

Strumenti di programmazione per sistemi paralleli e distribuiti (SPD)

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Programming Tools for Distributed and Parallel Systems

Course Introduction

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Description and Analysis of parallel and distributed programming platforms and models

- *Theoretical foundations*
- Standards for platforms and programming systems
- State-of-the-art solutions
- Practical use
- *Applications*

How the course is structured

- Teacher : Massimo Coppola
 - Contact : massimo.coppola@isti.cnr.it
- 9 credits (6 lessons, 3 practical)
 - 72 hours : ~48 + ~24
- Students to take notes of lessons in turn
- Notes and references on a wiki page
 - Available here

www.cli.di.unipi.it/doku/magistraleinformaticanetworking/spd

- Final examination : a project + short talk
 - Can be: a seminary at the end of the course
- Agreement on room and timetable
 - Depending on other courses
 - Laboratory Resources TBD

Direct Links to other courses

- SPA a prerequisite
- SPM complementary
 - SPD has more practical focus + lab time
 - SPD focuses on a few “standard” programming systems & frameworks, as well as research prototypes
- SPD + CPA CPA is synergic with SPD
 - CPA focuses on **Cloud**/Grid platforms, related **programming tools** and **Service-based** architectures
- Related topics you will find in other courses
 - **P2P**
 - **QoS an SLA in {networking, virtualization, services}**

Provisionary Timetable

Monday	09:00	11:00	O1
Tuesday	09:00	11:00	S.Anna (10B?)
Friday	16:00	18:00	B

- First lesson at Polo Fibonacci, room O1
- Lessons alternate between Polo Fibonacci and S.Anna/CNIT building within CNR Research Area, (room 10B or 27B usually)
- Attempt to minimize student movement, still an issue for Tuesday (Tuesday 16-18 ??)
- Exceptions and lab time to be reported in the news on the wiki page

- Parallel programming tools & platforms for HPC
- Many different parallelism levels
 - Clouds, Clusters, multi / many-core systems
- MPI **LAB**
message passing
Cluster to Cloud computing
- ASSIST **LAB**
high-level + dynamic +
autonomic management
- XtremOS, Contrail **LAB**
Grid/Cloud distributed OS
“abstract machine” view
- OpenNebula LAB?
Cloud Platforms (Nimbus...)
Cloud APIs
- Intel-TBB / Blocklib **LAB**
multi-core CPUs
- GPGPU LAB?
Many-core on-chip
parallelism
- Basic concepts if needed