

# 00. Presentation

October 19, 2015

This is a summary of the most important points discussed during the first lecture of “Parallel Programming”. Please, read them carefully and ask us any question you may have.

## **Which lecture is this?**

- This lecture is “Parallel Programming” (PP). If you registered for PP, you are in the right place.
- This is also “Introduction to High-Performance Computing” (iHPC) for CES students. If you registered to iHPC and are a Bachelor CES student, you are also in the right place.
- Others. If you want, you can still attend this course, but you can only get credits for PP. If it is not offered in your study program, you can submit a request to your study program advisor; we will support and co-sign such requests.

**Note For CES students:** we are aware that the current schedule for this lecture overlaps with “Mathematische Grundlagen III (CES)”. We are working to fix this and we hope to have found a solution by next Monday, October 26th.

**Note for Erasmus/Exchange students:** You should have received a PDF document together with clear instructions on how to register for the lectures and exams. You should let us know so that we can add you to the l2p platform and take you into account for the final exams. After the exam, you will have to bring this document, where we will write the final grade for you.

The official language for this lecture is **English**.

The lecture will consist of three main parts:

- Introduction to parallel programming and parallel architectures
- Programming distributed-memory architectures with MPI
- Programming shared-memory architectures with OpenMP

The 2nd and 3rd parts entail a lot of programming. **We assume working knowledge of the C programming language.** The most important concepts you must be familiar with are:

- Data structures
- Pointers and dynamic memory allocation
- Functions
- Recursion
- Usage of external libraries (for instance, BLAS, FFTW, OpenSSL, GLUT, etc.)

The lectures will be videotaped and made publicly available at <https://videoag.fsmpi.rwth-aachen.de/>

We will propose a set of exercises as homework (on a weekly/biweekly basis). However, this will not be graded. We encourage you to do the homework and submit your solution. We will use a random sample of them to discuss the solutions in class.

Every lecture will include an exercise session where we will solve homework from previous weeks.

There will be a midterm after the MPI part. This, again, will not be graded but will give you an idea of how the final exam looks like, as well as how well you understood the contents so far.

The webpages for the course where the material will be uploaded are:

- <http://hpac.rwth-aachen.de/teaching/pp-15/>
- The RWTH L2P platform