

ARCHER TRAINING

10TH FEBRUARY 2016

David Henty, HPC Training



EPCC Training

- Active since Cray T3D service in 1994

MSc in HPC
(2001)



PRACE Advanced
Training Centre
(2012)



ARCHER (2013)



Accredited online
courses (2016)



Supercomputing
MOOC (2017)



ARCHER Programme (initial plan)

- Typically, per year,
 - 66 days face-to-face
 - 12 online virtual tutorials
- For 2017
 - Hubs at Edinburgh, London, N8 and Southampton
 - approx 50% courses also part of PATC programme
 - free to all academics
 - PATC courses free to all

Location	Number of Courses	Number of Training Days
EPCC	5	11
London	5	11
Southampton	3	9
Cambridge	2	4
Oxford	1	2
Bristol	1	3
Birmingham	1	2
Belfast	1	2
Portsmouth	1	2
Swansea	1	2
Durham	1	2
Warwick	1	2
Leeds	1	2
Manchester	1	2
Totals	26	56

2017 Courses (initial plan)

Course	Number of Runs
Advanced MPI	1
Advanced OpenMP	1
Data Analytics with HPC	1
Data Carpentry	2
Efficient Parallel IO on ARCHER	1
Efficient use of ARCHER and the Knights Landing Processor	1
GPU programming with CUDA	1
Hands-on Intro to HPC	1
Introduction to Modern Fortran	0
Introduction to Scientific Programming with Python	2
Message-Passing Programming with MPI	3
Object-Oriented Programming with Fortran	0
Performance Analysis Workshop	1
Practical Software Development	0
Programming the Manycore Knights Landing Processor	2
Scientific Computing	1
Shared-Memory Programming with OpenMP	1
Single-Node Performance Optimisation	1
Single-Sided Communications	1
Software Carpentry	2
Threaded Programming	1
Writing Scalable Parallel Applications with MPI	1
Total number of courses run	25

Annual Process

- Discuss requirements with hubs and other centres
 - propose training programme
 - approved by external training panel
 - all material archived on web after delivery
- Possibility of developing new courses
 - asked for input on this from regular training survey
 - results about to be analysed ...

Novel Training

- MOOC
- Driving tests
- Online CPD courses
- Live webinars and recorded lectures



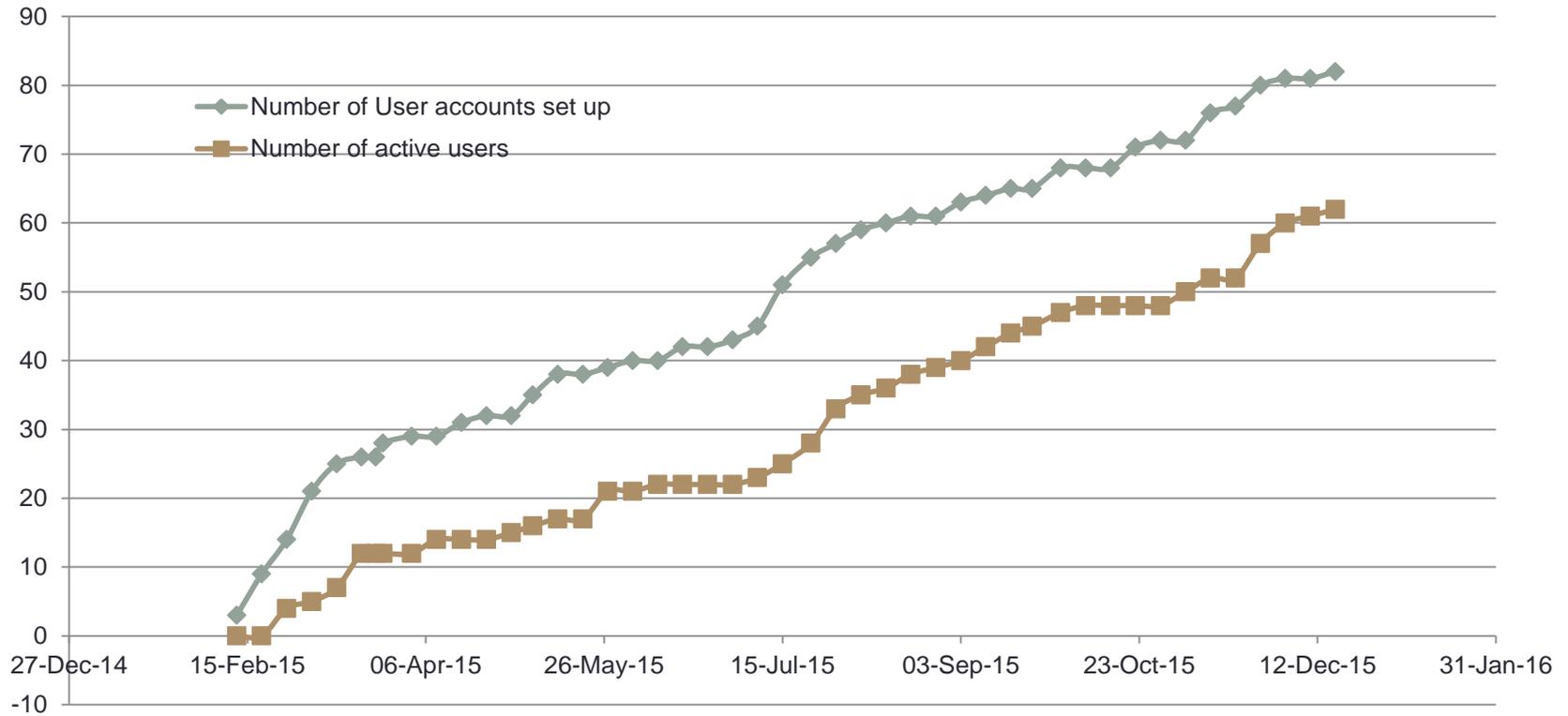
futurelearn.com/courses/supercomputing/

The screenshot shows a web browser window with the URL <https://www.futurelearn.com/courses/supercomputing/>. The page features the Future Learn logo and navigation options for 'Courses' and 'Programs'. The main content area is a dark-themed banner for the 'Supercomputing' course, labeled as a 'FREE ONLINE COURSE'. The banner text reads: 'Discover how supercomputers work and the real-life scientific breakthroughs made possible by today's computer simulations.' Below this is a pink button that says 'Join now - starts 6 Mar'. Underneath the banner, course details are listed: 'FREE online course', 'Duration: 5 weeks', '3 hours pw', and 'Certificates available'. At the bottom, there is a video player with a play button and a logo for 'PRACE' (Partnership for Advanced Computing in Europe) under the heading 'CREATED BY'. A 'Support' link is visible in the bottom right corner.



ARCHER driving test

Users



Quizzes

Home - BBC News x Quia - ARCHER Driving Test x +

https://www.quia.com/quiz/5

Home FAQ About Log in Subscribe now 30-day free trial

ARCHER Driving Test

Assessment based on the materials covered in the Hands-On introduction to HPC ARCHER training course, or for users of other HPC systems who have familiarised themselves with the specifics of running jobs on ARCHER by reading up the [online Introduction to ARCHER resources](#).

This quiz includes questions on programming and compiling.

If you only use existing software then we recommend you use the [Non-Programmer version](#) instead.

Question 4 of 29 Go to 4 - Not answered Go

4. You want to share some files on ARCHER with someone else in your research group. Where could you put them so that the other user can easily copy or read them, assuming your group is g01

(select all the ones that apply)

- /home/g01/shared/
- /work/g01/shared/
- /home/g01/g01/shared/
- /work/g01/g01/shared/

Submit answer Skip for now End quiz

Home - BBC News x Socrative x +

https://b.socrative.com/student/#

HPCQU1Z

1 of 9

What is MPI?

- A the Message-Passing Interface
- B the Miami Police Investigators
- C the Minimal Polynomial Instantiation
- D the Millipede Podiatry Institution
- E a library for distributed-memory parallel programming

SUBMIT ANSWER

Socrative - Mozilla Firefox

Plumber wi... Welcome... TDL - EPCC... ARCHER... 2005-2006... Socrative x To do - Sup... +

https://b.socrative.com/teacher/#live-results/question/1 90%

champions workshop

gcal TDL Archer wiki CSE Training eExpenses OOT CSE Wiki MSc Wiki MOOC Wiki stackoverflow

#1 What is MPI?

HOW'D WE DO? 2/2 students answered

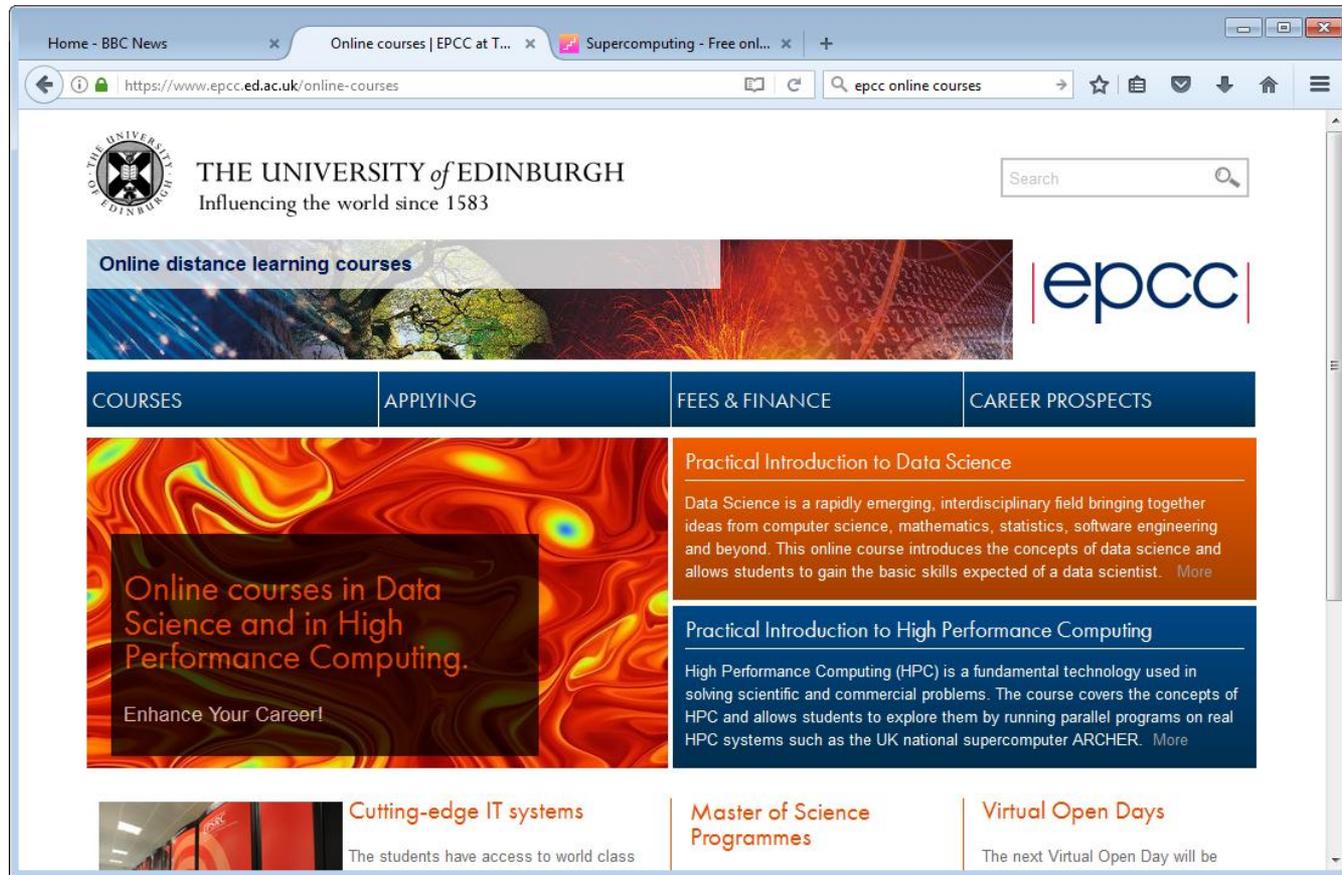
A	the Message-Passing Interface	0%
B	the Miami Police Investigators	33%
C	the Minimal Polynomial Instantiation	33%
D	the Millipede Podiatry Institution	33%
E	a library for distributed-memory parallel programming	0%

SHOW EXPLANATION



Postgraduate Professional Development

<http://www.epcc.ed.ac.uk/online-courses/>



The screenshot shows a web browser window displaying the EPCC online courses page. The browser tabs include 'Home - BBC News', 'Online courses | EPCC at T...', and 'Supercomputing - Free onl...'. The address bar shows 'https://www.epcc.ed.ac.uk/online-courses' with a search for 'epcc online courses'. The page header features the University of Edinburgh logo and the text 'THE UNIVERSITY of EDINBURGH Influencing the world since 1583'. A search bar is located in the top right. Below the header is a banner for 'Online distance learning courses' with the EPCC logo. A navigation menu includes 'COURSES', 'APPLYING', 'FEES & FINANCE', and 'CAREER PROSPECTS'. The main content area has a large graphic with the text 'Online courses in Data Science and in High Performance Computing. Enhance Your Career!'. To the right, there are two course cards: 'Practical Introduction to Data Science' and 'Practical Introduction to High Performance Computing'. At the bottom, there are three sections: 'Cutting-edge IT systems' (with a photo of a server room), 'Master of Science Programmes', and 'Virtual Open Days'.



Webinars and recorded lectures

The screenshot shows a YouTube video player for the video 'Message-Passing Concepts' from the 'ARCHEr Training Course: Message-Passing Program'. The video is at the 20:40 mark of a 33:47 duration. The main content area displays a slide titled 'Synchronous send' with two bullet points: 'Analogy with faxing a letter.' and 'Know when letter has started to be received.' Below the text is a diagram of a person at a computer sending a letter to a mailbox. The right sidebar contains a playlist of related videos, including 'Message-Passing Concepts', 'Message-Passing Thought Exercise (Traffic Modelling)', 'Cellular Automaton Exercise (Traffic Modelling)', and 'Introduction to MPI'. The video has 898 views and was published on Oct 9, 2014.

The screenshot shows a YouTube video player for the video 'ARCHEr Virtual Tutorial: Parallel IO on ARCHER'. The video is at the 4:57 mark of a 14:38 duration. The main content area displays a slide titled 'SSF: ARCHER Lustre' with a bar chart showing performance metrics. The right sidebar contains a playlist of related videos, including 'ARCHEr Virtual Tutorial: The Knights Landing Processor KNL Overview', 'Introduction to MPI Programming, part 2, by Hristo Iliev', 'Lustre and IO Tuning', and 'Debugging and profiling of MPI programs'. The video has 2 views and was published on Feb 9, 2017.

<http://www.archer.ac.uk/training/online/>

<http://www.archer.ac.uk/training/virtual/>



How can we work together?

- What do you want? Your users want?
- Coordination with Tier-2 training programme(s)
 - opportunities for collaborative courses (e.g. Soton, Sheffield)
 - sharing of popular course material
 - run courses at Tier-2 sites on your machines
 - for ARCHER we just need a venue + local audience
- E.g. Hands-on Intro to HPC course
 - could make PPTs available as well as existing PPTs + exercises
 - sample run available as online videos
 - you port to your machine and share new material
 - ARCHER (run 1), collaborative (run 2), devolved (run 3) ?



The logo for EPSRC (Engineering and Physical Sciences Research Council) features the acronym "EPSRC" in a bold, purple, sans-serif font. The text is centered between two horizontal green lines.The logo for NERC (Natural Environment Research Council) Science of the Environment. It consists of the acronym "NERC" in white, bold, sans-serif font on a dark green rectangular background. To its right, the words "SCIENCE OF THE ENVIRONMENT" are written in a smaller, white, sans-serif font on a light green rectangular background.The logo for Cray, "THE SUPERCOMPUTER COMPANY". The word "CRAY" is in a large, blue, stylized, sans-serif font. Below it, the tagline "THE SUPERCOMPUTER COMPANY" is written in a smaller, blue, sans-serif font.The logo for epcc (Energy Policy Centre). The lowercase letters "epcc" are in a dark blue, sans-serif font. The logo is flanked by two vertical red lines on either side.

<http://www.archer.ac.uk>
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