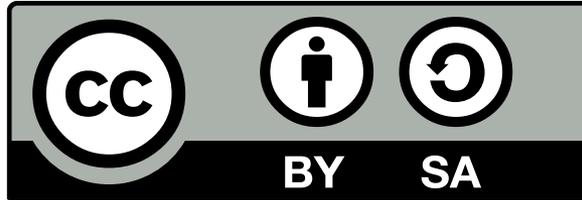




**wolf** dynamics  
multiphysics simulations,  
optimization & data analytics

[www.wolfdynamics.com](http://www.wolfdynamics.com)

# OpenFOAM® Introductory Training



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- 
- A help is needed, and much appreciated.
  - If you find errors, have suggestions for better wording, figures, or new material, let us know.
  - Also, if you find a tutorial that does not work, please let us know.
  - Follow-up problems, questions, and suggestions at [guerrero@wolfdynamics.com](mailto:guerrero@wolfdynamics.com)

# Disclaimer

This offering is not approved or endorsed by OpenCFD Limited, the producer of the OpenFOAM software and owner of the OPENFOAM® and OpenCFD® trademarks.

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**JG**

# Acknowledgements

This training material and tutorials are based upon personal experience, OpenFOAM® source code, OpenFOAM® user guide, OpenFOAM® programmer's guide, and presentations from previous OpenFOAM® training sessions and OpenFOAM® workshops.

We gratefully acknowledge the following OpenFOAM® users for sharing online their material or for giving us their consent to use their material:

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# On the training material

## The following typographical conventions are used in this training material

- Text in `Courier new` font indicates Linux commands that should be typed literally by the user in the terminal.
- Text in **`Courier new bold`** font indicates directories.
- Text in *`Courier new italic`* font indicates human readable files or ascii files.
- Text in **Arial bold font** indicates program elements such as variables, function names, classes, statements and so on. It also indicates environment variables, and keywords. They also highlight important information.
- Text in [Arial underline in blue](#) font indicates URLs and email addresses.
- This icon  indicates a warning or a caution.
- This icon  indicates a tip, suggestion, or a general note.
- This icon  indicates a folder or directory.
- This icon  indicates a human readable file (ascii file).
- This icon  indicates that the figure is an animation (animated gif).
- These characters `$>` indicate that a Linux command should be typed literally by the user in the terminal.

# On the training material

## The following typographical conventions are used in this training material

- Large code listing, ascii files listing, and screen outputs can be written in a square box, as follows:

```
1  #include <iostream>
2  using namespace std;
3
4  // main() is where program execution begins. It is the main function.
5  // Every program in c++ must have this main function declared
6
7  int main ()
8  {
9      cout << "Hello world";           //prints Hello world
10     return 0;                       //returns nothing
11 }
```

- To improve readability, the text might be colored.
- The font can be `Courier new` or **Arial bold**.
- And when required, the line number will be shown.

# On the training material

## Training material

- In the USB key you will find all the training material (tutorials, slides, quick reference guides, OpenFOAM® user guide, OpenFOAM® programmers manual, and lectures notes).
- You can extract the training material wherever you want. However, we highly recommend to extract all the training material in your OpenFOAM® user directory.
- From now on, we will refer to the directory where you extracted the training material as,
  - **\$PTOFC**  
(abbreviation of **Path To OpenFOAM® Course**)
- To uncompress the tutorials go to the directory where you copied the training material and then type in the terminal,
  - ```
$> tar -zxvf file_name.tar.gz
```
- In every single tutorial, you will find the file `README.FIRST`. In this file you will find the general instructions of how to run the case. You will also find some additional comments.
- In some cases, you will also find additional files with the extension `.sh`. These files can be used to run the case automatically, but we highly recommend to open the `README.FIRST` file and type the commands in the terminal, in this way you will get used with the command line interface and OpenFOAM® commands.
- If you are already comfortable with OpenFOAM®, use the automatic scripts to run the cases.
- You will find the automatic scripts in the cases explained in the lectures notes and some random cases.
- A word of caution, use the tutorials included in the training material just for recreational, instructional, or learning purposes and not for validation, benchmarking or as standard practices.



# On the training material

## Exercises

- At the end of each section, you will find an exercise section.
- The exercise section is optional, self-paced, and do it at anytime.
- The proposed exercises are designed to test your knowledge and to reinforce the concepts addressed during the lectures.
- All the concepts to be addressed in the exercise sections have been treated in the lecture notes, so the reader should not have problems answering the questions.
- If you have doubts, do not hesitate in asking.
- To help you answering the exercises, we might give you a few tips.
- And if it is necessary, the solution will be given.