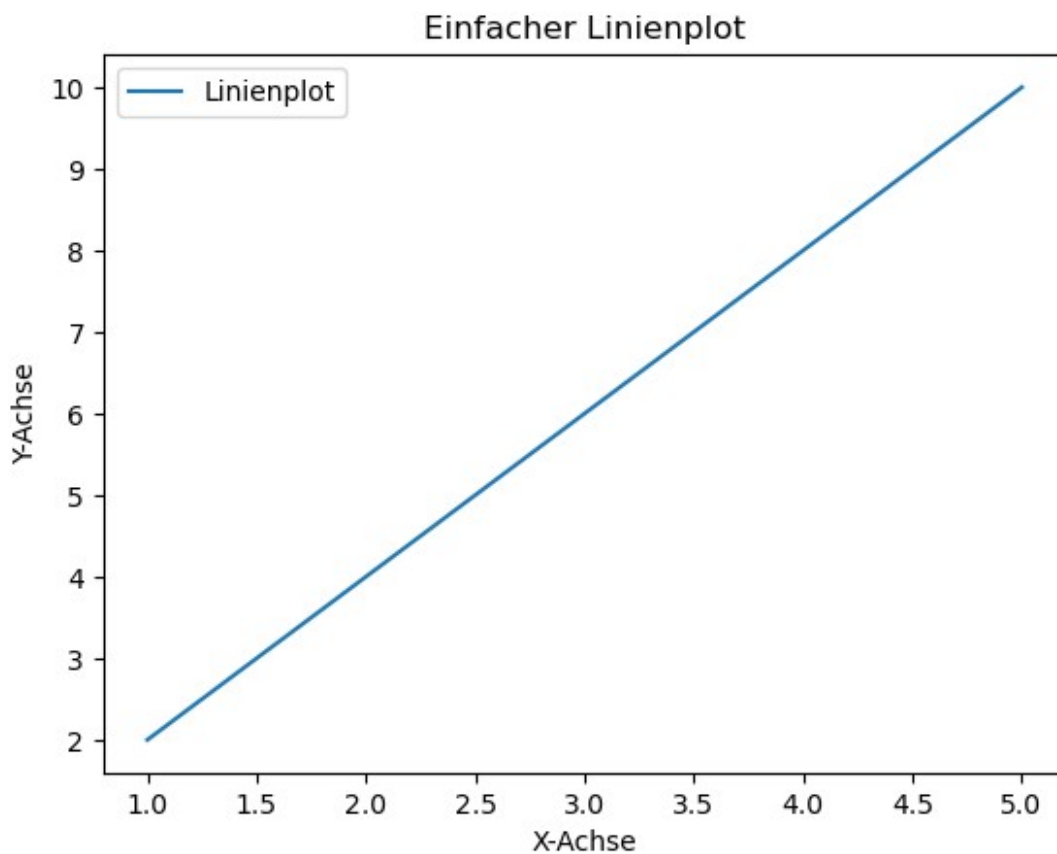# Cheat Sheet Python-Plots Beispiele

Einfacher Linienplot

```python
import matplotlib.pyplot as plt

x = [1, 2, 3, 4, 5]
y = [2, 4, 6, 8, 10]
plt.plot(x, y, label='Linienplot')
plt.xlabel('X-Achse')
plt.ylabel('Y-Achse')
plt.title('Einfacher Linienplot')
plt.legend()
plt.show()
```
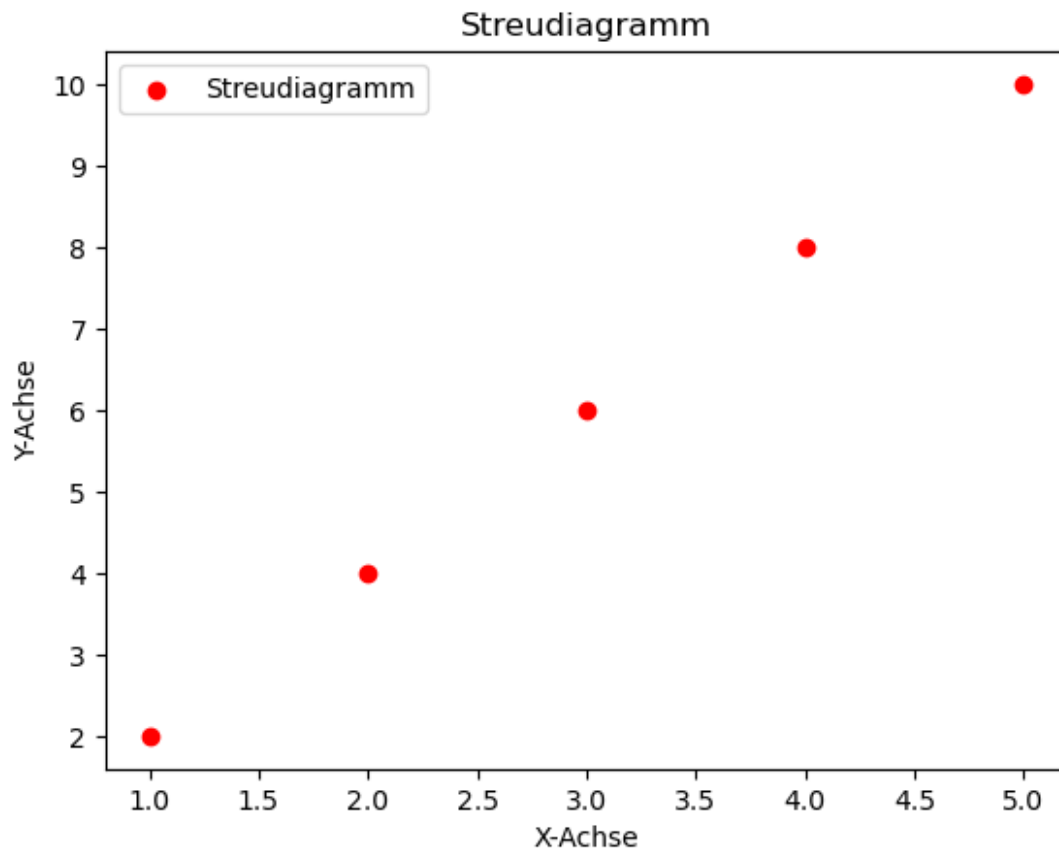

Streudiagramm

```python
import matplotlib.pyplot as plt

x = [1, 2, 3, 4, 5]
y = [2, 4, 6, 8, 10]
plt.scatter(x, y, label='Streudiagramm', color='red', marker='o')
```
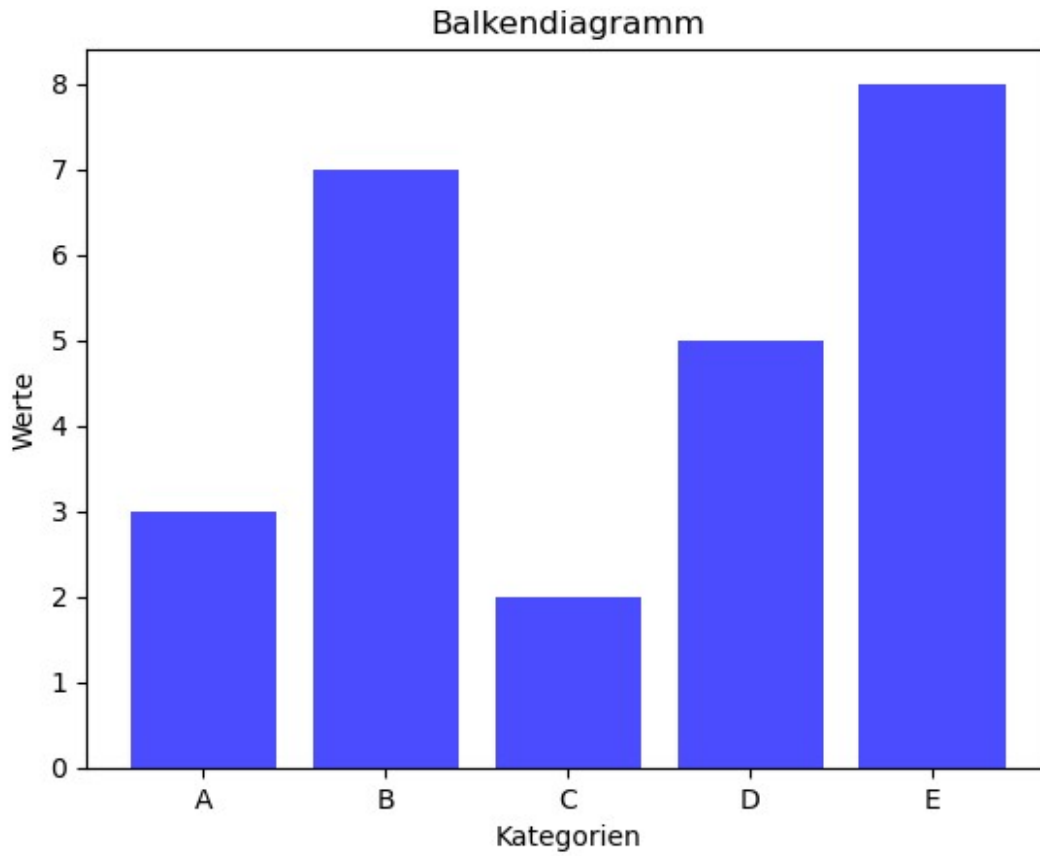
```
plt.xlabel('X-Achse')
plt.ylabel('Y-Achse')
plt.title('Streudiagramm')
plt.legend()
plt.show()
```


Balkendiagramm

```
import matplotlib.pyplot as plt

categories = ['A', 'B', 'C', 'D', 'E']
values = [3, 7, 2, 5, 8]
plt.bar(categories, values, color='blue', alpha=0.7)
plt.xlabel('Kategorien')
plt.ylabel('Werte')
plt.title('Balkendiagramm')
plt.show()
```

Anpassen von Achsen und Gitter

```python
import matplotlib.pyplot as plt

x = [1, 2, 3, 4, 5]
y = [2, 4, 6, 8, 10]
plt.plot(x, y)
plt.xlabel('X-Achse')
plt.ylabel('Y-Achse')
plt.title('Achsenanpassung und Gitter')
plt.grid(True, linestyle='--', alpha=0.5)
plt.xlim(0, 6)
plt.ylim(0, 12)
plt.show()
```

Achsenanpassung und Gitter

Subplots

```python
import matplotlib.pyplot as plt

x = [1, 2, 3, 4, 5]
y1 = [2, 4, 6, 8, 10]
y2 = [1, 2, 1, 2, 1]
y3 = [5, 4, 3, 2, 1]
y4 = [10, 8, 6, 4, 2]

plt.subplot(2, 2, 1)
plt.plot(x, y1)
plt.title('Subplot 1')

plt.subplot(2, 2, 2)
plt.plot(x, y2)
plt.title('Subplot 2')

plt.subplot(2, 2, 3)
plt.plot(x, y3)
plt.title('Subplot 3')

plt.subplot(2, 2, 4)
plt.plot(x, y4)
```
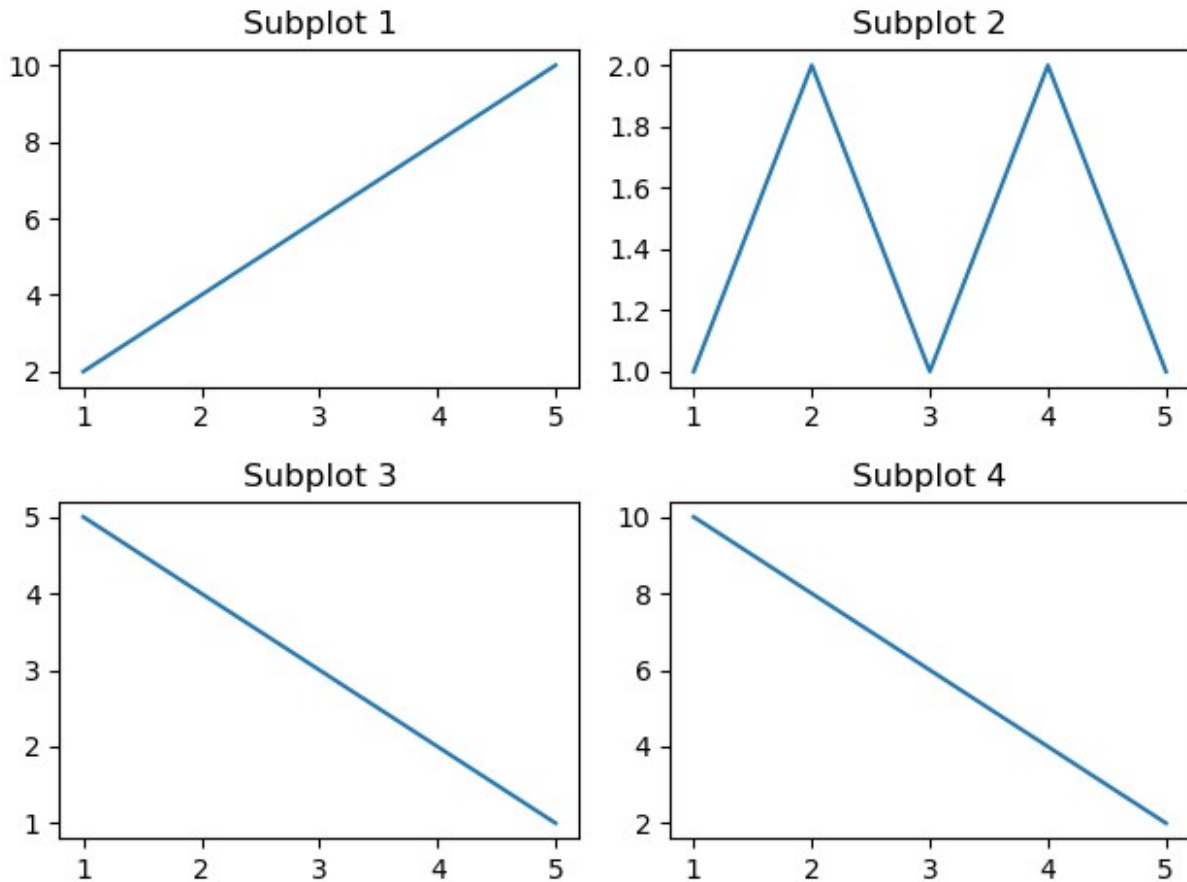
```
plt.title('Subplot 4')

plt.tight_layout()
plt.show()
```



```
import numpy as np
import matplotlib.pyplot as plt
# daten erstellen
accel_x = 2* 9.81 * (np.random.rand(100)- 0.5)
accel_y = 2* 9.81 * (np.random.rand(100)- 0.5)
accel_z = 2* 9.81 * (np.random.rand(100)- 0.5)
# daten auswerten
up = accel_z > 0
down = accel_z < 0
left = accel_y > 0
right = accel_y < 0

plt.figure(figsize=(18,12))

plt.subplot(5,1,1)
plt.plot(accel_x, label = "Beschleunigung [m/s2]")
plt.title("Accel X")
```

```
plt.legend(loc="upper left")

plt.subplot(5,1,2)
plt.plot(accel_y, label = "Beschleunigung [m/s2]")
plt.legend(loc="upper left")
plt.title("Accel Y")

plt.subplot(5,1,3)
plt.plot(accel_x, label = "Beschleunigung [m/s2]")
plt.legend(loc="upper left")
plt.title("Accel Z")

plt.subplot(5,1,4)
plt.plot(up)
plt.yticks([0,1],["Down","Up"])
plt.title("Lage Vertikal")

plt.subplot(5,1,5)
plt.plot(left)
plt.yticks([0,1],["Right","Left"])
plt.title("Lage Vertikal")

plt.show()
```
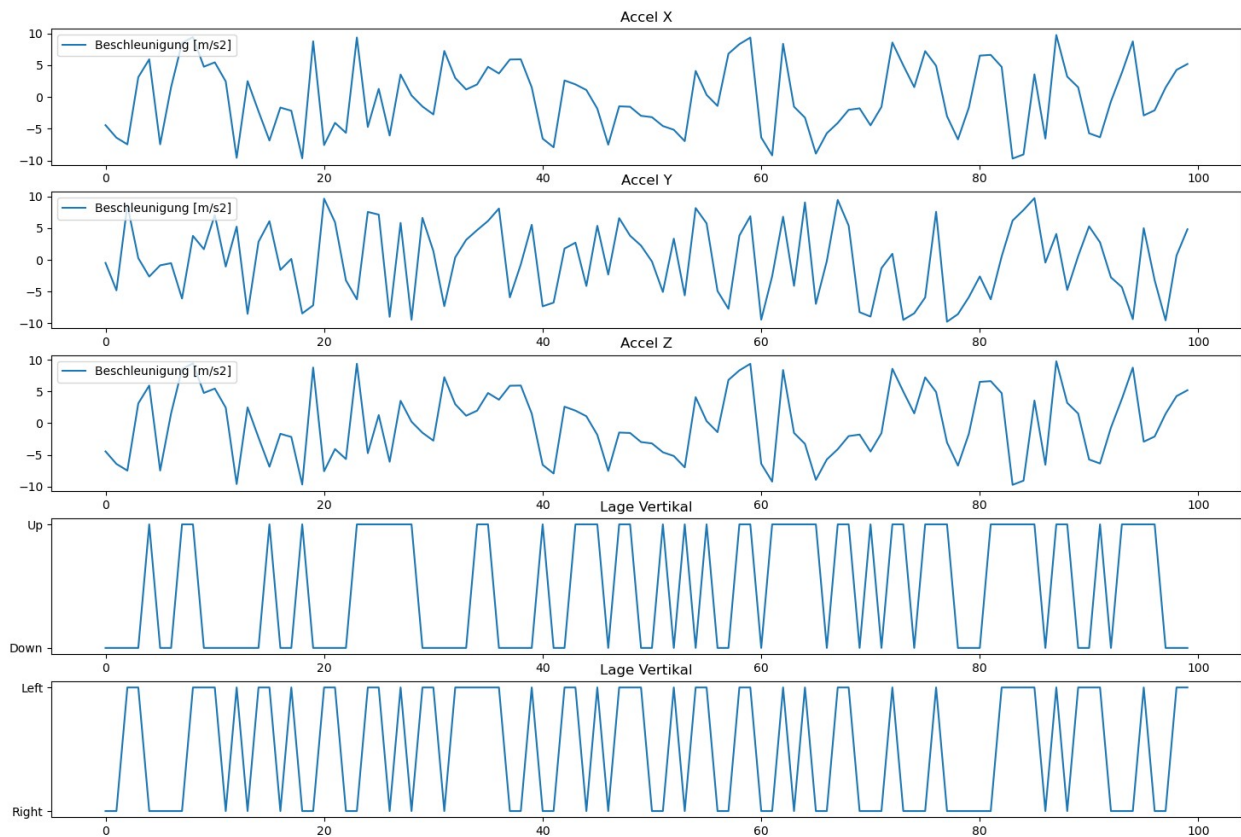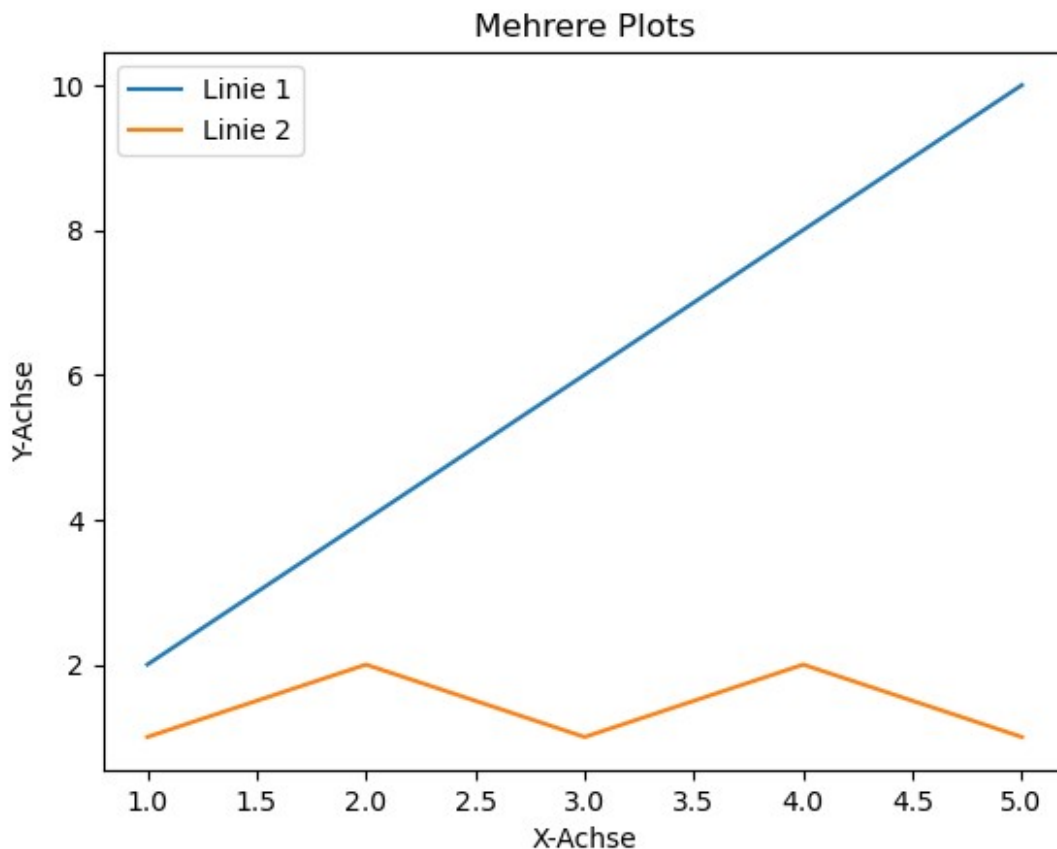
Mehrere Plots in einem Diagramm

```python
import matplotlib.pyplot as plt

x = [1, 2, 3, 4, 5]
y1 = [2, 4, 6, 8, 10]
y2 = [1, 2, 1, 2, 1]
plt.plot(x, y1, label='Linie 1')
plt.plot(x, y2, label='Linie 2')
plt.xlabel('X-Achse')
plt.ylabel('Y-Achse')
plt.title('Mehrere Plots')
plt.legend()
plt.show()
```
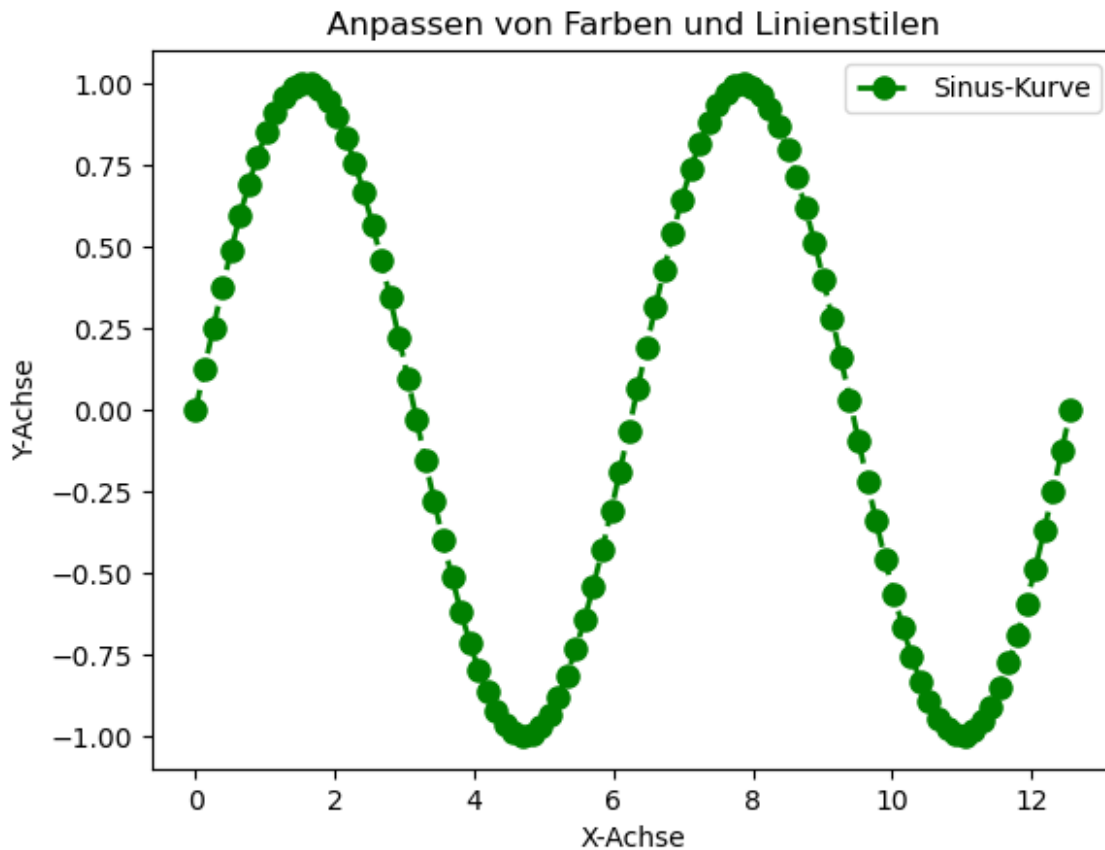

Farb- und Linienoptionen

```python
x = np.linspace(0, 4 * np.pi, 100)
y = np.sin(x)

plt.plot(x, y, color='green', linestyle='--', linewidth=2, marker='o',
markersize=8, label='Sinus-Kurve')
plt.xlabel('X-Achse')
plt.ylabel('Y-Achse')
```

```
plt.title('Anpassen von Farben und Linienstilen')
plt.legend()
plt.show()
```
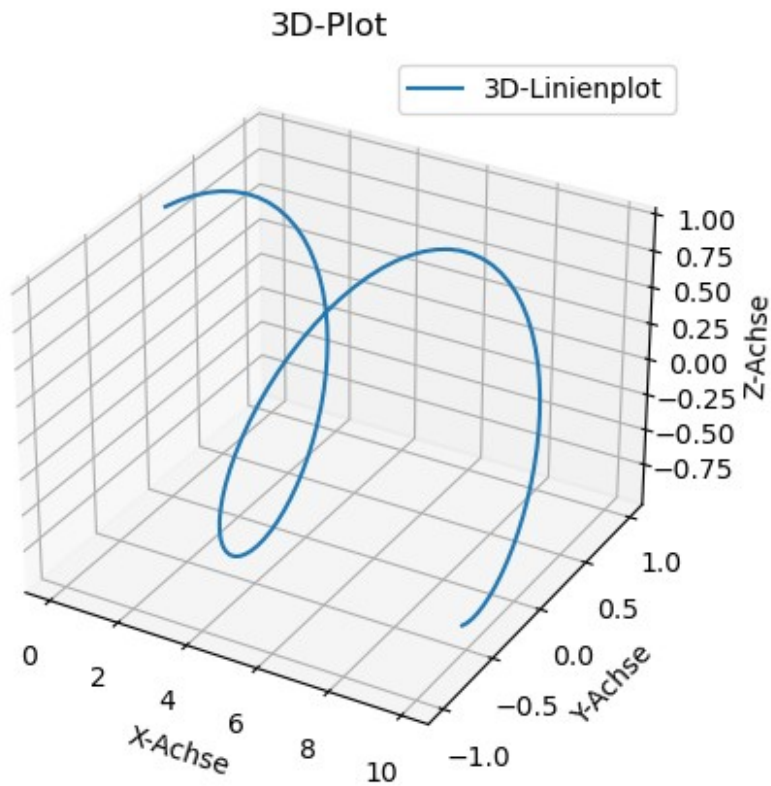

3D-Plot

```
from mpl_toolkits.mplot3d import Axes3D

fig = plt.figure()
ax = fig.add_subplot(111, projection='3d')

x = np.linspace(0, 10, 100)
y = np.sin(x)
z = np.cos(x)

ax.plot(x, y, z, label='3D-Linienplot')
ax.set_xlabel('X-Achse')
ax.set_ylabel('Y-Achse')
ax.set_zlabel('Z-Achse')
ax.set_title('3D-Plot')
ax.legend()

plt.show()
```

Heatmap

```python
data = np.random.rand(5, 5)
plt.imshow(data, cmap='viridis', interpolation='nearest')
plt.colorbar()
plt.title('Heatmap')
plt.show()
```

Heatmap