Advanced Parallel Programming

Prerequisite: MUST Complete hpc 101 webinar prior to class

Day 1

08:45 - 09:00   Logistics, Welcome, Introductions
09:00 - 09:45   Introduction to Parallel Programming - Yeti architecture
09:45 - 10:30   Lab: Compilation for performance and performance measurement
10:30 - 10:45   Break
10:45 - 11:30   Introduction to OpenMP
11:30 - 12:00   Lab: Scheduling OpenMP programs on Yeti
12:00 - 01:00   Lunch
01:00 - 01:45   Advanced OpenMP
01:45 - 03:00   Lab: Parallelization using OpenMP
03:00 - 03:30   Break
03:30 - 04:30   Consulting Time

Day 2

09:00 - 09:45   Introduction to MPI
09:45 - 10:30   Lab: Simple MPI example and scheduling MPI programs
10:30 - 10:45   Break
10:45 - 11:30   MPI - point to point communication
11:30 - 12:00   Lab: debugging MPI programs
12:00 - 01:00   Lunch
01:00 - 01:45   Advanced MPI
01:45 - 03:00   Lab: Profiling MPI programs
03:00 - 03:30   Break
03:30 - 04:30   Consulting Time

Day 3

09:00 - 09:45 HPC Filesystems architecture / Yeti specifics
09:45 - 10:30 Parallel I/O strategies
10:30 - 10:45 Break
10:45 - 11:30 Lab: Implement parallel I/O strategies on Yeti
11:30 - 12:00 Introduction to GPU programming
12:00 - 01:00 Lunch
01:00 - 01:45 OpenACC for GPU programming
01:45 - 03:00 Lab: Running and benchmarking GPU code on Yeti
03:00 - 03:30 Break
03:30 - 04:30 Consulting Time