



# PATC Training: Introduction to CUDA Programming

Venue: Room AGORA, building C3 of the UPC Campus Nord

## Agenda

### Day 1 – 2<sup>nd</sup> June , 2015

09:00 The GPU hardware: Many-core Nvidia developments  
10:45 Hosted Coffee break  
11:15 CUDA Programming: Threads, blocks, kernels, grids  
13:00 Lunch break  
14:00 CUDA Tools: Compiling, debugging, profiling, occupancy calculator  
15:45 Hosted Coffee break  
16:15 CUDA Examples: VectorAdd, ReverseArray, Matrix Multiply  
18.00 Adjourn

### Day 2 – 3<sup>rd</sup> June , 2015

09:00 Inside Kepler and Maxwell  
10:45 Coffee break  
11:15 Optimizing GPU codes on Kepler and Maxwell using CUDA 7.0  
13:00 Lunch break  
14:00 OpenACC and other approaches to GPU computing  
15:45 Coffee break  
16:15 Future Nvidia designs: Pascal, Stacked DRAM, Volta  
18:00 Adjourn

### Day 3 – 4<sup>th</sup> June , 2015

09:00 Atomics and Histogramming  
10:00 Reductions  
10:45 Coffee break  
11:15 Lab: Getting Started  
11:45 Lab: Vector Addition  
13:00 Lunch break  
14:00 Lab: Simple Matrix-Matrix Multiplication  
15:45 Coffee break  
16:15 Lab: Tiled 7-point 3D Stencil  
18.00 Adjourn

### Day 4 – 5<sup>th</sup> June , 2015

09:00 Prefix Scan  
10:00 CUDA Streams  
10:45 Coffee break  
11:15 Lab: Tiled Matrix-Matrix Multiplication  
13:00 Lunch break  
14:00 Lab: Histogramming  
15:45 Coffee break  
16:15 Lab: Vector Reduction  
18.00 Adjourn

#### NOTICES

##### **NOT Registered attendees:**

Attendees to the course not registered in the PRACE website (and thus not included in the attendees list) must contact [patc@bsc.es](mailto:patc@bsc.es)

##### **Certificate of attendance:**

Attendees will receive the certificate of attendance via e-mail (in the address they used to register their attendance) after the end of the training. For inquiries contact [patc@bsc.es](mailto:patc@bsc.es)

##### **Help us improve the training!**

Please remember you must fill-in the survey after the end of the training and before 21 June 2015 at <https://events.prace-ri.eu/event/327/evaluation/evaluate>

##### **WIFI Access:**

- 1) Select the network "XSF-UPC"
- 2) Open the browser. You will be automatically redirected to the login site.
- 3) Then you have two options:
  - 3.1) For http and https access only, use the "Guest" button
  - 3.2) For full access, use the following account:  
User: `ksf.convidat`  
Password: `Wh1pl4sh`

##### **Security**

For security reasons the classroom will be closed during the scheduled breaks.