

BIO-604

ORPER summer school

Fantner Georg, Heyard Rachel

Cursus	Sem.	Type
Neuroscience		Opt.

Language of teaching	English
Credits	2
Session	
Exam	Project report
Workload	60h
Hours	39
Lecture	14
Exercises	7
Practical work	5
Project	13
Number of positions	30

Frequency

Only this year

Summary

This summer school will provide PhD students knowledge on the different practices that they can adopt from the beginning of their research journey onwards, to improve the quality, transparency, shareability and reproducibility of their work.

Content**DAY 1:**

11:00 - Stefano Moia: The reproducibility crisis.

Overview of the current situation in scientific research, with a talk on The Reproducibility Crisis.

13:00 - Georg Fantner: Open Science.

Overview of the Open Science landscape today. Open data, open code, open access publishing, open hardware, open software...

14:30 - Rachel Heyard: What is ? How to? Statistical plan.

Students will learn best practices in the (statistical) design of their studies and why it is so important to follow them.

15:30 - Rachel Heyard: Statistical plan workshop .

Investigation of a couple of good (statistical) study plans. Then we will turn to the participants' research questions and start writing a draft of a statistical analysis plan.

17:00 - Gabriel Gasque: Data collection - protocols.io.

The art of writing reproducible methods and how certain tools (such as this software) can be of great help. Then demo/crash course on how to practically use the software and write your methods.

DAY2:

10:00 - Guillaume Anciaux: Data storage - open repositories.

What are open repositories for data storage, how do they work and how you can benefit from using them. The main open repositories at our disposal: zenodo, The Swiss ETH domain,... How to practically use them.

11:00 - Guillaume Anciaux: What is? How to? Metadata - Datasharing.

Definition of metadata and the need for data curation. - what to store ? (size constraints, ecology ?) - when to discard ? - when to clean

13:00 - Chiara Gabella: What is? How to? DMP.

What is research data management (RDM)? Research Data Life Cycle ; FAIR Principles ; DMP: why & what & where ;

Funders' DMPs ; Data Summary ; Allocation of resources ; Data security ; Ethical aspects

14:00 - Chiara Gabella: DMP workshop.

First exercise: SNSF example. Activity: Issues & Services. Then students will work on their own Data Management Planning (with or without a DMP template). They will exchange with their peers about their challenges and solutions. Q&A and feedback.

15:30 - Caro Hautekiet: What is? How to? Pre-registration.

What are pre-registrations, why and how can we benefit from pre-registering our studies, where to pre-register, how to pre-register. Live examples of different kind of pre-registrations.

15:30 - Caro Hautekiet: Pre-registration workshop.

Students will be able to create their own pre-registration with the help of the speaker.

DAY 3:

10:00 - Eduarda Centeno: What is? How to? Clean code.

Why and how can we benefit from implementing good coding practices. And what are these practices concretely.

11:00 - Eduarda Centeno: Clean code workshop.

Students will work on their own code and apply the knowledge just learnt by improving and documenting their codes. Then they will do an exercise where they will have to explain their code a peer and the peer will help them spot what is not clear and understandable from an outside perspective.

13:00 -Régis Longchamp,Pierre Guilbert, William Wegener: Versioning with git workshop.

Code publishing good practices - Document the project, Dependencies management, Choose a license, Git Workflow, Project layout, Coding conventions, Software tests, Packaging & Distribution, Dissemination & Maintenance

15:00 - Lorenza Salvatori: Scientific publishing.

Open Access key concepts. Open Access publishing routes, requirements and figures. How to make your article Open Access (costs, agreements, services).

DAY 4:

10:00 - Régis Longchamp,Pierre Guilbert, William Wegener: Clean, document and share your code and data challenge.

During this "challenge", student will have two hours to apply the knowledge learnt throughout the week and clean, document and share their code and data online. At the need of the two hour challenge they will have to provide a link to their project. This will then constitute the material for the report to write: each student will have to select to project of a peer and try to reproduce findings (with access to their code and data through the link generated at the end of the challenge), and write a report on the reproducibility of the project on which they work and suggest ways to improve it.

13:00 - Zoltan Dienes: Registered Reports and the future of scientific publication.

What are registered report? how and why can we benefit from such practice? Open discussion on the alternatives to the current system and on the future of scientific publication.

15:00 - Zoltan Dienes, Russ Poldrack, Stefano Moia, Eduarda Centeno: "How do we change the incentives?" - Open Discussion.

Note

Invited speakers:

Georg Fantner; Rachel Heyard; Eduarda Centeno; Stefano Moia; Guillaume Anciaux; Lorenza Salvatori; Zoltan Dienes; Russ Poldrack; Chiara Gabella; Francesco Varrato; Regis Longchamp; William Wegener; Pierre Guilbert;Cara Hautekiet; Gabriel Gasque

Learning outcomes:

Clean, document and share their research project (code and data) in an open repository

Keywords

Open science; data management plan; open data; pre-registration; open access; clean code; open source

Resources

Moodle Link

- <https://go.epfl.ch/BIO-604>