FACULTY OF SCIENCE

Date
DD mm 20YY

Reg. no
U 2022/xxx

NXXYYYF, Environmental Science: Methods in Research Synthesis, 3 credits

Miljövetenskap: Metoder för forskningssyntes, 3 högskolepoäng

Third Cycle/Forskarnivå

Confirmation

This course syllabus is preliminary, pending confirmation by The Research Programmes Board at the Faculty of Science. The course syllabus is formally approved in Swedish. This is a translation.

Learning outcomes

The aim of this course is that the student should, on completion, have acquired knowledge and competence in research synthesis methods in environmental science. This course is further aimed to provide the student with practical hands-on experience through active participation in the formulation and development of a publishable systematic review and meta-analysis.

On completion of the course, participants shall be able to:

Knowledge and understanding

- *Describe methods used within research synthesis and why they are important within environmental science research.*
- *Explain the purpose of different methods for research synthesis and compare their strengths and weaknesses.*

Competence and skills

- *Use database-searching and research searching tools to identify relevant literature*
- *Extract data from scientific publications using web and R-based applications*
- *Analyse extracted data within a meta-analytical framework*

Judgement and approach

- *Critically evaluate the strengths and limitations of different types of research synthesis*
- *Interpret results and the strength of evidence from systematic reviews and meta-analysis to determine generalisable trends within environmental sciences*

Course content

A description of the subject-specific content of the course, either as a running text or as a bullet list.

The course deals with:

- Systematic maps, reviews and rapid reviews
- Methods and applications for literature review and database searching
- Literature screening criteria and methods
- Data extraction from published literature
- Meta-analytical effect sizes and their quantification
- Statistical methods for meta-analysis and meta-regression

Forms of instructions

Teaching consists of a 3-day compulsory in-person session consisting of *lectures, seminars, and group workshops, followed by individual exercises and a final hybrid in-person/digital presentation at the end of the course*. It is compulsory to participate in lectures, seminars and exercises, and associated elements.

Forms of assessment

The assessment is based on completion of an individual report and through participation in compulsory components.

Grades

Possible grades are Pass and Fail. For a grade of Pass, the student must have passed both individual exercises.

Language of instruction

The course is given in English.

Necessary prior knowledge

A basic understanding of R is preferred but not necessary.

Additional information

The course is offered at the Centre for Environmental and Climate Science