

Invitation Letter sent out via Society of Biology

Dear Head of Biological Sciences,

An invitation to the launch of the Biological Sciences Dynamic Laboratory Techniques Manual.

The Biological Sciences Dynamic Laboratory Techniques Manual (DLTM) is a resource designed to assist students with their practical work during their transition from Post 16 courses to degree courses in the biological sciences. This laboratory skills software is designed to sit within a higher education institution's virtual learning environment (VLE) to be accessed by new undergraduates, foundation level students as well as those already further along on biology courses as part of their pre-lab work.

This project is funded by the Higher Education Academy and **will be made available freely** to all departments, so we hope that a member of your department can attend one of the two launches. Details of the Biological Sciences DLTM are attached.

The launches will be held at the University of Bristol on 9<sup>th</sup> January 2013 and at Manchester University on 16<sup>th</sup> January 2013. Each launch will be from 2:30 to 4:30 pm.

To book a place for yourself or colleague(s) and to receive more detailed conference information please email Dr Fai Tila (Project Conference Administrator) at [chem-dltm@bristol.ac.uk](mailto:chem-dltm@bristol.ac.uk).

We look forward to seeing you.

Best wishes,

Professor Dudley E. Shallcross FSB

## The DLTM Resource

The DLTM is based on the methodology of the national award winning Bristol ChemLabS Dynamic Laboratory Manual (DLM). Students who have engaged with these activities should make better use of their laboratory time and reduce their demand on the lab demonstrators to teach the basics, thus allowing demonstrators to demonstrate at a higher level or to assess more effectively.

The topics chosen are independent of specific experiments. The items are there to review, or for some to view for the first time, the techniques that could be used within a specific investigation ahead of a practical session ('pre-labs').

Each section gives a brief general introduction to the technique with images of equipment commonly used, sectioned video clips with notes giving hints tips and explanations and finally a short multiple choice quiz. The quiz gives feedback to students' answers so can be used formatively or summatively.

It should be noted that for some items of equipment, there are many variations. Not all equipment variations can be shown. The students, having worked through the resource item should be able to apply their knowledge to a slightly different piece of kit as well as to new situations.

The software is supplied as a series of 'SCORM resource items' that are easily uploaded by IT.

## The Skills Covered

Aseptic techniques  
Centrifuge  
Gilson pipettes  
Heating  
Large volume liquid measurement  
Microscopes  
pH meter  
Sampling in the Field  
Series dilution  
Solution preparation  
Using a spectrophotometer  
Weighing  
An equipment glossary is also included.

The project web page is: <http://www.chemlabs.bris.ac.uk/DLTM.html>

## Further Information

The laboratory based skills of incoming first year undergraduates in the sciences in the UK HEIs is highly variable; some have had extensive practice in a wide range of practical skills and techniques whilst others have had none at all. Bristol ChemLabS has addressed this issue through the construction of its on-line e-learning tool [1]. The virtual environment for laboratory skills development has allowed undergraduate students to rehearse the practical techniques before entering the laboratories from the comfort of their own homes. This has been shown to have a marked impact on confidence in the laboratory and in practical skill development [2-5].

The DLTM is based on the Dynamic Laboratory Manual (DLM) devised by Bristol ChemLabS, University of Bristol and the Chemistry LabSkills Software used by schools and universities globally. For both Bristol ChemLabS won the Times Higher Education National award in the 'Outstanding ICT Initiative of the Year' category in 2010 [2-5].

The DLTM resource has been built in partnership with Learning Science Ltd [6] the educational software company originally employed by the University of Bristol for its DLMs and an international advisory board, consisting of UK and international academics and UK secondary school teachers.

## Project Funding

In 2010 the [Higher Education Academy National Teaching Fellowship Scheme](#) awarded a three year grant to Professor Dudley Shallcross to develop Dynamic Laboratory Techniques Manuals for Physics and Biological Sciences. As part of this project the DLTM resources will be presented to any UK-based Higher Education Institution that wishes to make use of them.

## Main Authors

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## References

[1] <http://www.chemlabs.bris.ac.uk/DLM.html>, last accessed April 2012.

[2] T.G. Harrison and D.E. Shallcross (2008). 'A Chemistry Dynamic Laboratory Manual for Schools', *Chemistry in Action*, **86**, Winter p20-22 (2008).

[3] Harrison T.G., Shallcross D.E., Heslop W.J., Eastman J.R. & Baldwin A.J. (2009), 'The LabSkills Dynamic Lab Manual - an e-learning initiative to enhance schools' and colleges' laboratory practical

work for students, trainee teachers and technical staff', *Acta Didactica Napocensia*, 2, 1, 1-8. Also available at [http://adn.teaching.ro/article\\_2\\_1\\_1.pdf](http://adn.teaching.ro/article_2_1_1.pdf) (last accessed March 2012).

[4] Harrison T., Norman N.C. and Wyatt P. (2011). 'The Dynamic Laboratory Manual: E-Learning Software to Support Practical Chemistry Skills Development', *Chemical Education Newsletter*, American Chemical Society. CHED Committee on Computers.

[5] Harrison T.G., Heslop W.J., Eastman J.R., Baldwin A.J. and Shallcross D.E. (2012). *Chemistry LabSkills: Software to Support Laboratory Skills from Schools' Pre-University to University Foundation Courses*, *Australian Journal of Education in Chemistry* (in Press).

[6] <http://www.learnsci.co.uk/>, last accessed October 2012.