FOUNDATIONS IN HIGH-PERFORMANCE COMPUTING - MICRO-CREDENTIAL

This micro-credential is for those who will be tackling computing-, memory- or storage-intensive research problems that exceed the capacity of a laptop or desktop computer. It is comprised of four half-day modules and is intended to give attendees a hands-on introduction to high-performance computing ("supercomputing") using CU Boulder's Research Computing resources. By the end of the workshop participants will be able to:

- Identify community and CU-specific research computing resources.
- Find help/documentation for research computing.
- Access research computing resources.
- Use basic Linux to navigate the command line.
- Transfer data to/from research computing systems.
- Find, download and apply software on research computing systems.
- Schedule jobs on research computing resources including CPUs, GPUs and high-memory platforms.
- Monitor resource usage.
- Request research computing resource allocations.

Eligibility

The micro-credential is open to anyone affiliated with a Rocky Mountain Advanced Computing Consortium (RMACC) institution, including Colorado State University and CU Anschutz.

Delivery Mode

In-person

Credit Status

Noncredit

Academic Level

- Graduate
- Professional
- Undergraduate

Time to Completion

Four days (16 hours).

Requirements

Learners will be required to attend four half-day sessions, with each session consisting of a lecture on a foundational topic in high-performance computing, followed by a hands-on assessment exercise that will demonstrate proficiency in the topic.

Course outline:

Day 1:

- Getting familiar with Research Computing
- How to ask for help
- In-class hands-on assessment #1
- Obtain a CURC account
- Email a helpdesk ticket requesting to be added to the course user group

Day 2:

- Logging in to CURC and working with Linux
- Transferring your data to/from CURC
- In-class hands-on assessment #2
- Install Globus, set up Globus endpoint and transfer a file
- Transfer another file from the command-line using "rsync"
- Metric for success: both files appear in the learner's /projects directory on CURC

Day 3:

- Finding, downloading and applying software on CURC
- Scheduling basic jobs
- In-class hands-on assessment #3
- Write a job script that does X, Y, Z and schedule the job
- Metric for success: Job runs successfully as indicated by output file

Day 4:

- Monitoring resource use
- Requesting research computing resource allocations
- In-class hands-on assessment #4
- Request a CURC "Ascent" allocation
- Schedule a job with the new allocation
- Metric for success: Job runs successfully in the new allocation. User reports how many "SUs" were consumed by the job

Criteria

To earn the Introductory High-Performance Computing badge, learners must demonstrate the ability to:

- Identify community- and CU-specific research computing resources
- Find help/documentation for research computing
- Access research computing resources
- Use basic Linux to navigate the command line
- Transfer data to/from research computing systems
- Find, download and apply software on research computing systems
- Schedule jobs on research computing resources including CPUs, GPUs and high-memory platforms
- Monitor their resource usage
- Request research computing resource allocations

Skills

- High-performance computing
- Linux
- Supercomputing