# Mandatory course description

Fill in relevant information about the course. It is important to clearly demonstrate the learning objectives and outcome of the course in the interest of both PhD students and other stakeholders.

Please delete all text written in *italics* before you submit the course description.

The course description will be published in our [online course catalogue](https://phdcourses.ku.dk/Default.aspx?sitepath=sund&guid=1cf45799-1ac2-4f99-9c09-2ddc1cd5126b) and in the [national database for PhD courses](http://www.phdcourses.dk) and the [NorDoc course database](https://www.nordochealth.net/courses) (only scientific courses).

## Course title (maximum 80 characters)

Programming and statistical modelling in R

## Learning objectives

A student who has met the objectives of the course will be able to:

1. use programming principles (loops and functions) to handle repetitive tasks
2. use functions in R
3. use loops in R
4. do efficient data manipulation, visualization, and aggregation

*Please describe the students’ learning objectives in terms of; knowledge, skills and/or competences. Depending on the course curriculum, the distribution between the learning objectives may vary.*

*Describe the obtained learning objectives with words such as: ability to identify, explain, assess, define, describe, have insight, understand, demonstrate, analyse, conclude, compare, diagnose, theorise, put into perspective etc.*

*Please state 3-5 learning objectives.*

## Content

The course covers use of the statistical software package R. The aim is to take the intermediate R user to the next level, and make use of programming techniques for more efficient use of R. A key focus in on introducing core programming principles such as loops and functions. The course will have four half-day lectures after which the students will work on some exercises. This will give the students a chance to use and work with different aspects of R and apply the principles to their own research. *Describe the course curriculum in terms of scientific topics covered.*

## Participants

Ph.D.-students and health researchers with a basic knowledge of statistics corresponding to the course on basic statistics for health researchers and with a good working knowledge of R, e.g., as obtained by having already followed an introductory course on R. Participants are expected to bring their own laptop with R installed for the exercises. Max. 20 participants.

*Describe the target group of the course and required qualifications (if any) by the participating PhD students.*

## Relevance to graduate programmes

The course is relevant to PhD students from the following graduate programmes at the Graduate School of Health and Medical Sciences, UCPH:

All graduate programmes

Vælg et element.

Vælg et element.

*Select either “all graduate programmes” or up to three relevant graduate programmes.*

*If the course is organised by a graduate programme, please include this in your selection.*

[*See information about graduate programmes*](http://healthsciences.ku.dk/phd/about-the-graduate-school/graduateprogrammes/)*.*

## Language

English

*English or Danish. Note that all courses have to be provided in English if required by non-Danish participants.*

## Form

Lectures in four half days, four optional exercise hours placed as one each week. A mandatory take-home exam will be graded pass or fail is required in order to receive credit.

*For instance: Lectures, group work, discussions, poster presentations, exercises or others. If additional hours are stated in the budget, please make sure to describe the extra workload.*

## Course director

Associate professor Michael Sachs, Section of Biostatistics, Dept. of Public Health.

*Name, title, affiliation, email*

## Teachers

Michael Sachs and other members of the staff at the Section of Biostatistics.

*Names, titles, affiliations*

## Dates

30 October, 2, 6 and 9 November 2023, all days from 10.00-16.00.

## Course location

CSS

## Registration

Please register before 29 September 2023 *(Insert date - the Graduate School recommends 4 weeks before course start).*

## Expected frequency

The course is expected to run again in the Spring 2024

*If the course is recurrent and held at specific times each year, or you already know when the course is scheduled to be held again, you can state it here.*

Seats to PhD students from other Danish universities will be allocated on a first-come, first-served basis and according to the applicable rules.

Applications from other participants will be considered after the last day of enrolment.