

# Matplotlib

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Note: `plt.show()` must be called if you want to see the plot in a script.  
In a notebook, it is optional.

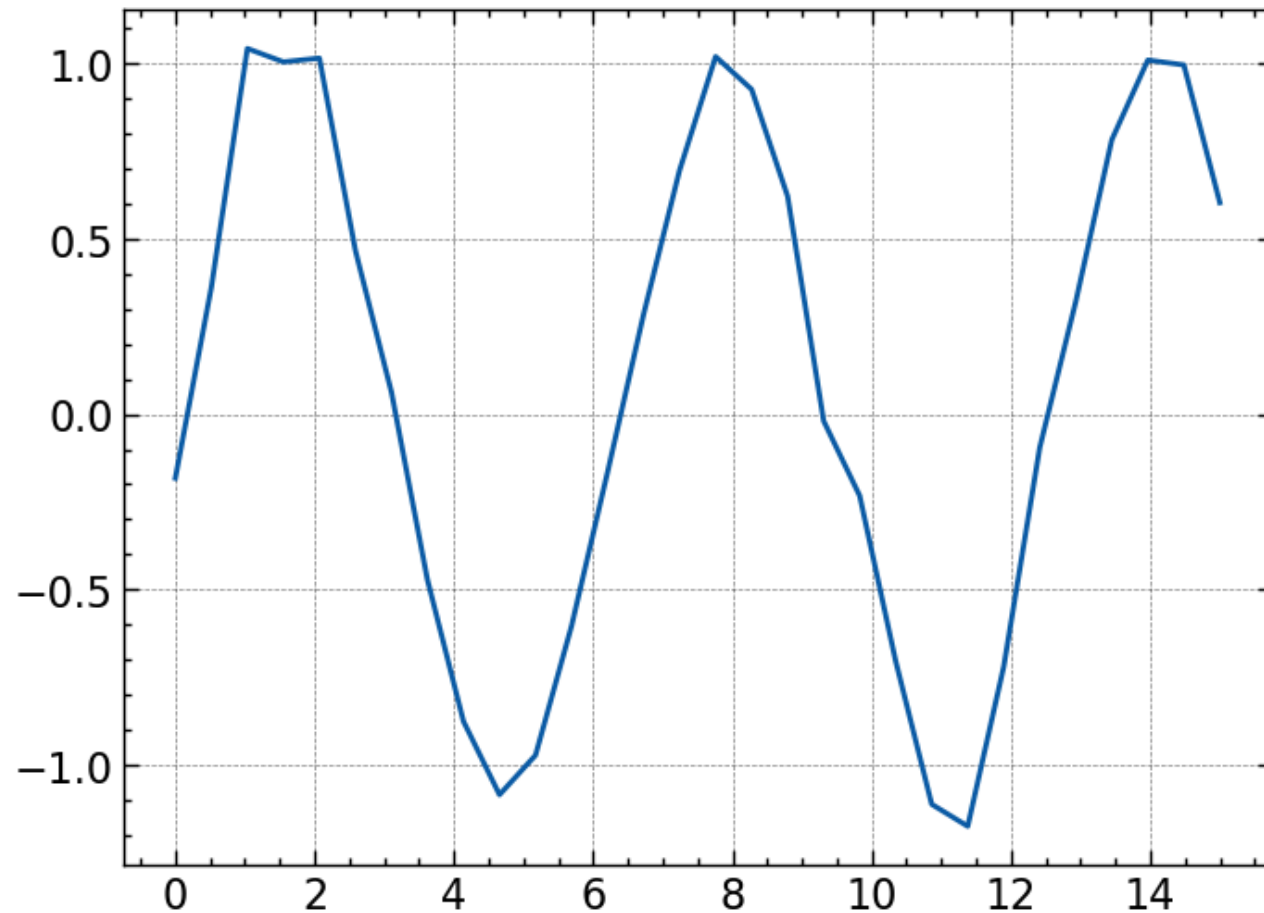
```
1 import numpy as np
2 import matplotlib.pyplot as plt
3 import scienceplots # professional paper plots
```

```
1 # this uses scienceplots to make plots look better
2 plt.style.use(['science', 'notebook', 'grid'])
```

# Basics

```
1 x = np.linspace(0, 15, 30)
2 y = np.sin(x) + 0.1 * np.random.randn(len(x)) # sine plus noise
```

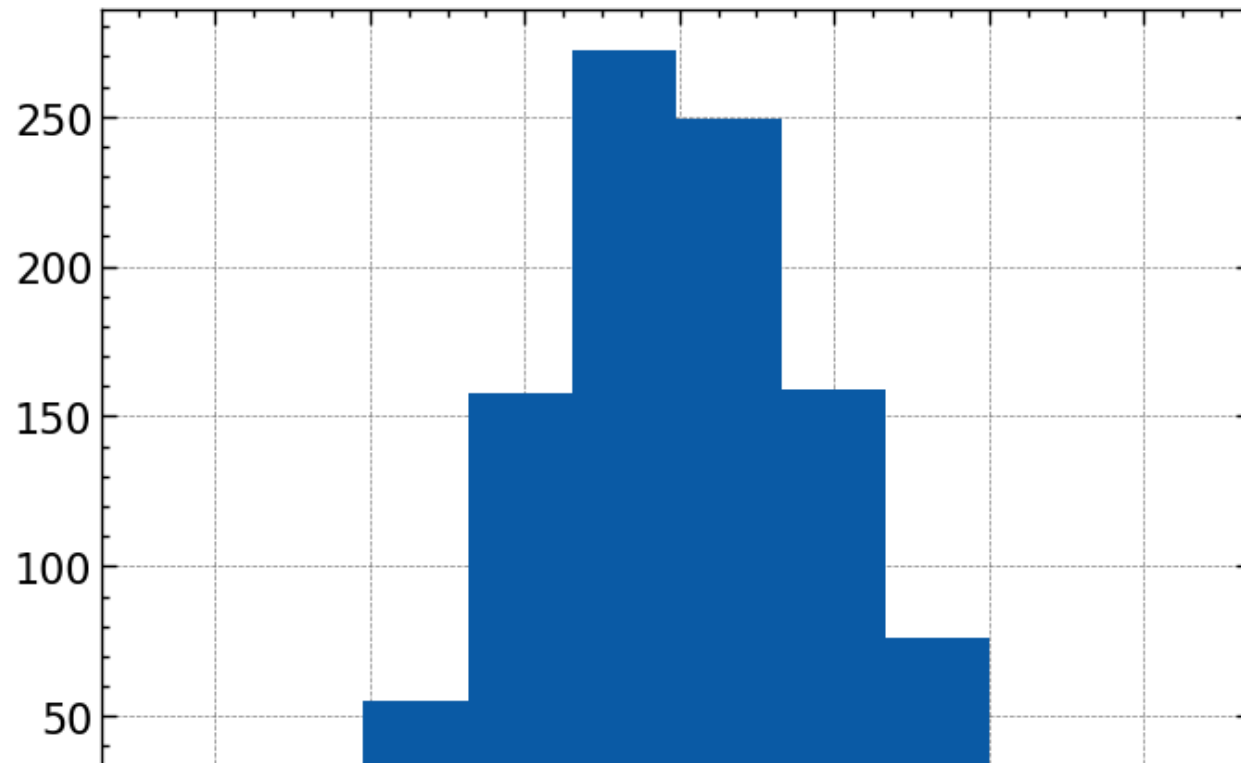
```
1 plt.plot(x, y)
```



# Histograms

```
1 res = np.random.randn(1000)*0.2 + 0.4
2 plt.hist(res)
```

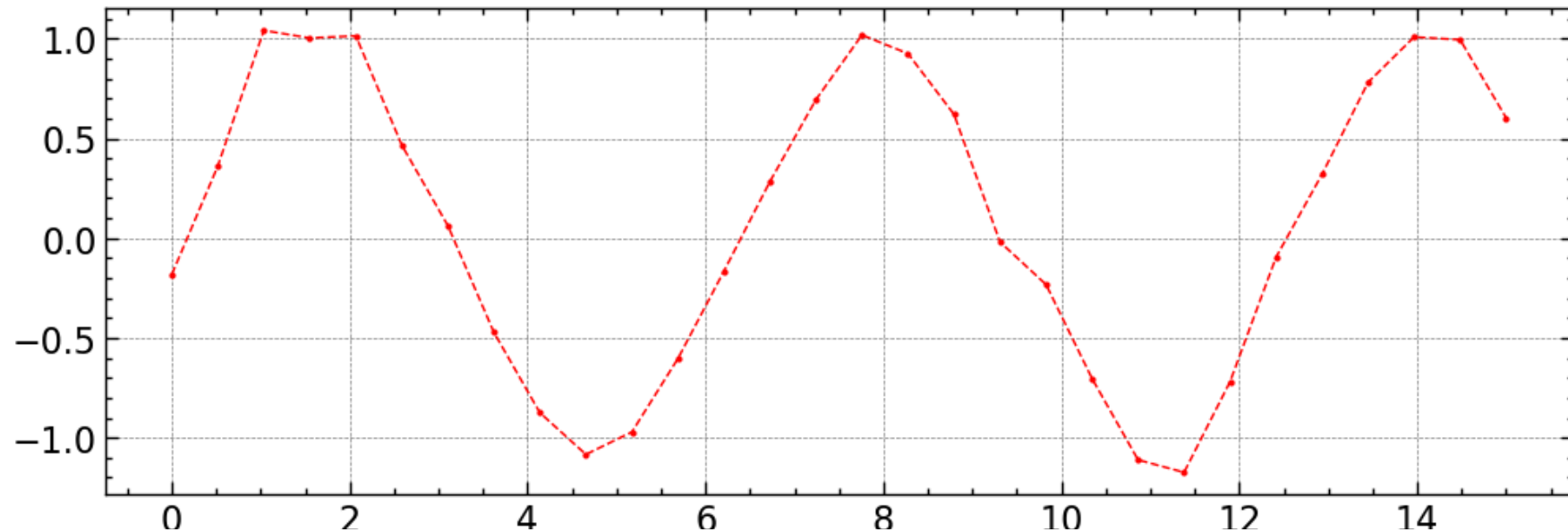
```
(array([ 3., 10., 55., 158., 272., 249., 159., 76., 15., 3.]),
 array([-0.27877989, -0.14374564, -0.0087114 ,  0.12632285,  0.2613571 ,
        0.39639135,  0.5314256 ,  0.66645984,  0.80149409,  0.93652834,
        1.07156259]),
 <BarContainer object of 10 artists>)
```



# Advanced Plotting

- Multiple subplots on 1 figure
- adding text
- animations

```
1 # Create an array of plots
2 fig, ax = plt.subplots(1, 1, figsize=(12, 4)) # 1 row by 1 column of plots
3 ax.plot(x, y, 'o--', color='red', lw=1, ms=2)
```



# Resources

- [Mr. P Solver Youtube Channel](#)
- [Install SciencePlots](#)