

Online Course

Critical Reasoning and Logic

Target group	PhD students and postdocs
Course description	<p>Scientists have to give arguments in many different contexts: in their publications, in grant applications, in lab meetings and in conference presentations. Nevertheless, the bases for strong and correct arguments are not always fully clear to them. Logic provides extremely helpful tools for scientists to develop their arguments in a coherent, well-structured and convincing way. The course introduces the most important concepts of logic: premises and conclusions of arguments, validity and soundness of arguments, deductive vs. inductive reasoning, common types of inferences and fallacies. The idea of the course is to use these concepts as a toolbox which provides useful techniques for everyday scientific work. The participants learn how to reconstruct arguments from scientific texts, how to give well-structured and logically valid arguments, and how to avoid misunderstandings.</p>
Contents	<ul style="list-style-type: none">• basic concepts of logic (validity and soundness of arguments etc.)• inductive and deductive arguments• common types of fallacies• reconstructing arguments from texts• tips and exercises for written argumentation
Objectives	<p>The participants...</p> <ul style="list-style-type: none">• state their arguments in a precise and logically coherent way• learn to quickly identify strengths and weaknesses of arguments• learn how to break-down arguments into their logical structure• train analytical thinking
Methods	<p>The methods are interactive throughout. The course provides extensive exercises that aim at the application of the acquired skills to the participants' individual fields of work. After the course the participants get individual feedback from the trainer on some of the extended exercises.</p>
Materials	<ul style="list-style-type: none">• Extended script (50 pages) including a list of recommended reading• exercise sheets and exercises in Moodle

Program

DAY 1

09:00 – 09:30	Round of introductions
09:30 – 10:00	What is an argument?
10:00 – 10:30	Deductive arguments (1): validity and soundness
10:30 – 11:00	<i>Break</i>
11:00 – 12:00	Deductive arguments (2): Arguments with background assumptions Argument patterns
12:00 – 13:00	Inductive arguments
13:00 – 14:00	The logical structure of scientific texts and talks
<i>Afternoon (aprox. 30 min)</i>	<i>Exercises</i>

DAY 2

09:00 – 09:30	Discussion of exercises from day 1
09:30 – 10:00	Writing a good introduction
10:00 – 10:30	Tips for written argumentation
10:30 – 11:00	<i>Break</i>
11:00 – 12:00	Fallacies
12:00 – 13:30	Tips and exercises for oral argumentation
13:30 – 14:00	Summary and feedback
<i>Afternoon (aprox. 30 – 60 min)</i>	<i>Exercises</i>

After the course..

Appointments via Doodle	Individual discussions with feedback on participants' texts and/or exercises
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