

Introduction to Bioinformatics

Course information

Matej Hrnčiar

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What is this course about?

- Introduction into molecular biology and genetics
- Data types in bioinformatics & basic operations w/ them in **Linux**
- Data processing, cleaning, quality control
- Variant calling, annotation & interpretation of variants
- Working with sensitive data
- Automation and reusability

Lectures

- **doc. Mgr. Monika Kováčová, PhD. — course coordinator**
- Mgr. Martin Blažek
- Ing. Matej Hrnčiar
- Ing. Katarína Hutirová

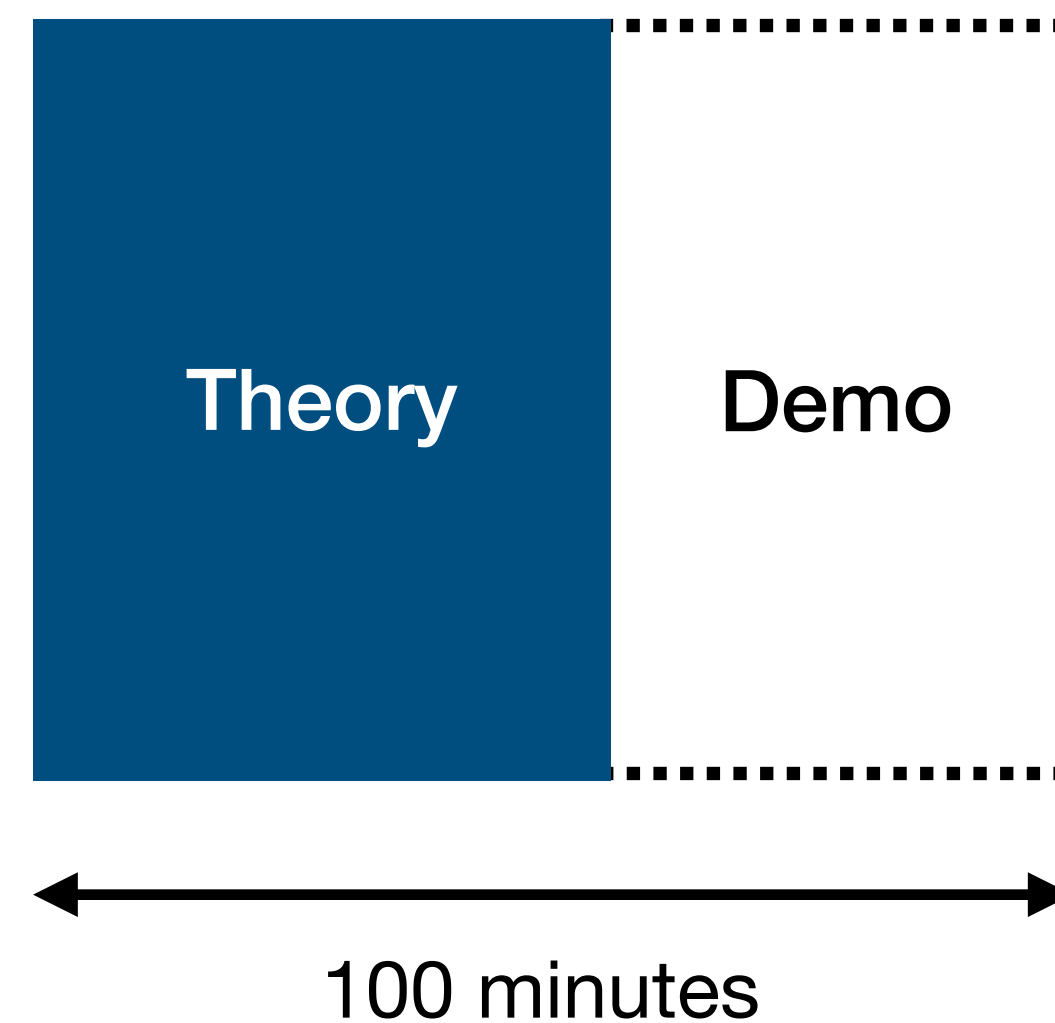
Seminars

- Mgr. Martin Blažek
- Ing. Katarína Hutirová

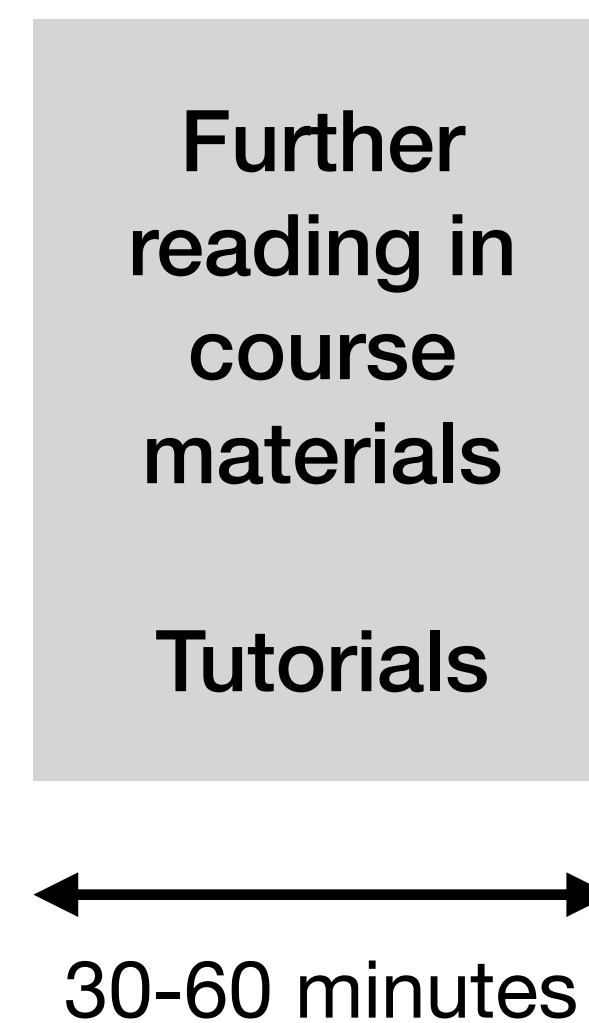
<https://github.com/brAInworks-labs/bioinformatics>

Course organisation

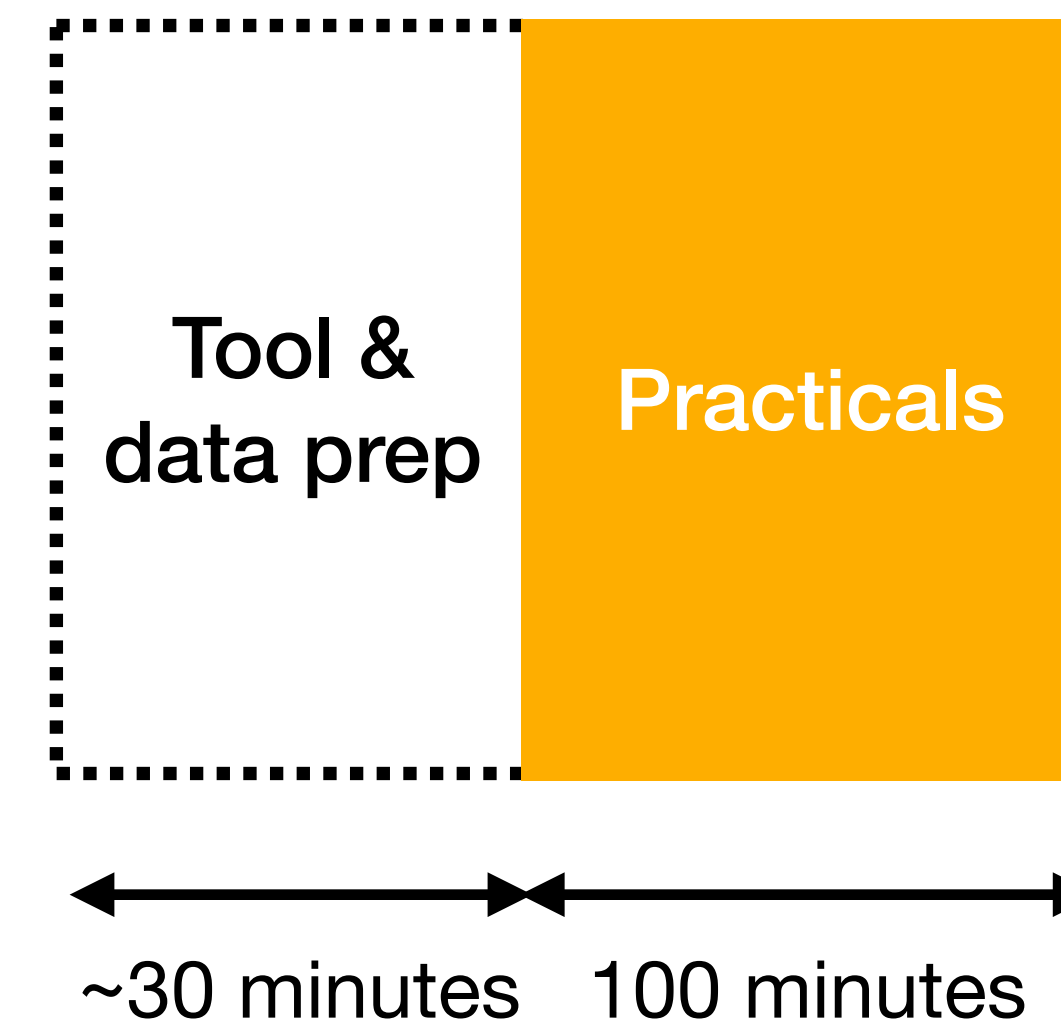
Lectures



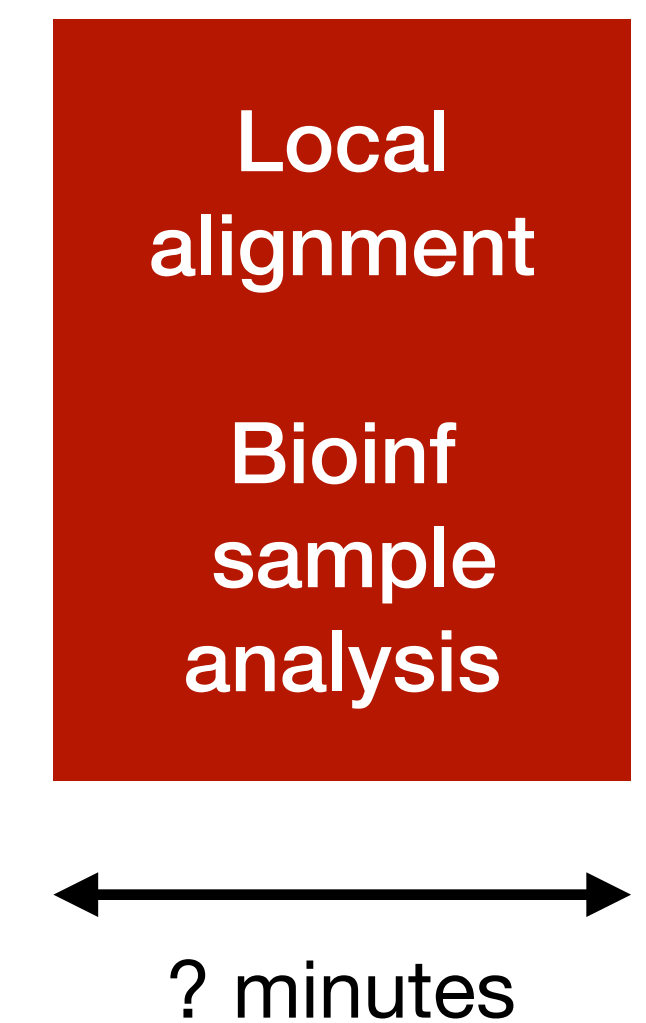
Self-study



Seminars



Projects



Projects

1. Local alignment:

- Implement algorithm
- Compare your solution with existing tools

2. Genomic sample analysis:

- Perform bioinformatic analysis on a real genomic sample
- Validate quality of the sample
- **Interpret results**

How to pass

- Active participation in lectures & seminars
- Seminars depend on each other — **finish all seminar goals before the following week, or you won't have the files you need**
- **Prepare all tools & data from *Getting started* section in advance** — failing to do so will result in being marked as absent!
- Collect at least **56 points** to pass

Grading

| | Max points attainable | Min required points | Due date |
|-------------------|-----------------------|---------------------|------------|
| Practical part | | | |
| Project 1 | 15 | 10 | 5th week |
| Project 2 | 45 | 25 | 12th week |
| Theoretical part | | | |
| Mid-course test 1 | 5 | - | 4th week |
| Mid-course test 2 | 5 | - | 8-9th week |
| Final exam | 30 | - | ? |

Plagiarism & use of AI

- Everything submitted for assessment must be your own independent work or must be **marked as copied**. If you do not notify the instructor that a part of submitted solution is copied from another source, **you will qualify for FX**.
- While the use of AI *is allowed*, you must understand what the AI-generated parts of your project do, otherwise **you will qualify for FX**. The AI-generated code doesn't contribute towards your grade, so **all parts generated by AI will result in zero points**.
- Note that while AI is good for code generation, it performs poorly in interpretation of results of bioinformatic analysis, so it's **strongly advised to not use the AI in Project 2!**

Questions?