INTRODUCTION TO THE PROGRAMMING AND USAGE OF THE SUPERCOMPUTING RESOURCES IN JÜLICH

ONLINE COURSE PROVIDED BY

JÜLICH SUPERCOMPUTING CENTRE

12.05.2025 I ILYA ZHUKOV, JOLANTA ZJUPA

DISCLAIMER

This course offers the opportunity to attend lectures selectively, based on individual needs and knowledge levels. Participants are not required to attend all sessions as some may cover advanced or basic material. While flexibility is offered, it is important to assess personal needs and choose sessions accordingly, as attending lectures out of order may result in knowledge gaps.

SCHEDULE MONDAY – MAY 12

13:00 - 13:10	Welcome	I.Zhukov, J.Zjupa (JSC)
13:10 - 13:40	Introduction to JSC **(pre-recorded)**	Bernd Mohr (JSC)
13:40 - 14:20	HPC in a Nutshell	Ilya Zhukov (JSC)
14:20 - 14:40	Break	
14:40 - 15:20	JSC Usage Models and Tools	Jolanta Zjupa (JSC)
15:20 - 16:00	JSC Systems - JUWELS, JURECA & JUSUF	Philipp Thörnig (JSC)
16:00 - 16:20	Break	
16:20 - 17:00	JUST: Jülich Storage Cluster	Stephan Graf (JSC)

SCHEDULE TUESDAY – MAY 13

09:00 - 12:00	Hands-on I - Access, UNIX Shell Basics, Environment	
12:00 - 13:00	Lunch	
13:00 - 13:30	HPC Software - Modules, Libraries & Software **(pre-recorded)**	Ruth Partzsch (JSC)
13:30 - 14:20	Workload Management with Slurm	Chrysovalantis Paschoulas (JSC)
14:20 - 14:40	Break	
14:40 - 15:25	JupyterLab - Supercomputing in your Browser **(pre-recorded)**	Jens Henrik Göbbert (JSC)
15:25 - 15:45	Break	
15:45 - 16:15	Proper Pinning Prevents Pretty Poor Performance	Thorsten Hater (JSC)
16:15 - 17:00	Uniform Resource Access, Data Access and Cloud Resources	Bernd Schuller (JSC)

SCHEDULE WEDNESDAY – MAY 14

09:00 - 11:30	Hands-on II - Software Modules, Custom Software, Accounting and Running Jobs	
11:30 - 12:00	LLview (demo)	Filipe Guimaraes (JSC)
12:00 - 13:00	Lunch	
13:00 - 14:00	GPU Accelerators at JSC	Andreas Herten (JSC)
14:00 - 14:30	Break	
14:30 - 15:30	Deep Learning on Supercomputers	Alexandre Strube (JSC)
15:30 - 15:50	Break	
15:50 - 17:00	HPC Software - Debuggers and Performance Analysis Tools	Michael Knobloch (JSC)

SCHEDULE THURSDAY - MAY 15

09:00 - 11:00	Hands-on III - CPU Affinity, Using GPUs	
11:00 - 12:00	Remote Visualisation	Herwig Zilken (JSC)
12:00 - 13:00	Lunch	
13:00 - 14:00	Performance Tools (demo)	Michael Knobloch (JSC)
14:00 - 14:20	Break	
14:20 - 15:20	JUWELS - Tuning and Tweaks	Heinrich Bockhorst (Intel)
15:20 - 15:40	Break	
15:40 - 16:20	ParTec Cluster Management	Patrick Küven (ParTec)
16:20 - 16:30	Wrap-up	I.Zhukov, J.Zjupa (JSC)

ORGANISATIONAL INFORMATION

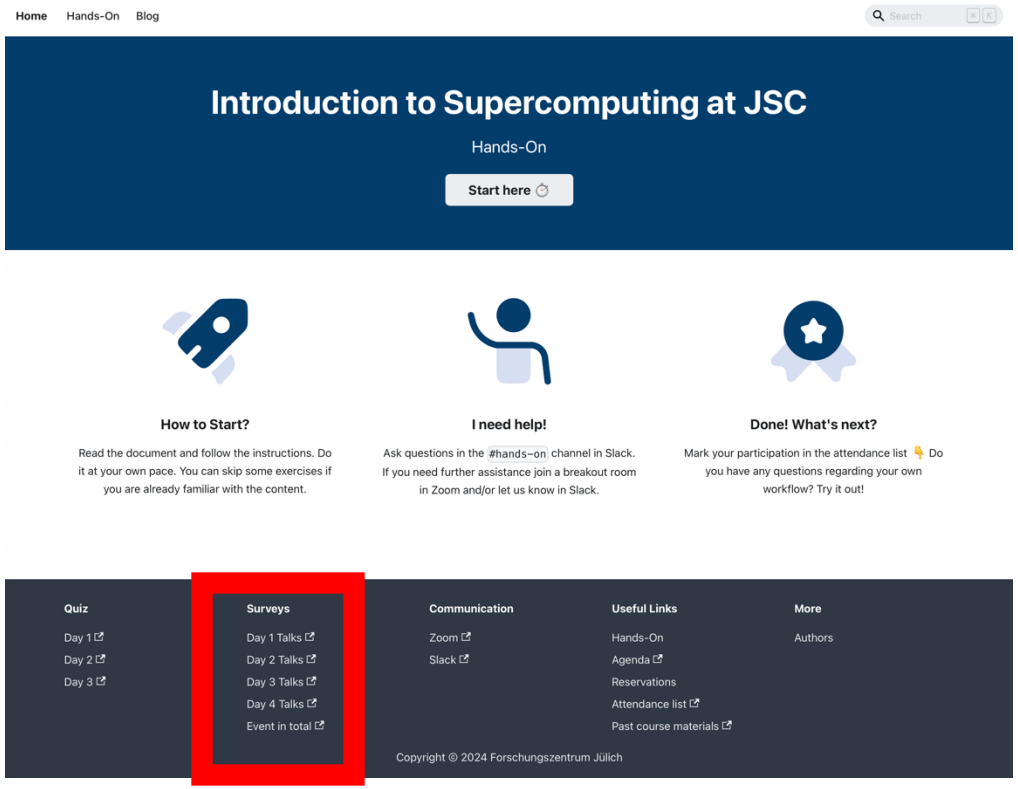
- For communication join our Slack chat
  http://go.fzj.de/slack_intro_0525
- **During** a talk you can ask questions either in the Zoom chat or the Slack chat ***#general*** channel.
- **After** a talk you can also ask questions verbally by turning on your microphone.
- For hands-on questions please use only the Slack chat ***#hands-on*** channel.
- Only screensharing will be recorded and published if allowed.
- Certificates will be based on attendance of the hands-on component.
- Slides and videos of selected talks are available after the course at
  https://www.fz-juelich.de/en/ias/jsc/news/events/training-courses/2025/supercomputing-1
- Slides and videos from the previous iteration are available at
  https://www.fz-juelich.de/en/ias/jsc/news/events/training-courses/2024/supercomputing-2

HANDS-ON

- Hands-on is available at
  http://go.fzj.de/handson_intro_0525
- Follow three simple steps
  - Read the document and follow the instructions. Do it at your own pace. You can skip some exercises if you are already familiar with the content.
  - Ask questions in the ***#hands-on*** channel in Slack. If you need further assistance join a breakout room in Zoom and/or let us know in Slack.
  - Mark your participation in the ***attendance list***. Do you have any questions regarding your own workflow? **Talk to us!**

CONTINUOUS EVALUATION

- Help us to improve the course by
  - Evaluating each day's talks
  - Evaluating the event in general
  - Giving feedback on what was good or bad and why



I WANT TO LEARN MORE

- **Check upcoming training courses**
  https://www.fz-juelich.de/en/ias/jsc/education/training-courses
  - Introduction to Bayesian Statistical Learning 2 (20-22.05.2025)
  - High-performance computing with Python (23-27.06.2025)
  - Bringing Deep Learning Workloads to JSC supercomputers (24-25.06.2025)
  - GPU Programming Part 2: Advanced GPU Programming (07-11.07.2025)
  - Introduction to parallel programming with MPI and OpenMP (11-15.08.2025)
  - In-Situ Visualization on High-Performance-Computers (09-10.09.2025)
  - and many more …

- Join the monthly session of **JSC HPC Support Corner**
  - https://go.fzj.de/jsc-hpc-support-corner

- Follow us on social media
  - X: @fzj_jsc, @fzj_jscuser
  - Mastodon: @fzj_jsc@social.fz-juelich.de