

Monday 13:30–14:30

Role of Statistics 04 Using scripts: How to describe and reproduce a data analysis? (PJA).

R 02 Using R as a scripting engine. Allowing for the easy replication of analyses, and keeping a faithful record of how data was analysed.

Monday 15:00–17:00

R 03 Advanced scripting: conditional and repeated execution of statements.

R 04 S as a full programming language. Writing functions.

1.3 Second day: Statistical analysis with R

Tuesday, 9:00-12:30, interactive lectures

Role of Statistics 05 Data analysis from exploration to models (TMR, PJA).

Session 01 A simple ‘guided tour’ through the workflow of one experiment and its results.

Session 02 A simple ‘guided tour’ through the workflow of another experiment and its results.

Discussion Questions and answers.

Tuesday, 12:30-13:30

Lunch

Tuesday, 13:30-16:00, exercises

Session 03 Analysis of data examples in pairs (chosen from own data or data provided by instructors).

Tuesday, 16:00-17:00

Session 04 Presentation and discussion of work done in Session 03.

1.4 Third day: Photobiology calculations with R

Wednesday, 9:00-12:30

photobiology **packages** Introductory lecture.

Session 05 Calculating biologically effective doses.

Session 06 Exercises.

Session 07 Simulating spectral irradiance with models.

Session 08 Exercises.

Wednesday, 12:30-13:30

Lunch

Wednesday, 13:30-17:00, exercises

Session 09 Analysis of radiation data examples in pairs (chosen from own data or data provided by instructors).

General discussion 2 hours.

1.5 Take-home exam

To be made available before start of the course, and answers to be returned one week after the course.

Exam part B (take-home) Students will be given a set of reprints with different problems in the design of the radiation treatments or in the quantification of radiation and asked to identify what is the main problem in each of these publications. Students will be also asked to describe an approach to correct or avoid the problems.

Exam part A (take-home) Students will be given a set of reprints or examples with different problems in the statistical design or data analysis and asked to identify what is the main problem in each of these examples. Students will be also asked to describe an approach to correct or avoid the problems.