Faculty common course 2021
Ansökan om medel för fakultetsgemensam forskarutbildningskurs 2021

English course title
Kursnamn på engelska
Modern statistics in natural sciences

Swedish course title
Kursnamn på svenska
Modern statistik i naturvetenskaper

Extent (credits)
Omfattning (högskolepoäng)
5hp

Language of instruction
Undervisningsspråk
English

Recommended prerequisites
Rekommenderade förkunskaper
Basic statistical knowledge.

General course objective/s and learning outcomes (Also specify which PhD examination goals that are addressed/covered. Describe how.)
Kursens syfte och mål (Beskriv vilka mål för examen på forskarnivå som beaktas och på vilket sätt.)
To give an introduction to the most commonly applied modern statistical techniques and tools used in a wide range of natural sciences. In addition to providing an overview of the statistical “tool-box”, the course generates an understanding of the philosophy and reasoning behind statistical design, modelling and inference. Practical elements (exercises) and group discussions gives the students hands-on experience, deeper insights and confidence. This is a general statistic course that attracts PhD students from biology, geosciences, chemistry, information technology and other related fields.

Course contents
Kursinnehåll
The course is focused on analyses of experimental data, but observational data analyses are also covered briefly. The course includes: experimental designs leading to ANOVA or ANCOVA, including block experiments, repeated measurement designs, nested and factorial designs, multiple regression including strategies for selecting variables and evaluating models, generalized linear models (GLIM) including logistic and Poisson regression, contingency table tests, power analysis, multivariate analysis and ordination techniques, resampling and permutation statistics, Bayesian model fitting, MCMC techniques, geometric morphometrics.

Instruction (course structure)
Undervisning (kursens uppläggnings)
The course is built around a series of 12 half-day and interactive lectures. In addition, the students then work off-schedule with a series of common practical elements/problems that are then discussed during tutored group discussions. Hands-on advice and individual tutoring of statistical software (R) is offered at several occasions during the course.

Assessment (form of examination)
Examination (examinationsformer)

Attendance at all lectures and approved individual practical reports that students hand in.

Course examiner (name, e-mail)
Examinator (namn, e-post)
Göran Arnqvist, Goran.Arnqvist@ebc.uu.se

Department with main responsibility
Huvudansvarig institution
Department of Ecology and Genetics

Contact person/s (course responsible teacher) (name, e-mail)
Kontaktperson/er (kursansvarig lärare) (namn, e-post)
Göran Arnqvist, Goran.Arnqvist@ebc.uu.se (teacher)
Peter Eklöv, Peter.Eklov@ebc.uu.se (director of PhD studies)

Course dates/period
Kurs datum/period

Maximum number of participants
Antal platser
34

Submit the application for admission to
Skicka anmälan till kursen till
http://www.biologi.uu.se/utbildning/forskautbildningskurser/

Submit the application not later than
Skicka anmälan senast