

Python and Jupyter Notebook Installation Instructions



Python is supported on a range of operating systems. In general, Linux and macOS have Python pre-installed. For other operating systems like Windows, Python can be downloaded from the website (https://www.python.org/downloads/).

For this course, we will install Python through an open-source data science package management system called **conda**. It is developed by Anaconda, Inc. and runs on Windows, macOS and Linux.

Python has two versions:

- Python 2.x
- Python 3.x

Of these two, Python 2 is older and is no longer supported or maintained by Python.org. So, we will use the latest stable version of Python 3 that comes with the conda installer.

There are two types of conda installers:

Anaconda	A full setup with IDE, GUI, CLI and Needs 3GB+ disk space scientific packages	
Miniconda	Minimal installer with conda, Python and dependencies	Needs 400MB disk space

We recommend downloading **Miniconda** for its lean setup, it contains all the essential tools required for this course. Additional Python packages can be easily installed using the **conda** or **pip** package managers.

To download Miniconda, visit the url:

https://docs.conda.io/en/latest/miniconda.html Choose the installation file by

• your operating system - Windows or macOS



- your computer's CPU bit size 32 or 64 bit (most present day computers are 64 bit)
- Python 3.x version

Python version	Name	Size
Python 3.7	Miniconda3 Windows 64-bit	51.6 MiB
	Miniconda3 Windows 32-bit	52.2 MiB
Python 2.7	Miniconda2 Windows 64-bit	50.9 MiB
	Miniconda2 Windows 32-bit	48.7 MiB

Once you have the installation file downloaded to your computer, follow the below operating system specific instructions.

Installation Steps: WINDOWS OS

- The first step is to verify if your computer already has Python installed. Here's a simple way to check that:
 - Open Command Prompt from the Windows Start menu
 - Type python --version and press Enter
 - If Python is installed, a version number will be returned
 - If Python is not installed, a blank line will appear



- Remember this, as it will be useful later during Miniconda installation
- Now open the Miniconda installation file that you have downloaded to your computer



• A setup guide window will appear (similar to the below image), click Next.

O Miniconda3 4.8.2 (64-bit) Se	tup	_		×
O ANACONDA.	Welcome to Miniconda3 (64-bit) Setup Setup will guide you through the installa 4.8.2 (64-bit). It is recommended that you close all oth before starting Setup. This will make it p relevant system files without having to r computer. Click Next to continue.	tion of t er applie	Miniconda3 cations to update	
	Next	>	Cance	el



• Click *I Agree* on the license agreement window and proceed to the next window.

O Miniconda3 4.8.2 (64-bit) Setup		_		\times
O ANACONDA.	License Agreen Please review the (64-bit).		efore installing Mi	iniconda3 ·	4.8.2
Press Page Down to see th	e rest of the agreer	nent.			
End User License Agreeme	nt - Anaconda Indiv	idual Edition			^
Copyright 2015-2020, Ana	conda, Inc.				
All rights reserved under t	he 3-dause BSD Lice	ense:			
This End User License Agre and Anaconda, Inc. ("Ana (which was formerly known	conda") and govern	s your use of An			~
If you accept the terms of agreement to install Minicor	-	-	inue. You must a	ccept the	
Anaconda, Inc					
		< Back	I Agree	Cano	el



• Choose the *Just Me* option on *Install for* window. This is important if you are installing Miniconda on a work computer as you might not have the administrator privileges.

 Miniconda3 4.8.2 (64-bit) Setup			_		×
O ANACONDA.	Select Installation Please select the Miniconda 3 4.8.2	type of installat	tion you w	ould like	to perfor	m for
Install for:						
Just Me (recommended))					
◯ All Users (requires admir	n privileges)					
Anaconda, Inc. ————				_		
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 Select the installation folder for Miniconda, we recommend the default option at C:\Users\<your-username>\Anaconda3\. Make sure not to have spaces in your file path.

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O ANACONDA.	Choose Install L Choose the folde		tall Miniconda3	4.8.2 (64-bi	t).
Setup will install Miniconda				different	
folder, click Browse and se	elect another folder.	Click Next to co	ntinue.		
Destination Folder					
C:\Users\25494\Minic	onda3		Br	owse	
Space required: 250.0MB					
Space available: 145.6GB					
Anaconda, Inc. ———					

- The next step is an important part of the installation process.
 - Keep the first option "Add Miniconda3 to my PATH environment variable" checked so that you can use **conda** directly from your Command Prompt (Windows) or Terminal (Mac OS).
 - The second option "Register Miniconda3 as my default Python" is selected by default. You can keep this selected if this is your first Python installation and if you want to use this Python version in other applications. If you already have Python pre-installed and using it for other applications, then you might want to uncheck this option as well.



O Miniconda3 4.8.2	(64-bit)	Setup		_		×
O ANACON	DA.	Advanced Insta Customize how A	-		WS	
Advanced Option		my PATH environn	nent variable			
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PyCharm, Wi	ng IDE, I	rograms, such as P PyDev, and MSI bir he primary Python	iary packages,	to automatically	,	
Anaconda, Inc. ——			< Back	Install	Can	icel



• The next window will install Python, conda and other required dependencies. This might take 1-2 minutes. Proceed to the *Next* window once installation is complete.

O Miniconda3 4.8.2 (64-bit) Setup	_	
O ANACONDA.	Installation Complete Setup was completed successfu	Шγ.	
Completed			
Extract history			
Processed C: \Users\2549 Execute: "C: \Users\2549 Running post install Execute: "C: \Users\2549 Execute: "C: \Users\2549 Created uninstaller: C: \U	us 4\Miniconda3\Menu\console_short 4\Miniconda3\Menu\powershell_sh 4\Miniconda3\pythonw.exe" -E -s ' 4\Miniconda3\pythonw.exe" -E -s ' sers\25494\Miniconda3\Uninstall-M	iortcut.json success 'C:\Users\25494\Mii 'C:\Users\25494\Mii 'C:\Users\25494\Mii	sfully. nicond
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	< Back	Next >	Cancel



• Click *Finish* and exit setup. You can refer to the resources or opt out based on your preference.

O Miniconda3 4.8.2 (64-bit)	Setup	_		\times
ANACONDA .	Completing Minicol (64-bit) Setup Thank you for installing Anacon Here are some helpful tips and We recommend you bookmark to back to them later. Anaconda Individual Edition	nda Individual Edi resources to get these links so you Tutorial	ition. : you star	
	< Back	Finish	Can	cel

• Optionally, you can restart your computer now.

Verify Installation:

• Open Anaconda prompt from Windows Start menu.





• Enter conda list to check if conda is installed and working, this will display a list of installed packages and their versions.

Anaconda Prompt (Miniconda3))		_		×
(hear) Orly and list					^
(base) C:\>conda list		5404)44-4-2-			
<pre># packages in environment "</pre>	at C:\Users\2	5494\Miniconda3:			
# # Name	Version	Build	Chanr	1	
	1.3.0		Chanr	ier	
asn1crypto ca-certificates		py37_0			
	2020.1.1	0			
certifi	2019.11.28	py37_0			
cffi	1.14.0	py37h7a1dbc1_0			
chardet	3.0.4	py37_1003			
conda	4.8.2	py37_0			
conda-package-handling		py37h62dcd97_0			
console_shortcut	0.1.1	4			
cryptography	2.8	py37h7a1dbc1_0			
idna	2.8	py37_0			
menuinst	1.4.16	py37he774522_0			
openssl	1.1.1d	he774522_4			
pip	20.0.2	py37_1			
powershell_shortcut	0.0.1	3			
pycosat	0.6.3	py37he774522_0			
pycparser	2.19	ру37_0			
pyopenssl	19.1.0	ру37_0			
pysocks	1.7.1	py37_0			
python	3.7.6	h60c2a47_2			
pywin32	227	py37he774522_1			
requests	2.22.0	py37_1			
ruamel_yaml	0.15.87	py37he774522_0			
setuptools	45.2.0	py37_0			
six	1.14.0	py37_0			
sqlite	3.31.1	he774522_0			
					~



• Enter the command **python**. This command runs the Python shell. If conda is installed and working, the version information it displays when it starts up will include *Anaconda*. To exit the Python shell, enter the command **quit()**.





Installation Steps: macOS

- Miniconda has two types of installation files for macOS:
 - Package file (.pkg) for GUI based installation
 - Shell file (.sh) for installation through Terminal
- Download either of these file types based on your preference.

Package File Installation (GUI):

- Open the installer file you have downloaded to your computer.
- Follow through the steps on the installer screen by agreeing to the license terms.



• Choose the default option *Just Me* on the Destination select window, this is important if you do not have the administrator privileges for the computer. The default installation



path for GUI based installation is at /Users/<your-username>/opt folder.

00	🥪 Install Miniconda3	3
	Select a Destination	
 Introduction Read Me 	How do you want to install this software?	
 License Destination Select 	Install for all users of this computer	
 Installation Type Installation 	Install for me only	
	Install on a specific disk	
	Installing this software requires 63.5 MB of space.	
	You have chosen to install this software in your home folder. Only the current user will be able to use this software.	
	Go Back Continue	

• Continue through the installation and close the installation window once complete.





Terminal Installation:

- Open the Terminal and navigate to the folder where the installation file is downloaded to.
- Run the bash command followed by the filename like: bash Miniconda3-latestMacOSXx86_64.sh
- Follow through the screen prompts and agree to license terms by entering yes

```
Welcome to Miniconda3 py37_4.8.3
In order to continue the installation process, please review the license
agreement.
Please, press ENTER to continue
>>>
```

 Next, select the default installation location by pressing ENTER key. Unlike the .pkg file, the default path for shell installation is at: /Users/<your-username>

```
Miniconda3 will now be installed into this location:
/Users/BruceWyne/miniconda3
```

```
    Press ENTER to confirm the location
    Press CTRL-C to abort the installation
```

- Or specify a different location below
- The installer prompts "Do you wish the installer to initialize Miniconda3 by running conda init?" Type yes

```
Preparing transaction: done
Executing transaction: done
installation finished.
Do you wish the installer to initialize Miniconda3
by running conda init? [yes|no]
[yes] >>>
```

 This will make changes to your bash_profile at: /Users/<yourusername>/.bash_profile. Once the installation is complete, close and reopen the Terminal.

```
==> For changes to take effect, close and re-open your current shell. <==
If you'd prefer that conda's base environment not be activated on startup,
   set the auto_activate_base parameter to false:
conda config --set auto_activate_base false
Thank you for installing Miniconda3!</pre>
```



Python installation without Anaconda (Windows 10)

- 1. Apart from this course, you can install Python directly without using Anaconda package manager.
 - a. Download the latest Python 3 release from <u>https://www.python.org/</u>. Choose either the *web-based installer* or the *executable installer*.
 - b. Run the installer. Select the option to Add Python 3.x to PATH.



- 2. Install Python packages using *pip*
 - a. Open a Command Prompt window



b. For example, enter the following command to install NumPy package: pip install numpy. This will download and install the package.



2. Jupyter Notebook



Jupyter supports interactive data science and scientific computing across multiple programming languages. There are two types of Jupyter software:

- **Jupyter Notebook**: open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text.
- **JupyterLab**: web-based interactive development environment for Jupyter notebooks, code, and data. JupyterLab will eventually replace the classic Jupyter Notebook.

You can start working with Jupyter Notebook and as you get comfortable using it, you can move on to JupyterLab later.

Install Jupyter Notebook

- Install Jupyter Notebook using the following command in the Command Prompt: conda install -c conda-forge notebook
- This will in turn install several required packages and prompts for your permission to proceed. Type **y** and wait until the installation is complete.
- In order to save jupyter notebooks as PDF documents, install the package <u>notebook-as-pdf</u>

by running the following commands:

- o python -m pip install -U notebook-as-pdf
- Once done, launch jupyter using the command: jupyter notebook



• This will start the notebook server and open a new tab in the default web browser of your computer.

💭 Jupyter	Quit Logout
Files Running Clusters	
Select items to perform actions on them.	Upload New - C
	Name Last Modified File size
🗋 🗅 Аррз	9 months ago
	9 months ago
Downloads	a month ago
Drivers	9 months ago
inetpub	8 months ago
C Intel	9 months ago
C PerfLogs	15 days ago
Program Files	a day ago

- You can either browse to your desired directory using the Jupyter interface or navigate to the directory in the command prompt prior to launching Jupyter notebook.
- To create a new notebook, select *Python 3* option under *New* menu.

Name 🕹	Upl	oad New - 2
	Notebook:	
	Python 3	te
	Other:	Create a new notebook with Python 3
	Text File	
	Folder	
	Terminal	
	8 months	ago



• As a notebook opens in the new tab, make sure to select the *code* option to execute Python script. You can add text to the notebook using *markdown* option.





 To save a notebook to pdf, select File menu > Download as and click on PDF via HTML option.

C Jupyter Untitled (autosaved)





Python Package Management:

A Python package or library is a collection of modules, functions and methods that allows for a minimal use of code during development. There are several useful data science packages for Python and we will work with a few of them in this course.

Installing a package is quite similar to the Jupyter installation you have just done. In general packages are installed through package managers like conda and pip. Just specifying the command conda install <package_name> in the Command Prompt and it will install that package if it exists in conda's repository. If not you can always use pip install <package_name>, which is in fact the most famous and widely used package management system for Python.

Let us go over an example and install NumPy package using **conda**. In Command Prompt:

- conda install numpy will install the NumPy package in your environment
- Use conda list command to verify the installation or to list all packages in your environment
- You can install a specific version of the package limited to your environment by specifying the version number like conda install numpy==1.18.1
- conda update numpy will update the NumPy package to the latest version
- Finally to uninstall the package, use the command conda remove numpy

As we are primarily using the **conda** package manager, use **pip** only as an alternative, that is if a package is not found through one of the conda's channels.