equations,
5. Introduction to Sturm-Liouville theory, the theory for the corresponding generalized Fourier series and some further methods for solving PDE,
6. Introduction to transform theory with applications,
7. Introduction to Hamiltonian theory and isoperimetric problems,
8. Introduction to the theory of integral equations,
9. Introduction to the theory of dynamic systems, chaos, stability and bifurcations,
10. Discrete mathematics with applications.
It also gives brief information about some other useful techniques in Applied Mathematics (theory of distributions, similarity methods, FEM, finite difference methods, BEM, homogenization, interpolation, etc.)

Examination: Written and, possibly, oral examination at the end of the course. Moreover, compulsory assignments may be given during the course.

Målgrupp/er (specifiera ämnen/inriktningar) samt rekommenderade förkunskaper
Target group/s (specify, if possible, subject/specialization) and recommended background
All types of students with the recommended background, which is a first university course in analysis, linear algebra and ordinary differential equations.
Huvudansvarig institution  Department of Mathematics
Department with main responsibility

Andra inblandade institutioner (specifiera hur).
Other departments involved (specify how).

Kontaktperson/er (namn, e-postadress)
Contact person (name, e-mail address)
Jörgen Östensson, ostensson@math.uu.se

Anmälan om kursdeltagande till
Application from course participants should be sent to
Jörgen Östensson, ostensson@math.uu.se

Senast  August 20, 2013
Not later than

Kursen har tidigare givits (ange när) ht 2012 med  20  deltagare (ange antal)
The course has previously been given (specify when and number of participants)