

# Miniproject: General Instructions

Biological Modeling of Neural Networks (BIO-465)

Spring semester 2022

## General Instructions – Mini-Projects

As part of the Biological Modeling of Neural Networks course, you will work on one of the three proposed mini-projects : ‘Single neurons’, ‘Hopfield model’ and ‘Balanced networks’.

**Project** Choose one of the three mini-projects. The detailed descriptions are given in separate pdf files on moodle. The number of teams choosing the same project is not limited.

**Teams** You have to work in teams of two students. To find a project partner, you can use the Piazza forum (<https://piazza.com/class/kzsedwap2uo6xr?cid=5>).

**Final report** Document all your solutions in a project report of at most 5 pages (one per group). This report will be the basis of your group grade and should contain :

- a brief description of the topic you are dealing with in your own words (between 5 to 10 lines),
- the answers to the questions, including equations and figures where required,
- a short conclusion (between 5 to 10 lines).

Write concisely in complete English sentences and present figures carefully (axis labels, legends etc.)

**Python implementation** The mini-projects contain both theory questions and coding questions. The latter have to be solved using Python. You are allowed to use the neurodynex3 library and code that you have written for the Python exercises (but make sure you understand that code).

The python files with your code have to be submitted together with the final report. It will not be evaluated but it will be used for fraud detection, so make sure we can follow how you generated your figures.

**Regulations and fraud detection** The mini-project is graded and the same rules as for exams apply (“Ordonnance sur le contrôle des études à l’EPFL”). In short : EPFL takes any form of cheating and plagiarism very serious. The mini-project has to be your own work. You are not allowed to share code or answers across teams. However you can discuss ideas between teams and ask questions on Piazza. If you split the work between the two team members, both team members have to understand all parts of the mini-project. After the submission, we will perform a fraud detection which will consist of some questions about your report and your code. If you work in teams, both members should have a good understanding of the code that you submitted. Note : The goal of this meeting is fraud detection ; it is neither an exam nor a presentation.

**Grading** The mini-project has 60 points in total. Answering all the questions correctly gives you 50 points. The remaining 10 points are given for the general presentation of the report which includes the introduction and the conclusion.

The grade of the mini-project enters the final grade :  $\text{final grade for "BMNN"} = 30\% (\text{grade of mini-project}) + 70\% (\text{grade of the written exam})$ .

**Submission** You will have to submit your Python code and your project report in a **single zip** file via the moodle page. The file name should have the structure `TitleMiniProject_NameMember1_NameMember2.zip`. The zip file should contain :

- a single pdf file with you project report :  
`Report_TitleMiniProject_NameMember1_NameMember2.pdf`
- and the python files with your source code :  
`Code_TitleMiniProject_NameMember1_NameMember2.ipynb`.

If you work in teams both of you should submit the same zip file. On moodle, make sure you press the submit button before the deadline.

**Deadline** The deadlines to submit your code and report are

- 30th May 2022, at 11.55 pm (fraud-detection : 2nd - 3rd June 2022)
- 6th June 2022, at 11.55 pm (fraud-detection : 8th - 9th June 2022).

Note that the early deadline allows you to do the fraud detection before the exam preparation period, which you might find convenient.