

Node-Level Performance Engineering

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Three-day online tutorial

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<http://tiny.cc/NLPE-Ansys>



Course schedule day 1

Time (EST)	Day 1
8:00	Welcome – Intro
8:30	Computer architecture for software developers (1)
9:15	Coffee break
9:30	Computer architecture for software developers (2)
10:15	Hands-on: Divide benchmark
10:45	Tools: Topology and affinity, frequency
11:15	Lunch Break
12:15	Hands-On: topology, affinity
13:00	Introduction to the Roofline Model
14:00	Coffee break
14:15	Tools: performance counters
15:00-	Quiz/Q&A/open end

Course schedule day 2

Time (EST)	Day 2
8:00	Roofline case study: Stencil smoothers
9:00	Hands-on: performance counters and memory bandwidth
10:00	Coffee break
10:15	Performance Engineering: Basic skills
11:00	Hands-on: Dense matrix-vector multiplication (I)
11:45	Lunch
12:45	Optimal use of parallel resources: ccNUMA
13:30	Hands-on: Dense matrix-vector multiplication (II)
14:00	Roofline case study: Tall & skinny matrix-matrix multiplication
14:30	Coffee break
14:45-	Quiz/Q&A/open end

Course schedule day 3

Time (EST)	Day 3
8:00	Optimal use of parallel resources: SIMD
9:00	Hands-on: MiniMD analysis
10:00	Coffee break
10:15	Roofline case study: Sparse matrix-vector multiplication
11:30	Lunch
12:30	Hands-on: Matrix-free CG solver
13:45	Coffee break
14:00	The ECM performance model
15:00-	Quiz/Q&A/open end