GETTING STARTED ON ARCHER

ARCHER Champions

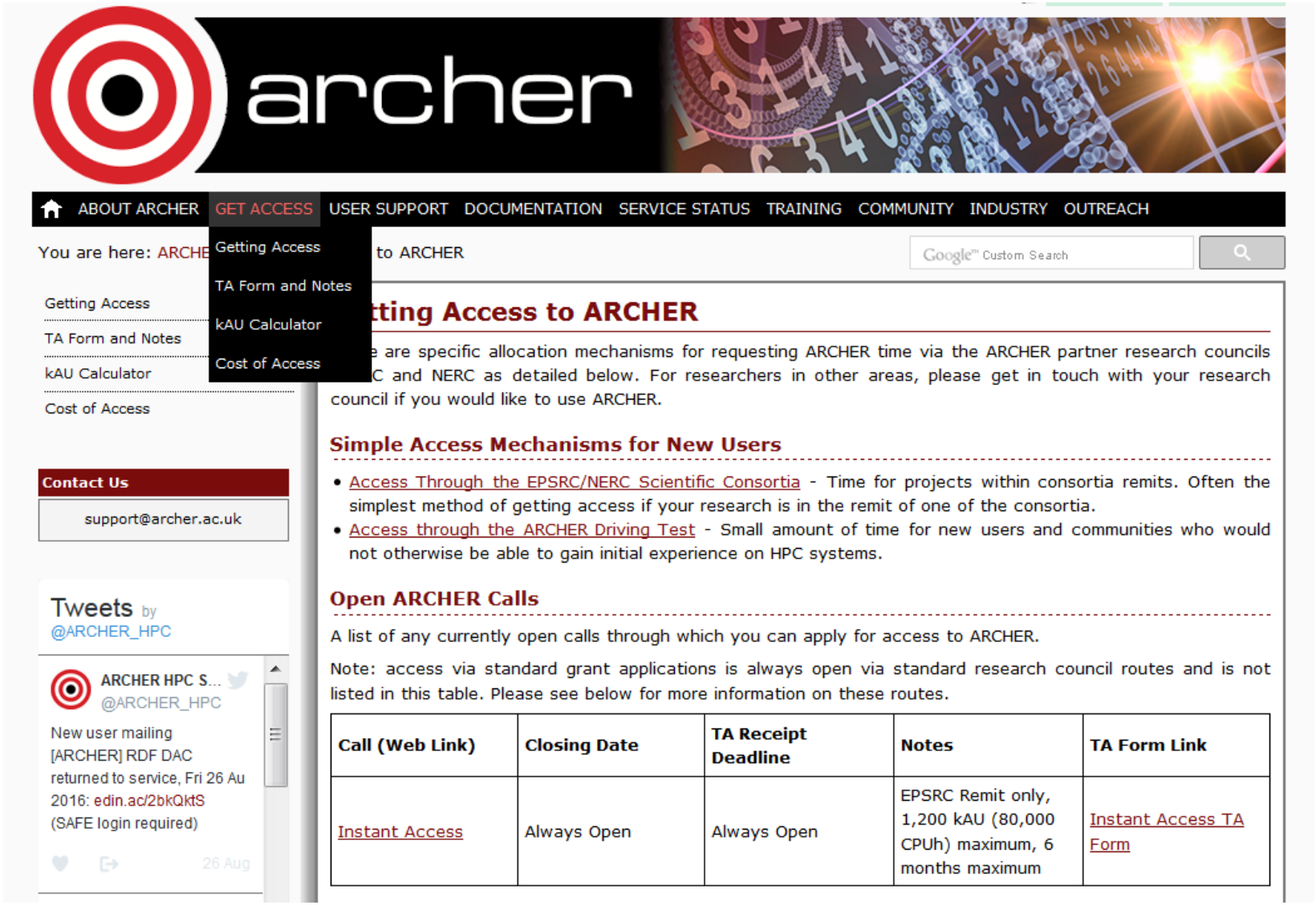
5th / 6th SEPTEMBER 2016 – University of Oxford

Clair Barrass, USL Team and Training Administrator

Getting Started on ARCHER

Access

Training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ABOUT ARCHER
GET ACCESS
USER SUPPORT
DOCUMENTATION
SERVICE STATUS
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OUTREACH
Getting Access
TA Form and Notes
kAU Calculator
Cost of Access
You are here: ARCHE
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Contact Us
support@archer.ac.uk
Tweets by @ARCHER_HPC
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New user mailing
[ARCHER] RDF DAC
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2016: edin.ac/2bkQktS
(SAFE login required)
26 Aug
tting Access to ARCHER
e are specific allocation mechanisms for requesting ARCHER time via the ARCHER partner research councils
C and NERC as detailed below. For researchers in other areas, please get in touch with your research
council if you would like to use ARCHER.
Simple Access Mechanisms for New Users
Access Through the EPSRC/NERC Scientific Consortia - Time for projects within consortia remits. Often the simplest method of getting access if your research is in the remit of one of the consortia.
Access through the ARCHER Driving Test - Small amount of time for new users and communities who would not otherwise be able to gain initial experience on HPC systems.
Open ARCHER Calls
A list of any currently open calls through which you can apply for access to ARCHER.
Note: access via standard grant applications is always open via standard research council routes and is not listed in this table. Please see below for more information on these routes.
Call (Web Link)
Closing Date
TA Receipt Deadline
Notes
TA Form Link
Instant Access
Always Open
Always Open
EPSRC Remit only, 1,200 kAU (80,000 CPUh) maximum, 6 months maximum
Instant Access TA Form


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Access

Lots of information on ARCHER Website

- EPSRC
  - RAP
  - Leadership
  - EPSRC Grant
  - Instant Access
  - **ARCHER Driving Test**
- NERC
  - NERC Grant
- Other
  - Grants or other funding mechanisms

Access Details

- EPSRC / NERC Consortia
  - Projects which fall within the remit of the existing consortia
  - Each consortium has its own way of applying for access and allocating time.
  - Details on the ARCHER Scientific Consortia webpage http://www.archer.ac.uk/community/consortia/

Access Details

- RAP (Resource Allocation Panel)
  - 2 calls per year
  - No limit on amount of time that can be requested
  - Access to ARCHER for one year
  - Top-up available for up to two years
- Leadership Project
  - 1 call per year
  - Computationally intensive projects >100,000 kAU
  - Up to 24 months

Access Details

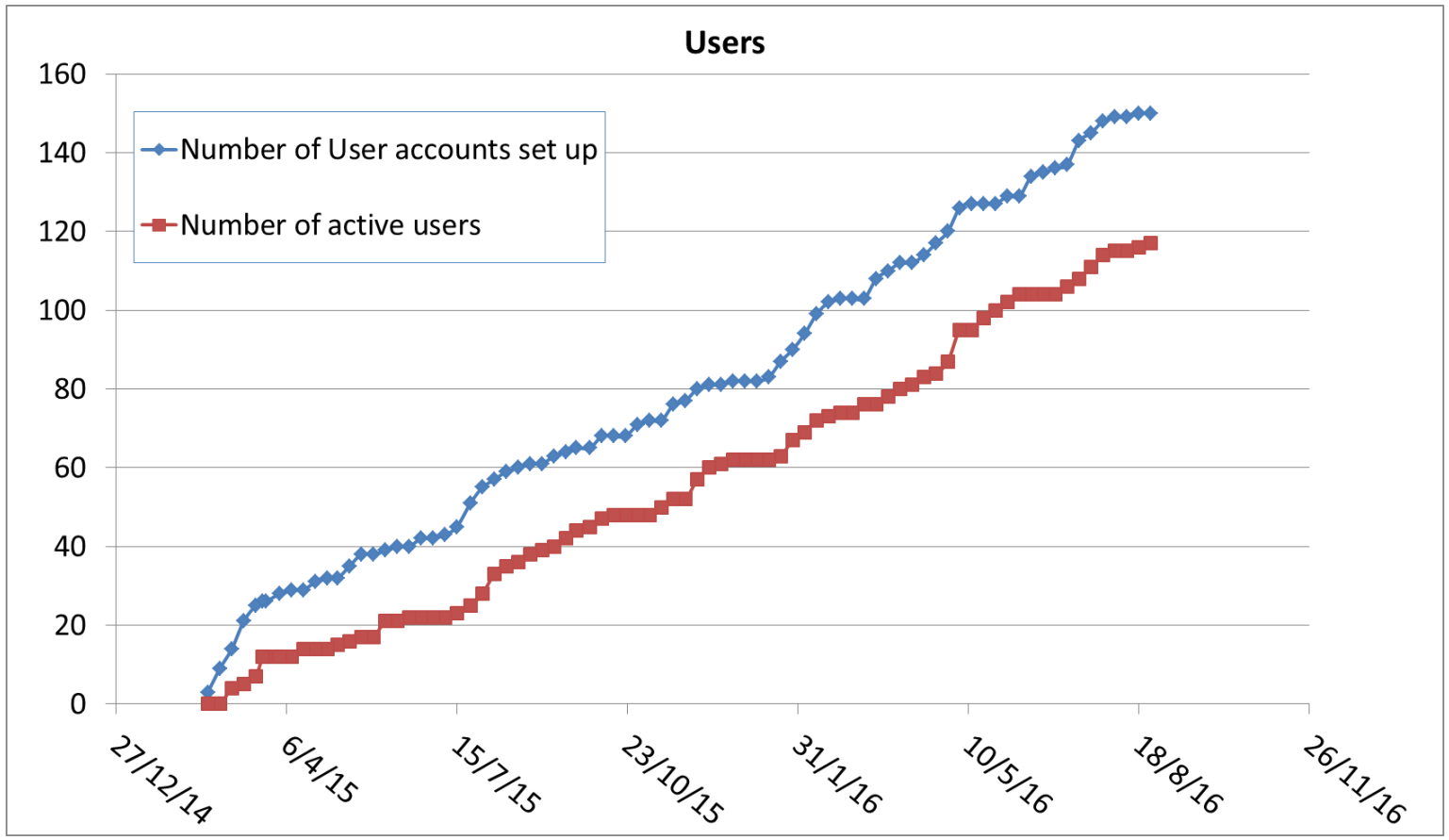
- Grants – from EPSRC / NERC / Other
  - Grant application details and forms available on website
  - Up to three years funding
  - Generally require Technical Assessment to be submitted with the application

- Instant Access
  - Aimed at new ARCHER users
  - Up to 1200 kAUs
  - Up to 6 months
  - Opportunity to test ARCHER for their purposes
  - Prepare for fully peer reviewed application

ARCHER Driving Test

- Introduced at beginning of 2015
- Very low barrier-to-entry
  - Online Quiz
- Instant access
  - Invitation issued right away
- Sufficient time and resources to get started
  - 1200 kAUs for 12 months
- Full ARCHER support team available right away

ARCHER Driving Test



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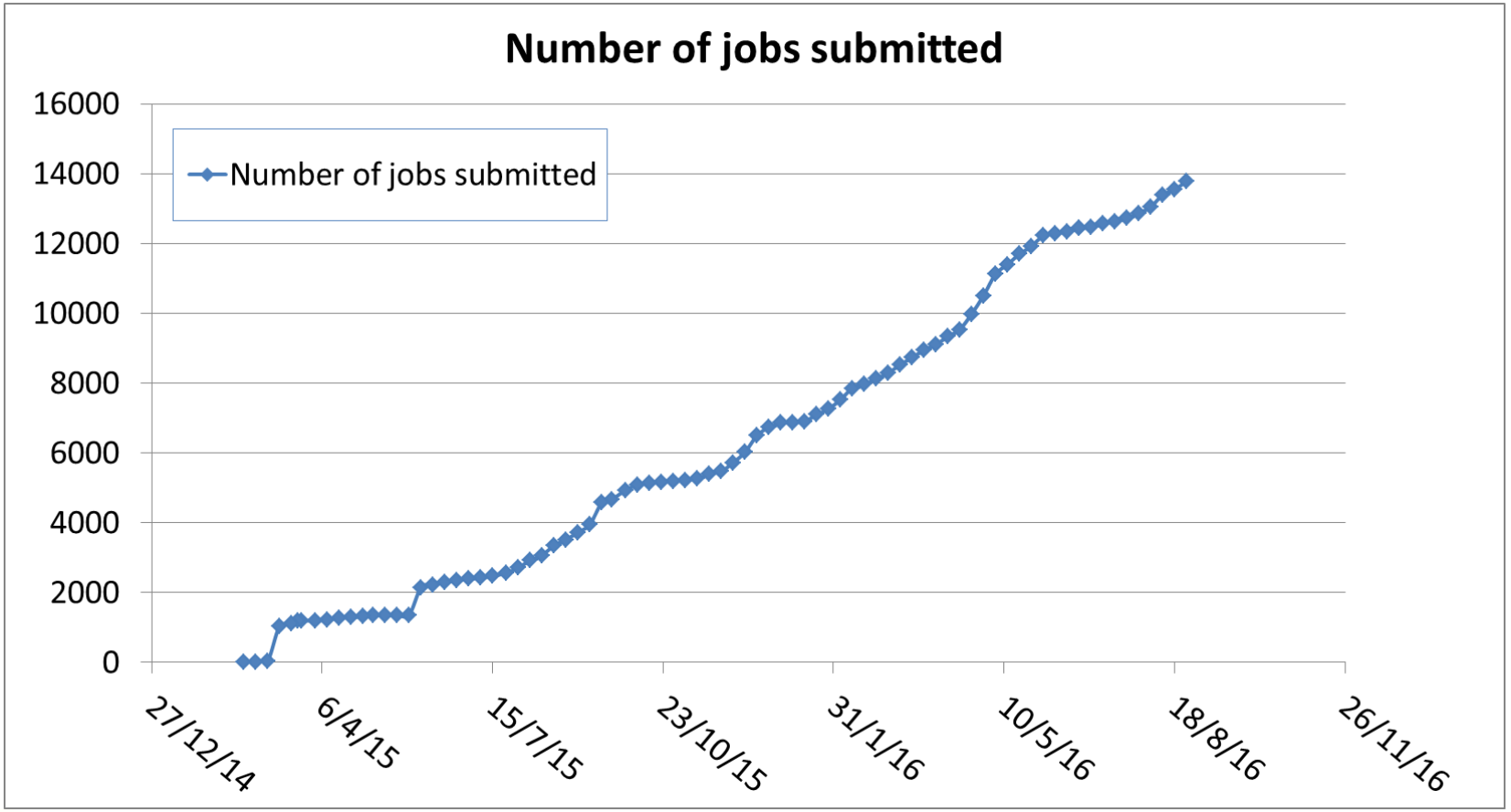
ARCHER Driving Test



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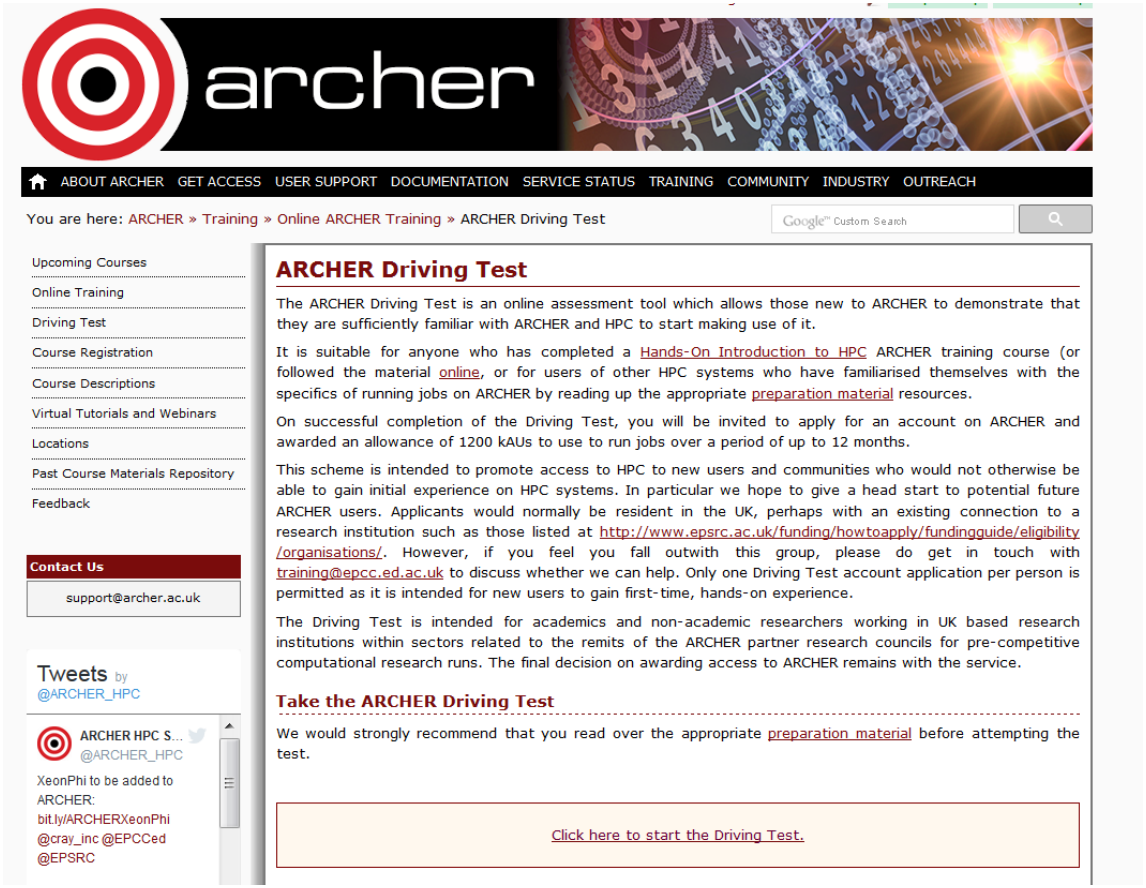
ARCHER Driving Test



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Driving Test – Question Bank

- Range of question topics
  - Compiling
  - Hardware
  - Input / Output / Data management
  - PBS job submission
  - Running jobs
  - Programming

- 64 different questions - and growing

Driving Test – Question Bank

Each quiz contains 20 questions

	Randomly selected *2 questions will be randomly selected from label: ARCHER, Hardware.*
	Randomly selected *3 questions will be randomly selected from label: ARCHER, I / O.*
	Randomly selected *4 questions will be randomly selected from label: ARCHER, Programming.*
	Randomly selected *3 questions will be randomly selected from label: ARCHER, Compiling.*
	Randomly selected *1 question will be randomly selected from label: ARCHER, PBS.*
	Randomly selected *3 questions will be randomly selected from label: ARCHER, Running jobs.*
	Randomly selected *4 questions will be randomly selected from label: ARCHER, Final.*

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ARCHER Driving Test Questions

5. Jobs on ARCHER should be run from within which filesystem?

- /PBS
- /home
- /work
- /general

ARCHER Driving Test Questions

16. You have just logged in to ARCHER and you wish to run a parallel application. However, your application builds with gnu or intel compilers only; how should you ensure that the source code is compiled correctly?

(select all the ones that apply) (1 point)

- [ ] use the module command to change the default programming environment
- [ ] alter the makefile so that the gnu or intel compiler is called explicitly
- [ ] alter the makefile so that it uses the generic compiler wrappers (cc, CC or ftn)
- [ ] compile on a local Linux system which has these compilers and copy the executable to ARCHER

ARCHER Driving Test Questions

57. Which of the following is the best definition of "decomposition" when thinking about parallelising a problem? (1 point)

- The proportion by which the processing speed is increased by splitting up the problem
- The impact of the increased communication required on the total run time when the problem is split up
- The decision on how to split the problem up into many tasks
- The time taken to run the parts of the process which cannot be split up

ARCHER Driving Test Certificate & Sign-up Invitation

ARCHER Driving Test

Training <Training@staffmail.ed.ac.uk>

Sent: Thu 01/09/2016 08:44

To: 'k.s.curtis@leeds.ac.uk'

Message | Driving Test Certificate Kellye Coffyn.pdf (225 KB)

Dear Kellye

Congratulations on successfully completing the ARCHER Driving Test - your Certificate of Completion is attached.

We are pleased to confirm that you have passed the test and would like to invite you to apply for an account on ARCHER including 1200 kAUs which can be used over the coming 12 months to put the skills you have learned into practice.

This time on ARCHER can be used for any academic research, or for pre-competitive computational research runs for non-academic researchers within sectors related to the remits of the ARCHER partner research councils. * * * This is a once-only offer, only one application for time on ARCHER may be made under this scheme, per person. * * *

In order to set up your account, you must first register on our administration system, SAFE. Full instructions are available at http://www.archer.ac.uk/documentation/safe-guide/safe-guide-users.php#reg-log-pass

Once you have an account on SAFE, you should apply for your ARCHER machine account under project e508 ARCHER Driving Test. Full instructions on this step are available at http://www.archer.ac.uk/documentation/safe-guide/safe-guide-users.php#getac
The project signup password is 'driving'. Please do not share these signup details with anyone else.

There is lots of information, a Quick Start guide and ARCHER User guide at http://www.archer.ac.uk/documentation/

If you have any questions about this offer or about the ARCHER Driving test, please contact training@epcc.ed.ac.uk. Any questions relating to using ARCHER should be sent to helpdesk@archer.ac.uk

We look forward to receiving your application and welcoming you to the ARCHER User Community.

Best wishes

Clair
EPCC Training Team

Once you have access – now what?

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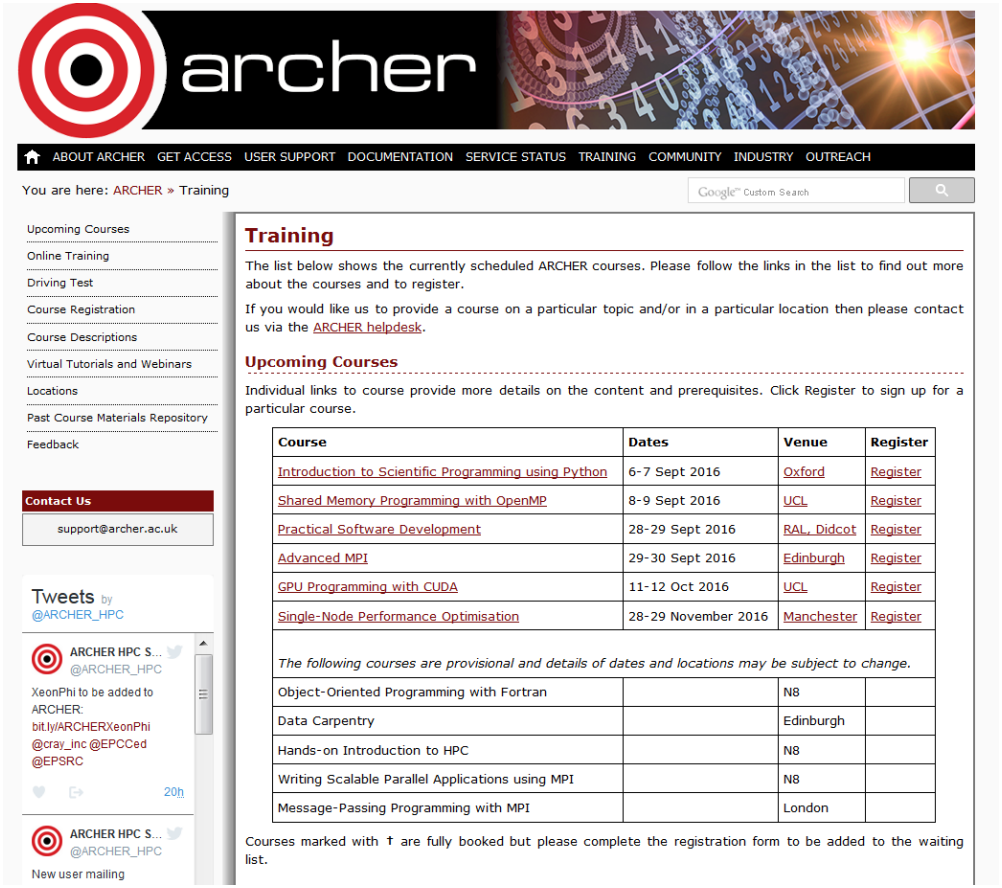
Training



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ABOUT ARCHER | GET ACCESS | USER SUPPORT | DOCUMENTATION | SERVICE STATUS | TRAINING | COMMUNITY | INDUSTRY | OUTREACH

You are here: ARCHER » Training

Google™ Custom Search

- Upcoming Courses
- Online Training
- Driving Test
- Course Registration
- Course Descriptions
- Virtual Tutorials and Webinars
- Locations
- Past Course Materials Repository
- Feedback

Contact Us

support@archer.ac.uk

Tweets by @ARCHER_HPC

ARCHER HPC S... @ARCHER_HPC

XeonPhi to be added to ARCHER: bit.ly/ARCHERXeonPhi @cray_inc @EPCCed @EPSRC

20h

ARCHER HPC S... @ARCHER_HPC

New user mailing

Training

The list below shows the currently scheduled ARCHER courses. Please follow the links in the list to find out more about the courses and to register.

If you would like us to provide a course on a particular topic and/or in a particular location then please contact us via the ARCHER helpdesk.

Upcoming Courses

Individual links to course provide more details on the content and prerequisites. Click Register to sign up for a particular course.

Course	Dates	Venue	Register
Introduction to Scientific Programming using Python	6-7 Sept 2016	Oxford	Register
Shared Memory Programming with OpenMP	8-9 Sept 2016	UCL	Register
Practical Software Development	28-29 Sept 2016	RAL, Didcot	Register
Advanced MPI	29-30 Sept 2016	Edinburgh	Register
GPU Programming with CUDA	11-12 Oct 2016	UCL	Register
Single-Node Performance Optimisation	28-29 November 2016	Manchester	Register
The following courses are provisional and details of dates and locations may be subject to change.			
Object-Oriented Programming with Fortran		N8	
Data Carpentry		Edinburgh	
Hands-on Introduction to HPC		N8	
Writing Scalable Parallel Applications using MPI		N8	
Message-Passing Programming with MPI		London	

Courses marked with † are fully booked but please complete the registration form to be added to the waiting list.

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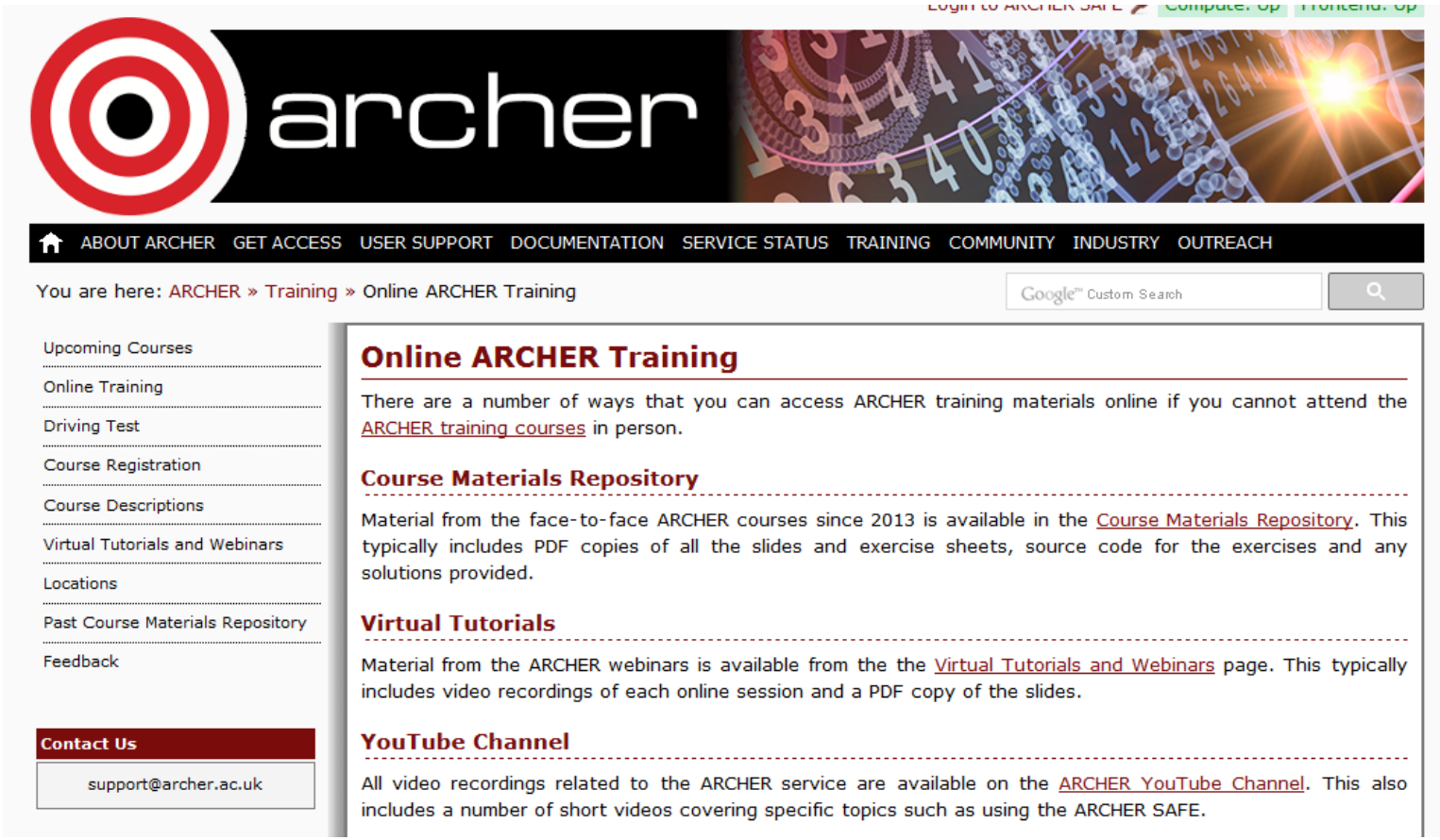
Online Training



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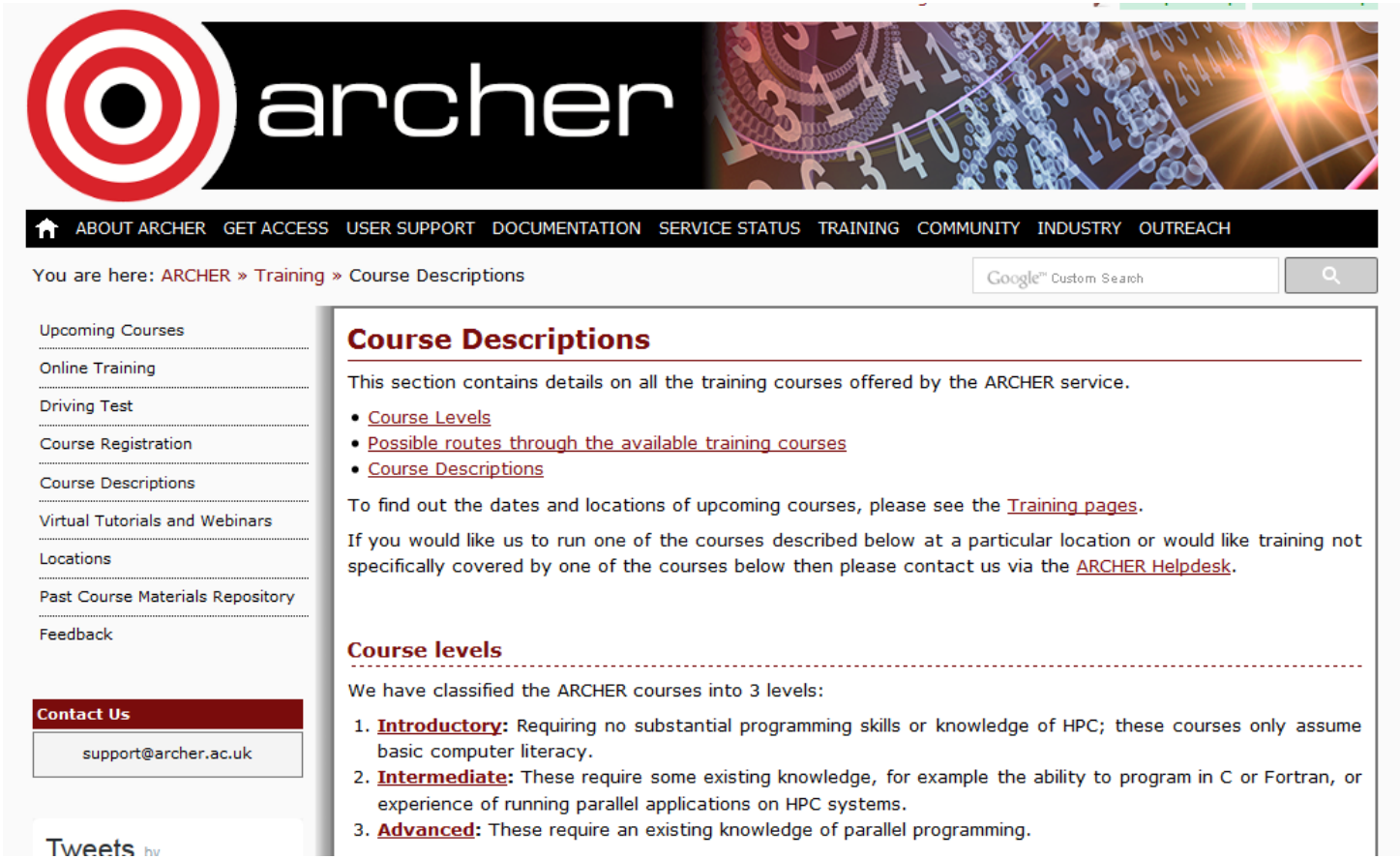
Training Course Descriptions



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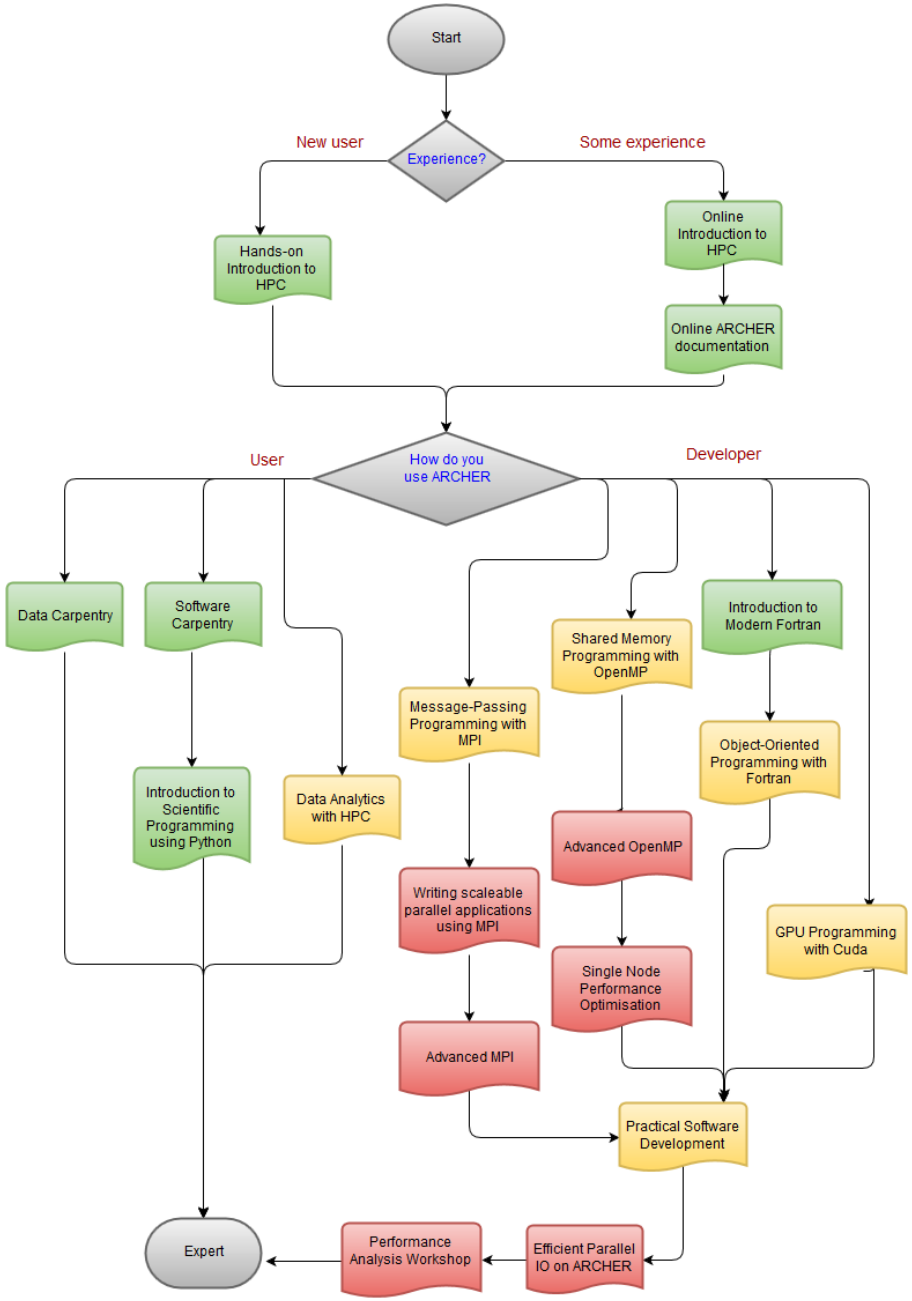
Training Course Flowchart



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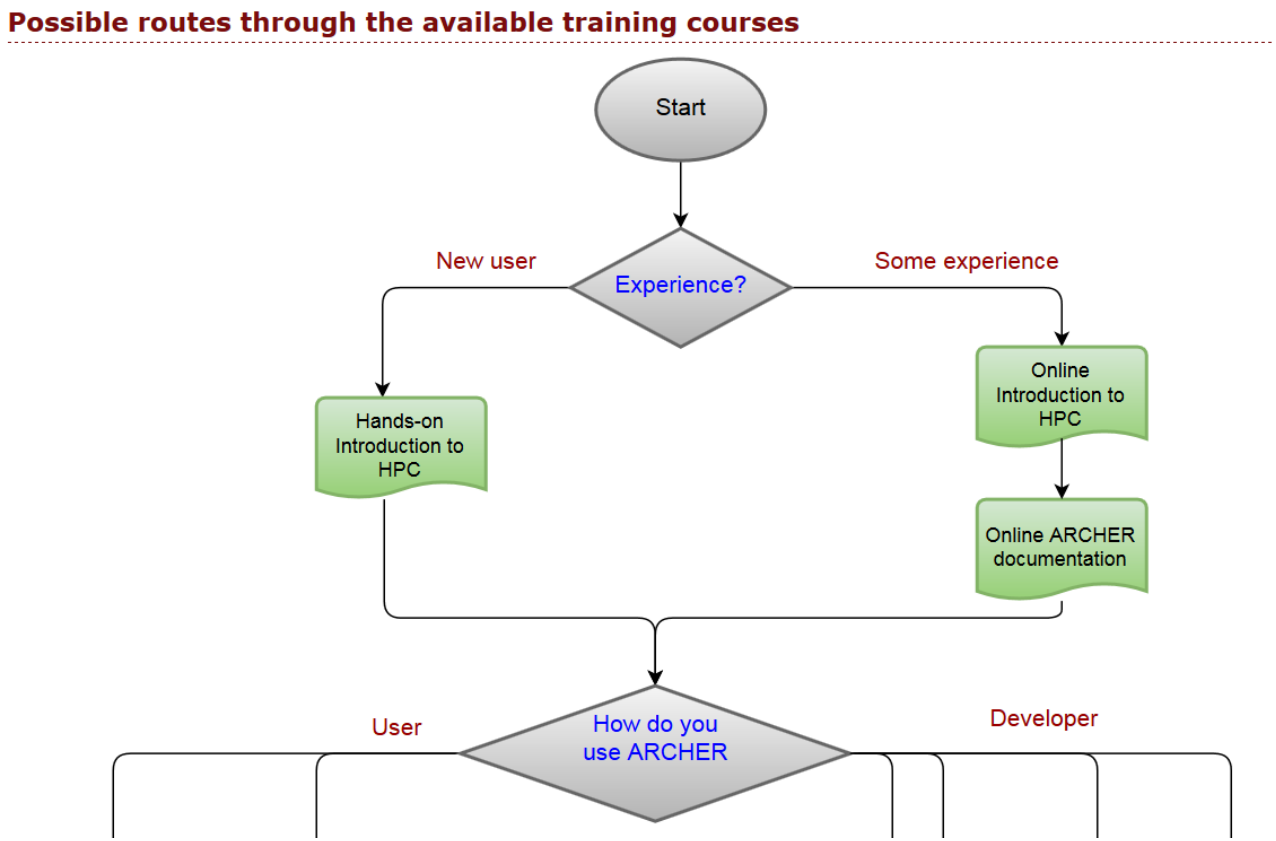
Training Course Flowchart



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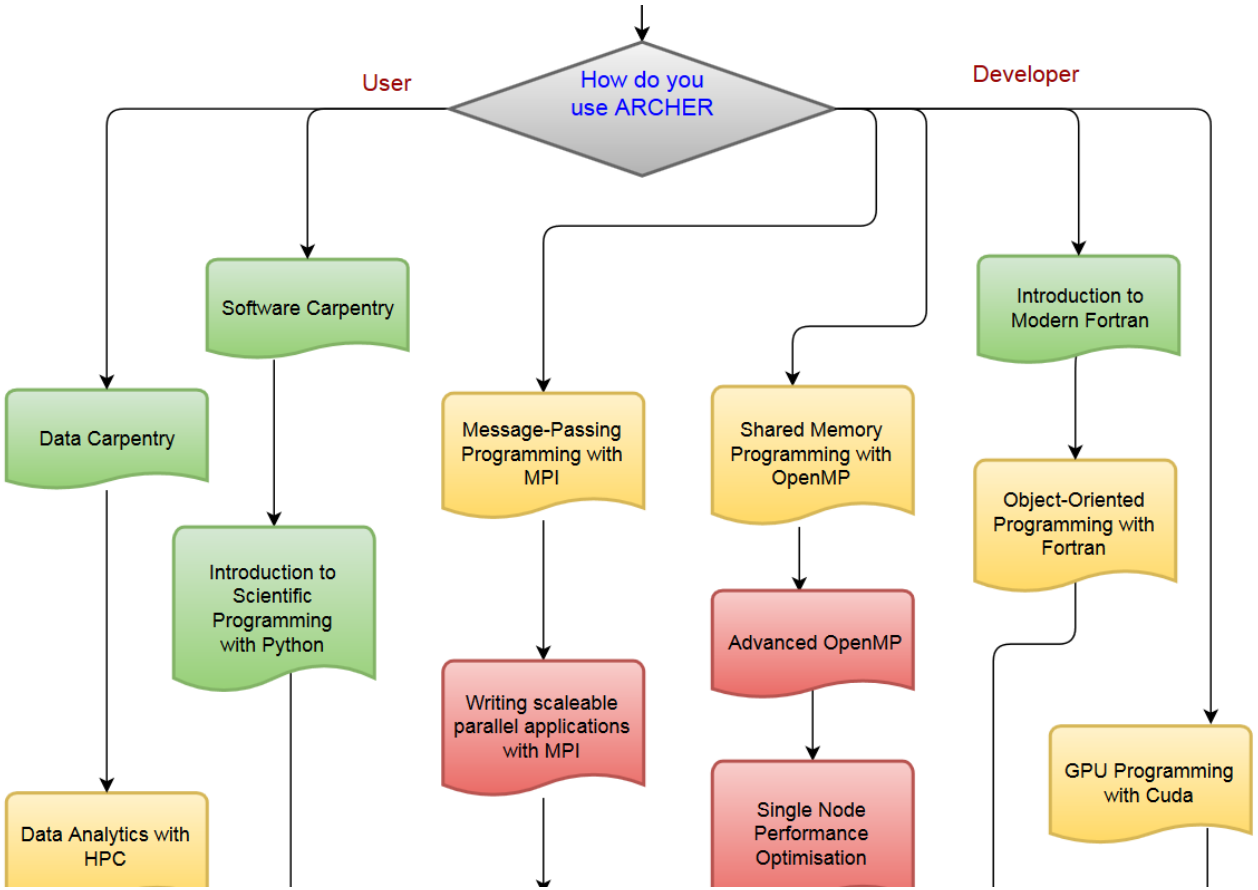
How do you use ARCHER
User
Developer
Software Carpentry
Data Carpentry
Introduction to Scientific Programming with Python
Data Analytics with HPC
Message-Passing Programming with MPI
Writing scaleable parallel applications with MPI
Shared Memory Programming with OpenMP
Advanced OpenMP
Single Node Performance Optimisation
Introduction to Modern Fortran
Object-Oriented Programming with Fortran
GPU Programming with Cuda

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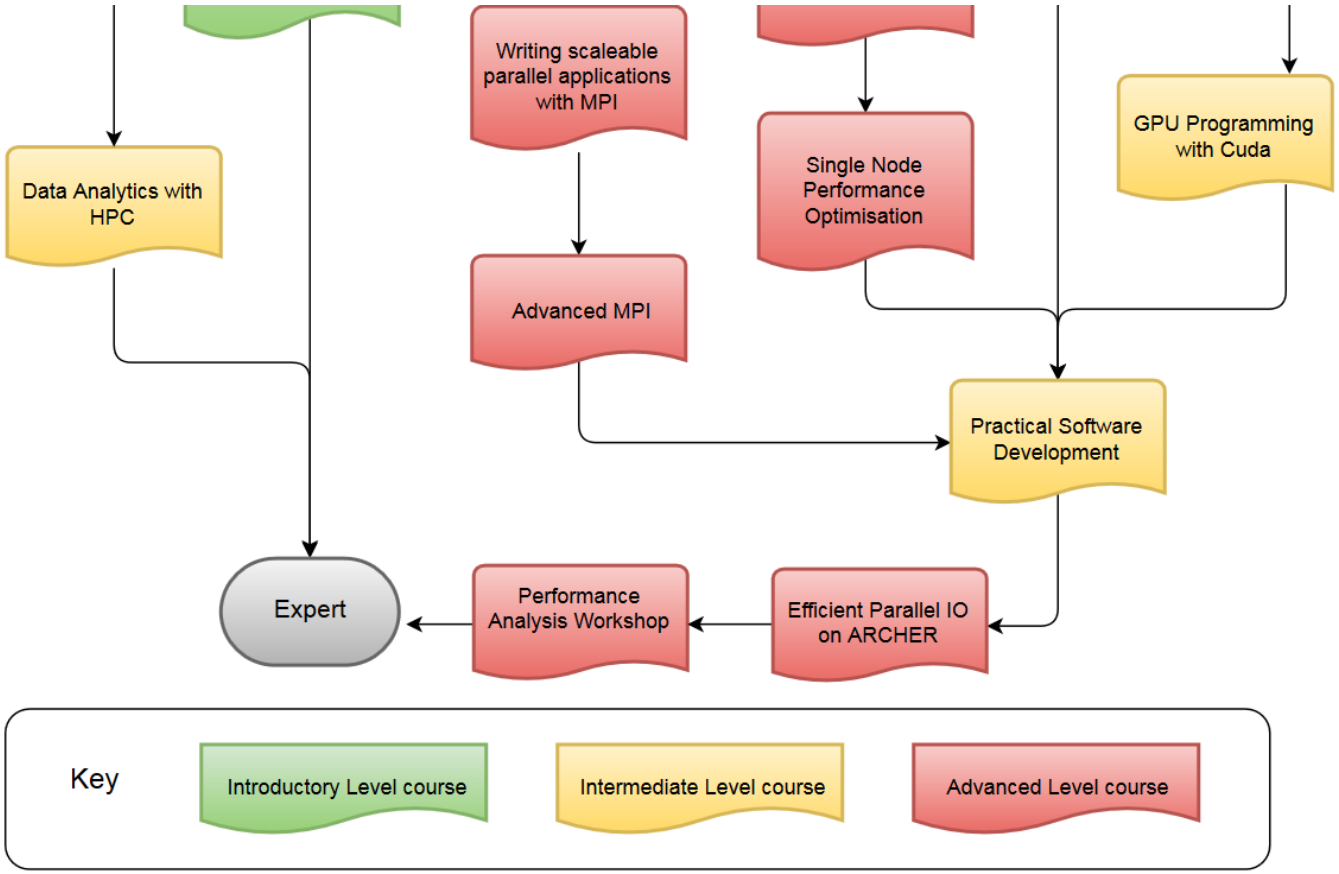
Writing scaleable parallel applications with MPI
Single Node Performance Optimisation
GPU Programming with Cuda
Data Analytics with HPC
Advanced MPI
Practical Software Development
Expert
Performance Analysis Workshop
Efficient Parallel IO on ARCHER
Key
Introductory Level course
Intermediate Level course
Advanced Level course

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Course Descriptions

Outline Course Descriptions

Introductory (level 1) courses

Data Carpentry

In many domains of research, the rapid generation of large amounts of data is fundamentally changing how research is done. The deluge of data presents great opportunities, but also many challenges in managing, analysing and sharing data. Data Carpentry aims to teach the skills that will enable researchers to be more effective and productive. The course is designed for learners with little to no prior knowledge of programming, shell scripting, or command line tools.

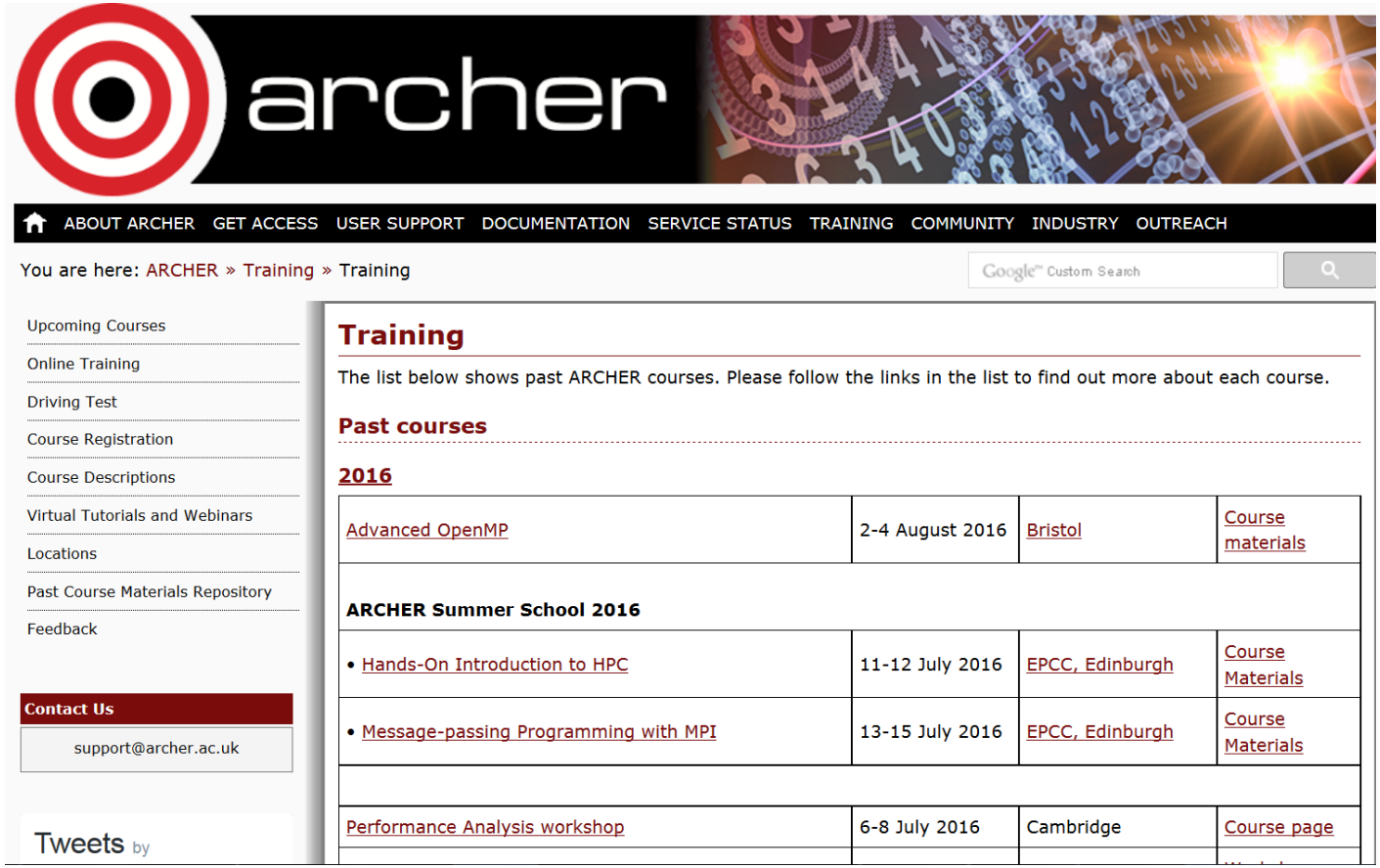
Hands-on Introduction to High Performance Computing

High-performance computing (HPC) is a fundamental technology used in solving scientific problems. Many of the grand challenges of science depend on simulations and models run on HPC facilities to make progress, for example: protein folding, the search for the Higgs boson and developing nuclear fusion.

The course runs for 2 days. The first day covers the the basic concepts underlying the drivers for HPC development, HPC hardware, software, programming models and applications. The second day will provide an opportunity for more practical experience, information on performance and the future of HPC. This foundation will give the you ability to appreciate the relevance of HPC in your field and also equip you with the tools to start making effective use of HPC facilities yourself.

The course is delivered using a mixture of lectures and hands-on sessions and has a very practical focus. During the hands-on sessions you will get the chance to use ARCHER with HPC experts available to answer your questions and provide insight.

Course Materials Repository



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All Course Resources Remain Available

Shared-Memory Programming with OpenMP

Dates: 11-12 May 2016

Location: University of Sheffield

Lecture Slides

Wednesday 11th May 2016

- Overview of ARCHER training
- Shared-memory concepts
- Parallel traffic modelling
- Traffic modelling solution
- OpenMP introduction
- Parallel regions
- Work sharing directives

Thursday 12th May 2016

To follow

- Synchronisation
- Further topics
- Tasks
- OpenMP memory model
- Caches
- Cache coherency
- Non-Uniform Memory Access
- Performance tuning

Notes

Short summaries of the OpenMP syntax are available from the OpenMP website:

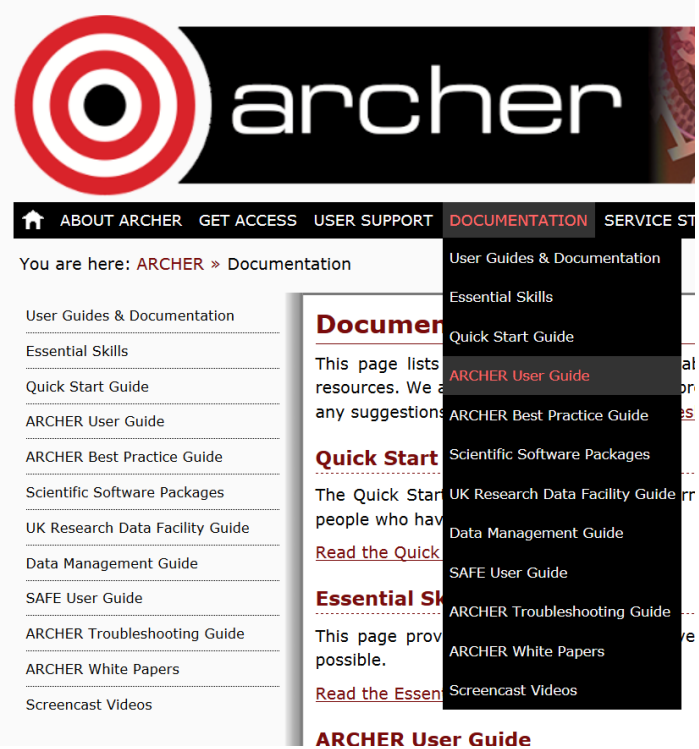
- OpenMP 4.0 API C/C++ Syntax Quick Reference Card
- OpenMP 4.0 API Fortran Syntax Quick Reference Card

Exercise Material

- Traffic modelling exercise sheet
- OpenMP exercise sheet
- OpenMP source code
- Performance investigations

Website Documentation

- Using ARCHER



- Using SAFE

Documentation – Screencast Videos

Registering, logging in, passwords

How to register on SAFE

1. Go to the SAFE New User Signup Form
2. Fill in your personal details. You can come back later and change them if you wish
3. Click "Submit"
4. You are now registered. Your SAFE password will be emailed to the email address you provided. You can then login with that email address and password

At this point your account is registered on the SAFE but you do not have a machine account for ARCHER. To obtain a machine account on ARCHER you require a *Project Code* and a *Project Password* (if required). Your project's PI or Project Manager should be able to supply you with these details.
Once you have them you should:

1. Log into SAFE
2. On the Main page, click the "Request New Account" button.
3. Select the correct project from the drop down list
4. Enter the correct project password for the project you have selected.

How to login to SAFE and Overview of Main Page

1. Go to the SAFE https://www.archer.ac.uk/safe/
2. Type in the email address you have registered with
3. Type in your SAFE password
4. Click "Login"
5. You are now on the Main Page and here you can see Menus along the top which give access to SAFE functionality

Key to Success

- New users up and running
- Experienced users mastering new skills
- Successful research

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http://www.archer.ac.uk
support@archer.ac.uk