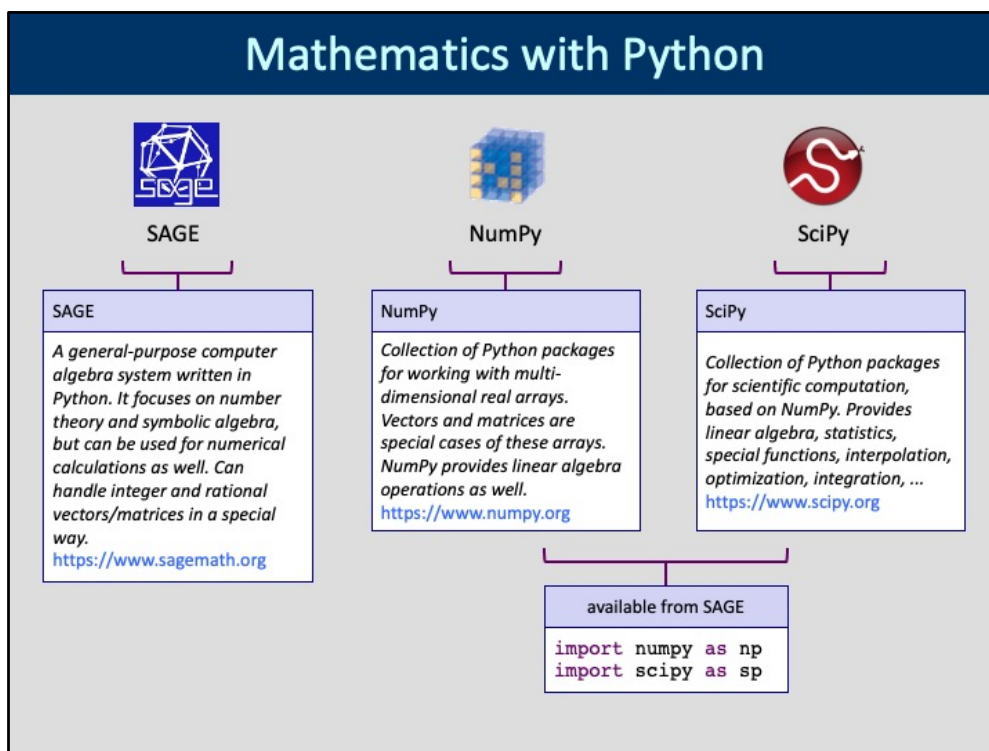


A quick-and-dirty guide on how to use CoCalc (formerly known as SageMathCloud), especially for homework assignments.

Mathematics with Python



NumPy and SciPy are two large Python packages for scientific computing. SAGE makes these available by default or you can `import` them in the usual manner. SAGE is a computer algebra system that would like to be an open-source replacement of Wolfram Mathematica. It is not quite there yet... ☹

SAGE in the cloud



cocalc.com

"Collaborative Calculation in the Cloud" that makes SAGE, Python, Julia, R, ... available via a webapp. Free access with very limited CPU and RAM resources. Server is located in the US.


AIT's CoCalc

Free version of CoCalc in a Docker container. Runs in a VM hosted in Germany on 4 CPUs and 16 GB RAM. Network access from Budapest is fast.

Sign up for CoCalc

AIT CoCalc installation
Support Sign In Sign Up

<https://sage.interquadrat.eu>



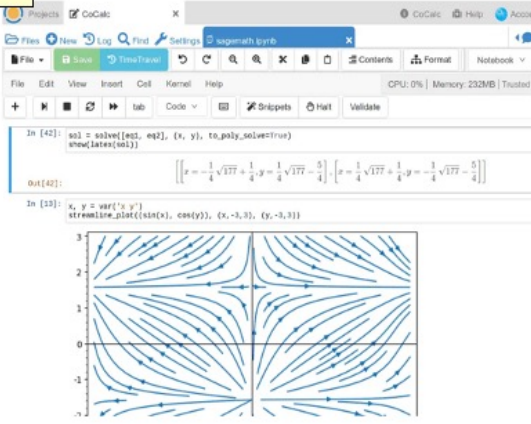
CoCalc at AIT

A SageMath/Cocalc installation for teaching computational biology.

An instance of CoCalc hosted by Aquincum Institute of Technology

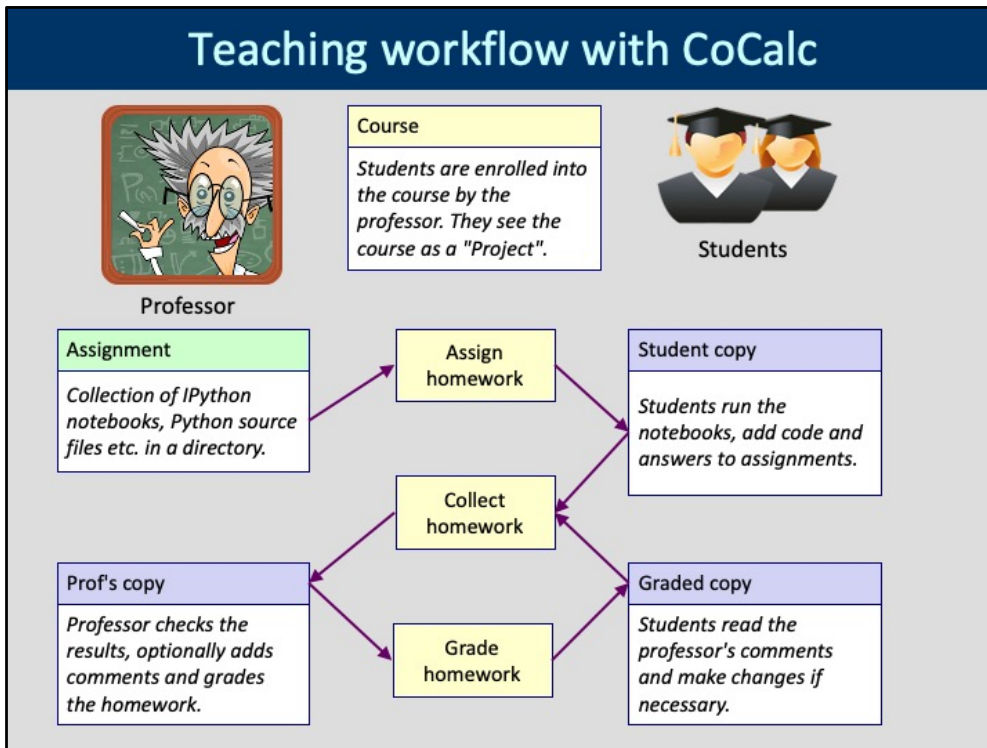
Sign In

Sign Up

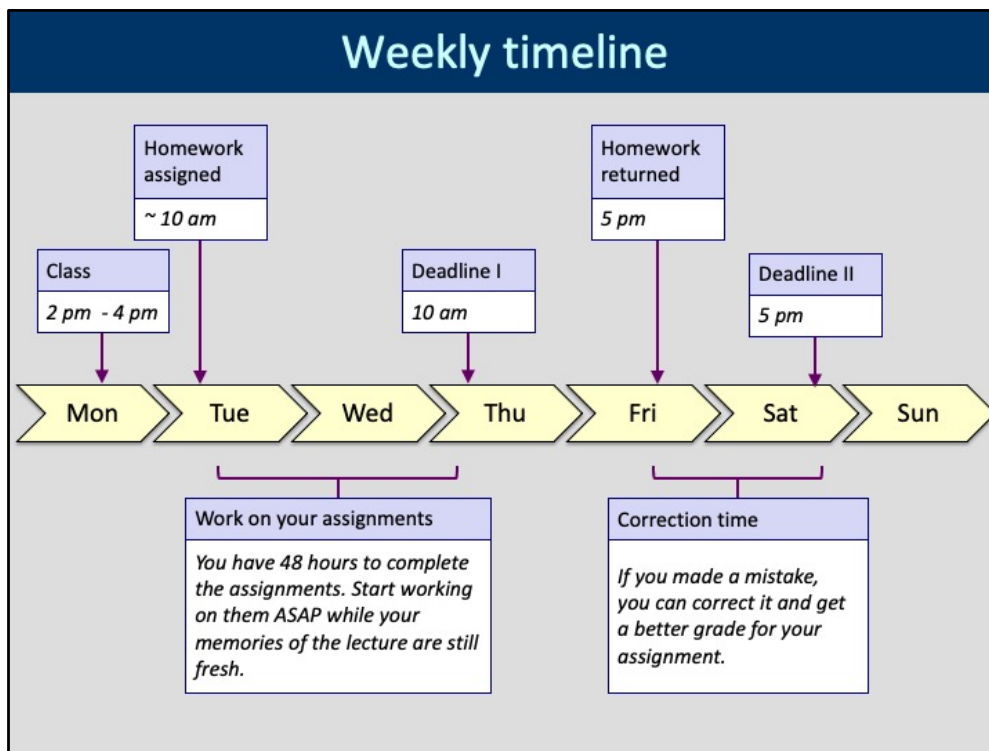


You are requested to create an account on <https://sage.interquadrat.eu>. This is the free version of CoCalc hosted at an AIT server. You will need a registration token which will be provided by me. Once you signed up please let me know by sending me an e-mail to aaszodi@ait-budapest.com so that he can "enrol" you to the course. Please read the Sage online help at <https://cocalc.com/help> and my short tutorial at <https://www.interquadrat.eu/biocyb/cocalc.php> as well.

Teaching workflow with CoCalc



CoCalc's "course management" provides homework assignment, collection and grading functionality. We will follow this general workflow during the course.



Homework will be assigned by Tuesday 10 am the latest. Then you'll have two days to work on them. Most assignments shall take no longer than about 30 minutes to complete. It is advisable to do them as soon as possible while your memories of the class are still fresh in your mind. This will help you understand the topic better. On Thu 10am I will collect your work and grade it. Your graded homework with possible comments will be returned by Friday 5pm. If you like your grade then you have nothing to do. If you made mistakes then you'll have 24 hours to correct them. I will collect the corrected work after Sat 5pm and re-grade it. You can always send me an email if something is unclear. While I am not going to do your homework for you :-), I'll help if necessary.

Example project page

Projects Deleted Hidden Project invite token...

[Create New Project...](#)

Joe Tarhonya - test No description [▶ András Aszódi](#) ■ Stopped

5 minutes ago
Ubuntu2004 (official)

[Load any older projects...](#)

The course

*You get enrolled into the course by the professor. It is usually called 20XX-fall or 20XX-spring where 20XX is the current year. Here we use a course called **test**.*

When you log into CoCalc, you will see our course as your "project", corresponding to a subdirectory under the main "biocyb" directory.

The teacher assigns a homework task

The screenshot shows a web application interface for managing assignments. At the top, there's a navigation bar with 'Projects' and 'Biocybernetics' tabs. Below that, a menu includes 'Files', 'New', 'Log', 'Find', 'Settings', 'Processes', and 'test.course'. The main content area is titled 'Assignments (1)' and contains a search bar for assignments. A table displays the assignment 'biocyb/assignments/intro' with columns for 'Student', '1. Assign to Student', '2. Collect from Student', and '3. Record homework grade.'. The student 'Joe Tarhonya' is listed with 'Assign...' and 'Collect...' buttons and their respective timestamps.

Student	1. Assign to Student	2. Collect from Student	3. Record homework grade.
Joe Tarhonya	Assign... 6 minutes ago	Collect... now	Enter grade...

This is how I will assign a new homework to you. You won't see this page.

The student receives the assignment

The image consists of two screenshots of a file manager interface, likely from a learning management system. The top screenshot shows the file manager at the path `/biocyb`. A callout box titled "Assignment location" points to a directory named `biocyb` in the file list. The text in the callout says: "Once you received your first assignment, it will appear as a new directory under `biocyb/assignments` in your project." The bottom screenshot shows the file manager at the path `/biocyb / assignments / intro`. A callout box titled "Assignment files" points to a file named `linalg.ipynb` in the file list. The text in the callout says: "Most homework assignments consist of several IPython notebooks. Please make sure you run all of them!"

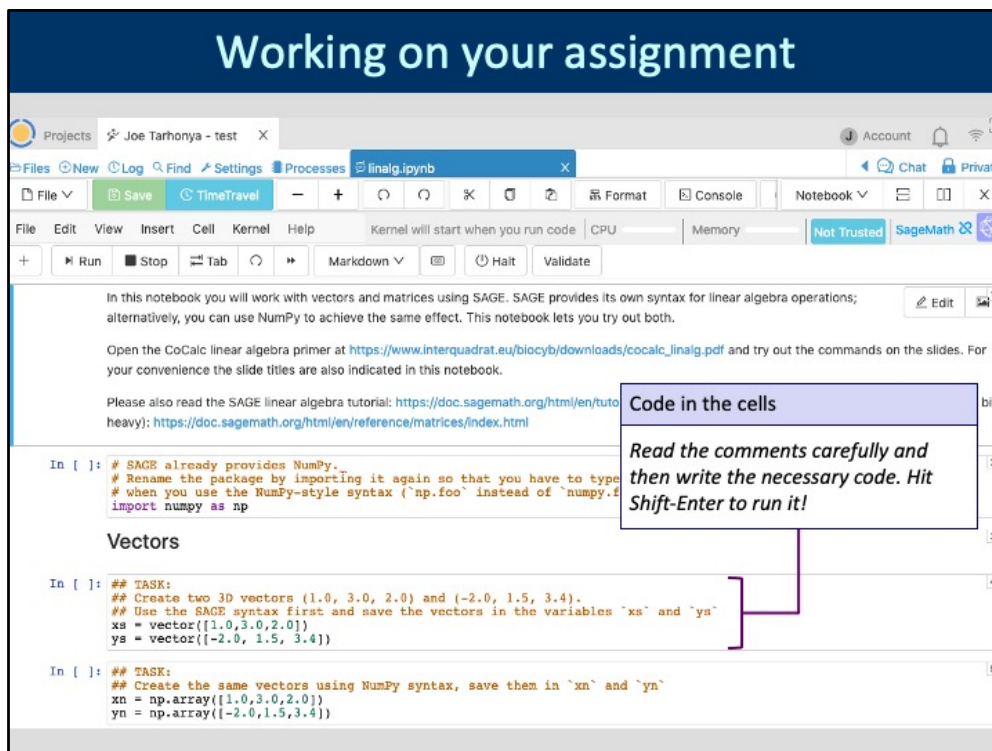
Assignment location

Once you received your first assignment, it will appear as a new directory under `biocyb/assignments` in your project.

Assignment files

Most homework assignments consist of several IPython notebooks. Please make sure you run all of them!

The assignments are provided as IPython/Jupyter notebooks which have the *.ipynb extension. Occasionally I add Python support modules or PDF handouts to guide you.



This screenshot shows a Jupyter notebook as it appears in CoCalc. Most notebook cells contain only comments that provide instructions on how to solve the task at hand. You are supposed to enter Python code and then run it. The notebooks are auto-saved every minute.

When working on your assignments keep your lecture notes at hand because the assignments often refer to aspects that we discussed in class.

The teacher collects, grades, returns

Assignment Name Due Date ▾

▼ biocyb/assignments/intro

Due
 Peer Grading...

(1 / 1 assigned)
 (1 / 1 collected)
 Skip entering grades
 (0 / 1 returned)

Student	1. Assign to Student	2. Collect from Student	3. Record homework grade.	4. Return to Student
Joe Tarhonya	<input type="button" value="Assign..."/> <input type="button" value="Open"/> <small>7 minutes ago</small>	<input type="button" value="Collect..."/> <input type="button" value="Open"/> <small>less than a minute ago</small>	<input type="button" value="Save"/> <input style="width: 100%;" type="text" value="A+"/> Well done, Joe!	<input type="button" value="Return"/>

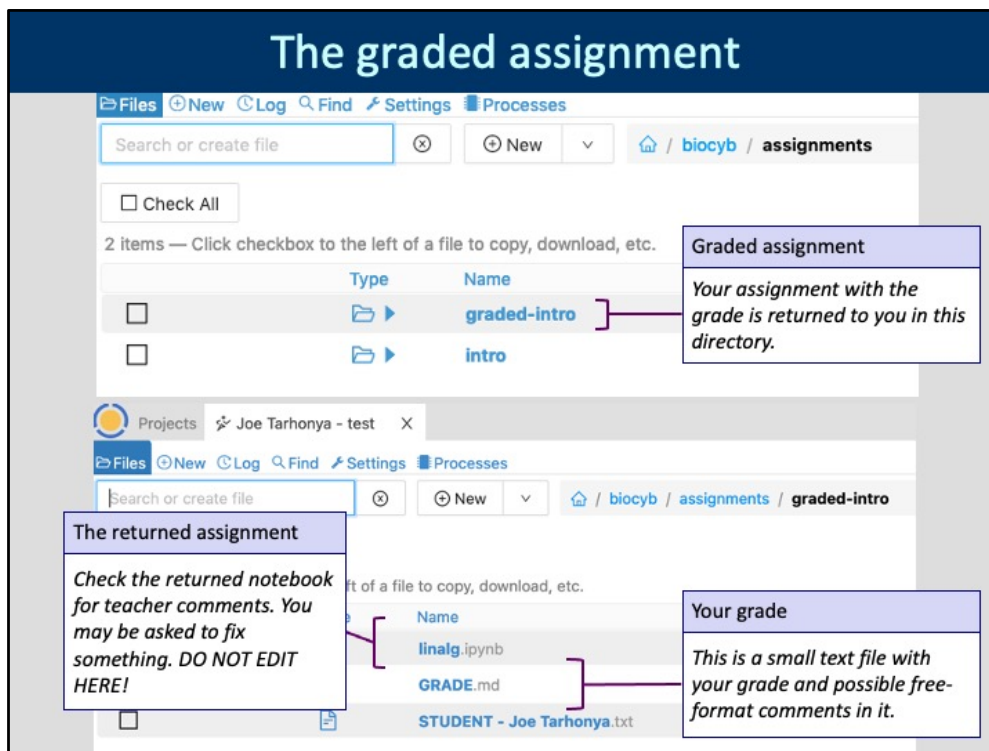
Collecting

Students do not submit their assignments, the teacher collects them. This is somewhat unusual.

Grading & returning

The grade is free text, sometimes you get explanations. Then your homework is returned.

This is from my perspective again. Remember, you do not submit your assignment, but rather I will collect it. After grading I'll return them to you.



If you are asked to fix something in your assignment worksheet, it is much better if you edit the original assignment, because I can re-collect it. This way we eventually reach a stage where the assignment is correctly done.