

Object-oriented scientific programming with C++

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Lecture 1

What's this course about

Object oriented programming

Learn the **design principles** of OOP (not restricted to C++)

Matlab example

```
A = [1 2; 3 4]  
size(A)
```

Here, the `size` **functions** is applied to the matrix `A` and determines its size from outside. That means the function `size` must be able to deduce the matrix size. In other words, the matrix size is publicly visible.

Python example

```
A = numpy.matrix([[1, 2], [3, 4]])  
A.shape
```

Here, the matrix `A` provides a *member function* to determine its size from inside.

Header files

At the beginning of each C++ code you include some **header files**, for instance the one for input and output streams

In [2]:

```
#include <iostream>
```

Now, we can write our first C++ instruction

In [3]:

```
std::cout << "Hello World!\n";
```

Hello World!

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