

1. Install Miniconda or Anaconda

- **Conda** is both a **package** and **environment manager** that simplifies installing and managing Python libraries.
 - **Steps:**
 1. Download from:
 - [Miniconda](#) or
 - [Anaconda](#)
 2. Run the installer and follow prompts.
 3. Add Conda to your system PATH (optional but useful).
 4. Restart your terminal.
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2. Create and Activate a Virtual Environment

```
conda create -n IDA python=3.9
conda activate IDA
```

This isolates dependencies for your project.

3. Install Required Libraries

```
conda install numpy pandas matplotlib seaborn scikit-learn jupyter scipy statsmodels
```

These libraries cover:

- **NumPy** → numerical computing
 - **Pandas** → data manipulation
 - **Matplotlib / Seaborn** → data visualization
 - **Scikit-learn** → machine learning
 - **SciPy / Statsmodels** → statistics and hypothesis testing
 - **Jupyter** → interactive notebooks
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4. Test Installation

```
conda activate IDA
mkdir ~/Desktop/IDA_exercises
cd ~/Desktop/IDA_exercises
jupyter notebook .
```

Then test imports inside Jupyter:

```
import numpy as np, pandas as pd, matplotlib.pyplot as plt, seaborn as sns
import sklearn
from scipy import stats
import statsmodels.api as sm
```

5. Tips for Smooth Use

- Update regularly: `conda update --all`
 - Close unused notebooks to free memory.
 - Practice small projects to master tools.
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Outcome:

You'll have a ready-to-use **Python Data Science Environment** capable of data analysis, visualization, and modeling using Jupyter Notebook.

Data Science Environment Setup – Cheat Sheet

Step	Task	Command / Description	Purpose
1	Install Conda	Download & install:  Miniconda or Anaconda	Manages Python packages & environments
2	Create environment	conda create -n IDA python=3.9	Makes isolated environment for the course
3	Activate environment	conda activate IDA	Switch to the working environment
4	Install libraries	conda install numpy pandas matplotlib seaborn scikit-learn jupyter scipy statsmodels	Installs main Data Science libraries
5	Test installation	python import numpy as np, pandas as pd, matplotlib.pyplot as plt, seaborn as sns import sklearn, statsmodels.api as sm, scipy	Verifies all packages are correctly installed
6	Launch Jupyter Notebook	jupyter notebook .	Opens interactive workspace
7	Organize workspace	mkdir ~/Desktop/IDA_exercises cd ~/Desktop/IDA_exercises	Keeps all exercises and notebooks together
8	Update environment	conda update --all	Keeps packages up to date
9	Close unused notebooks	—	Saves memory and avoids kernel crashes

Main Libraries Overview

Library	Purpose
NumPy	Numerical computations, arrays
Pandas	Data manipulation & cleaning
Matplotlib / Seaborn	Data visualization
SciPy / Statsmodels	Statistical tests, modeling
Scikit-learn	Machine learning
Jupyter Notebook	Interactive data analysis workspace

Result:

You now have a fully functional **Python Data Science Environment** ready for data analysis, visualization, and modeling.

Install Conda + Create and Activate a Jupyter Notebook Environment (Windows 11)

◆ STEP 1 — Download & Install Miniconda (Recommended)

Miniconda is lighter and faster than Anaconda.

Download Miniconda (Windows 64-bit)

<https://docs.conda.io/en/latest/miniconda.html>

Choose:

- **Miniconda Windows 64-bit**
- **Installer: Miniconda3 Windows 64-bit .exe**

Installation:

1. Run the installer
 2. Click **Next → I Agree**
 3. Choose **Just Me**
 4. Keep installation path default
 5. IMPORTANT: Check this box:
 - **✓ Add Miniconda3 to my PATH environment variable** (recommended)
 6. Install → Finish
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◆ STEP 2 — Open Conda Terminal (Anaconda Prompt or CMD)

You can use:

- **Anaconda Prompt** (best)
 - **Command Prompt**
 - **PowerShell**
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◆ STEP 3 — Create Your Environment (example name: `ida`)

```
conda create -n ida python=3.11 -y
```

This installs:

- A clean Python 3.11
 - A new environment named `ida`
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◆ STEP 4 — Activate the Environment

```
conda activate ida
```

You should now see:

```
(ida) C:\Users\yourname>
```

◆ STEP 5 — Install Jupyter Notebook in the Environment

```
conda install notebook -y
```

OR using pip:

```
pip install notebook
```

◆ STEP 6 — Launch Jupyter Notebook

```
jupyter notebook
```

Your browser will open automatically at:

```
http://localhost:8888
```

◆ STEP 7 — (Optional but Recommended) Install Pandas, NumPy, Matplotlib

```
conda install pandas numpy matplotlib -y
```

◆ STEP 8 — (Optional) Set Jupyter Notebook to always use this environment

If you want to select this environment as a kernel from the Jupyter interface:

```
python -m ipykernel install --user --name ida --display-name "IDA Environment"
```

Now inside Jupyter, you will see:

IDA Environment

as an option under **Kernel → Change Kernel**.



You now have:

- ✓ Conda installed
 - ✓ A clean environment (`ida`)
 - ✓ Jupyter Notebook running inside it
 - ✓ Essential data analysis libraries installed
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