

Introduction to High Performance Computing

EPSRC

NERC SCIENCE OF THE ENVIRONMENT

CRAY
THE SUPERCOMPUTER COMPANY

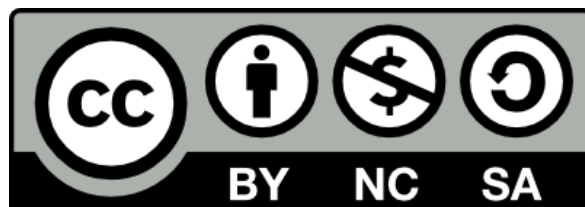
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WHPC

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Course Parameters

- Pre-requisites
 - None, this course is designed for everyone, from computing novices upwards, to be able to participate in and complete
- Hands-on practicals form an integral part of the course.
 - We will help with these, and do not expect any programming experience of attendees (although you're free to dive into the programs if you have more computing experience)



Your trainers

- Toni Collis: t.collis@epcc.ed.ac.uk
 - Applications Consultant at EPCC
 - ARCHER Team
 - Women in HPC Network Coordinator
- Weronika Filingier: w.filingier@epcc.ed.ac.uk
 - Applications Developer at EPCC
 - ARCHER Team
- Buket Benek Gursoy
 - Computational Scientist at Irish Centre for High-End Computing (ICHEC)
- Athina Frantzana
 - Women in HPC Network Facilitator



Aims

- Why do people use HPC?
- What do people use HPC for?
- Understanding of computer hardware
 - Which parts matter for performance in modelling and simulation?
- Understanding of processes and threads
- Understanding of parallel programming models
- How to interact with a HPC resource
- Knowledge of current HPC architectures
- Knowledge of current parallel programming libraries
- Appreciation of the future of HPC



Timetable

Day 1

12.30 L01 Welcome and introduction
12.45 L02 Why learn about HPC?
13.00 L03 Using HPC: image sharpening
13.15 Practical: Sharpen
14.30 Coffee
15.00 L04 Parallel Programming
15.30 L05 Building Blocks1: CPU/Memory/
Accelerators
15.50 L06 Building Blocks2: OS/Process/
Threads
16.10 L07 Fractals
16.15 Practical: Fractals
18.00 Close

19.00 Dinner (Raglans Restaurant)

Day 1

09.00 L08 HPC Architectures
09.45 L09 Parallel Models
10.15 Practical
10.45 Coffee
11.15 Practical continued
12.10 L12 Compilers
12.30 Lunch
13.30 L13 Parallel Libraries
14.00 L14 Future HPC
14.15 Practical (continue and wrap up)
14.55 L11 Summary
15.00 Close

16.00 PRACEDays at the Aviva Stadium



Course materials

- Everything online:
 - Slides, exercise notes, code to use

http://www.archer.ac.uk/training/course-material/2015/05/intro_dublin

TinyURL:

<http://tinyurl.com/qx5mx3m>



Support

- Helpdesk
 - Email support@archer.ac.uk
 - via ARCHER SAFE <http://www.archer.ac.uk/safe>
 - phone: +44 (0)131 650 5000
 - By post, to: Anne Whiting
 - EPCC
University of Edinburgh
JCMB
The King's Buildings
Mayfield Road
EDINBURGH EH9 3JZ
- <http://www.archer.ac.uk/training/virtual/>



Training opportunities

- ARCHER Training (free to academics):
 - <http://www.archer.ac.uk/training/>
- EPCC MSc in HPC
 - <http://www.epcc.ed.ac.uk/msc/>



Funding calls

- Embedded CSE support
 - Through a series of regular calls, Embedded CSE (eCSE) support provides funding to the ARCHER user community to develop software in a sustainable manner for running on ARCHER. Funding will enable the employment of a researcher or code developer to work specifically on the relevant software to enable new features or improve the performance of the code
 - Apply for funding for development effort
 - Sixth call opens in August/September
 - Happen every 4 months
- See <http://www.archer.ac.uk> for details



Feedback and follow-up

- <http://www.archer.ac.uk/training/feedback/>
- Virtual Tutorials
 - Online every second Wednesday of the month
 - <http://www.archer.ac.uk/training/virtual/>





Working towards equal
representation in HPC
www.womeninhpc.org.uk

- Supports collaboration and networking by bringing together female HPC scientists, researchers, developers, users and technicians from across the UK.
- We encourage women in HPC to engage in outreach activities and improve the visibility of inspirational role models.
- Our activities are complemented by research into the influence of UK equality initiatives on the HPC community.



www.facebook.com/womeninhpc

[@women_in_hpc](https://twitter.com/women_in_hpc)

www.linkedin.com/grp/home?gid=8105215

