

What is LabSkills?

LabSkills is innovative e-learning software that helps chemistry students develop essential practical skills and build strong links between practical and theoretical science. LabSkills is made up of 50 chemistry modules, each containing a variety of activities for group and individual study that are interactive, enjoyable and highly effective.

Students learn quickly, gain confidence and perform better in assessments and exams. Teaching staff can incorporate ready-made activities seamlessly into their courses.

Key Points

- Provides ideal pre-lab preparation for students with limited experience of practical chemistry. A safe opportunity to practise and develop essential experimental skills.
- Supports best use of valuable laboratory time, quickly bringing students up to speed with techniques, skills, competencies and safety considerations.
- Contains 50 individual learning modules designed to integrate seamlessly with existing course material that have been developed with the Centre for Excellence in Teaching and Learning at the University of Bristol.
- Runs on any web server, Virtual Learning Environment (VLE) or Management Learning System (MLS). Supports unlimited users.



LabSkills software is the latest innovation in science technology for universities and has been developed with Bristol ChemLabS, the Centre for Excellence in Teaching and Learning in the School of Chemistry at the University of Bristol – one of the UK's top universities.

Why is LabSkills so effective?

The learning resources in LabSkills require students to actively participate in the learning process. The high level of responsive interaction requires students to continually test their understanding of the science and learn from their successes and mistakes. Instant feedback is provided at every stage which supports students whatever their level of knowledge and understanding.

Using LabSkills, students can prepare for practical classes by exploring the techniques and experiments that they will then encounter in the laboratory itself. They can practise in a safe environment and receive directed and focused feedback on their performance. The differentiated resources in LabSkills allow students to work at their own pace and access additional help and feedback whenever required.





Implementing LabSkills

The resource can be used in many ways in universities:

- **Before starting a practical (pre-lab)**

Students can be directed to work through specific sections in the lead up to practical work. This supported self-study may be used as homework and will result in more effective use of valuable laboratory time. Students can submit printed test results. LabSkills is fully SCORM compliant and allows results to be viewed electronically through the university's learning platform.

- **On the whiteboard**

A whiteboard option allows the screen size to be maximised so that interactive elements can be used for tutorials and group discussion.

- **During the practical class**

The software may be run on PCs and whiteboards in the laboratory as an aide memoire.

- **Revision and exam practice**

LabSkills provides an effective way for students to actively revise practical work away from the laboratory when repeating the experiment is not possible.

We provide great support for our software. The licence includes free support for the first year.

LabSkills also provides highly effective support for trainee and newly qualified teachers. In partnership with the Royal Society of Chemistry it is used in over 50 universities in the UK.

LabSkills on Networks and Learning Platforms

LabSkills runs on any web server, Virtual Learning Environment (VLE) or Management Learning System (MLS). It is fully compliant with SCORM, the industry standard for learning platforms meaning that results and activity for individual students can be tracked if you have a SCORM-compatible VLE or MLS.

Staff and students can log onto LabSkills from any computer on the network. This includes access over the internet, so LabSkills can also be used from home.



"Students show up at the lab fully prepared and are able to start the experimental work almost immediately and thereby make maximum use of the time in the laboratory."

*Professor Nick Norman,
CEO Bristol ChemLabS, University of Bristol*

Resources in LabSkills

LabSkills includes common techniques and experiments, best practice, safety, videos, calculations, tests, revision and much more.

Simulations

Each technique contains interactive simulations which are intuitive and media-rich. These provide multiple opportunities to explore techniques through trial and improvement, addressing all common student mistakes with questioning, hints and feedback.

- Setting up equipment correctly
- Optimising experimental conditions
- Visualising molecular behaviour

Exam practice resources

Exam-style, multi-step questions with optional interactive hints and feedback throughout.

Skills and competency training

Questions and worked examples with interactive hints and feedback.

- Understanding chemical tests and the appropriate choice of equipment
- Mathematics within chemistry covering errors, accuracy, precision and significant figures
- Balancing equations and calculating quantities, concentrations, reaction rates and equilibrium constants

Videos

Short video clips showing the latest equipment being used and providing a step-by-step breakdown of each technique with brief notes.

Tests

Self-test questions to reinforce and consolidate learning for each technique, competency and experiment. Automatic provision of feedback, review and print options.

Safety

Interactive images of apparatus with safety and good laboratory practice emphasised.

Experiments

Interactive images for each experiment broken down with information on background and context, health and safety, experimental procedure and observation opportunities.

Reference resources:

- **Equipment glossary** - Descriptions of commonly used equipment
- **Reagent glossary** - Descriptions of reagents commonly used at this level
- **Health and Safety** - General rules for laboratory safety
- **Periodic table**
- **Scientific calculator**



A great reference for practicals



100s of engaging interactions



Formulae and calculations

“An excellent package that affords a very visual way of training people which builds an understanding of how a technique works and what needs to be done to get good results.”

Principal Scientist, GlaxoSmithKline

Content

Fourteen self-contained modules covering all of the main lab techniques commonly used at this level. Each module contains a mix of simulations, videos, safety resources and multiple choice tests.

Preparation and purification	Quantitative analysis
Reflux	Titration
Recrystallisation	Titration curves
Filtration	Collection of a gas
Distillation	Enthalpy change of combustion
Solvent extraction	Enthalpy change in solution
Melting point	Colorimetry
Thin layer chromatography	Electrochemical cells

Sixteen additional modules consider core laboratory competencies covering basic skills, lab calculations, and chemical tests. Each module contains structured questions with hints and feedback and multiple choice tests.

Tests and Observations	Basic skills
Tests for inorganic compounds	Weights and measures
Tests for organic compounds	Preparing solutions
Transition metal compounds	Heating

Lab calculations	Instrumental techniques
Stoichiometry and yield	Mass spectrometry
Quantities and concentration	IR spectroscopy
Errors and significant figures	NMR spectroscopy
Reaction rates	GC analysis
Equilibrium constants	HPLC analysis

Twenty widely performed experiments covering preparative, qualitative and quantitative practicals.

Oxidation of alcohols	Enthalpy of hydration (Hess's Law)
Enthalpy change of neutralisation	Multi-stage synthesis – aspirin
Enthalpy change of combustion	Preparation of an ester
Preparation of an alkene	Hydrolysis of an ester
Preparation of an organic acid	Nitration of an aromatic
Preparation of a halogenoalkane	Preparation of chrome alum
Acid / base titration	Iron (II) / permanganate titration
RMM of a volatile liquid	Reaction of iodine and propanone
Iodine / thiosulfate titration	Iodine clock
Identification of an unknown	Investigating reaction equilibria



Get in touch

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System Requirements

Hosting Content: Foundation Chemistry LabSkills
Dynamic Lab Manual runs on any web server or VLE.

Viewing Content: Flash Player 9.0.00 or later
(<http://www.adobe.com/go/getflash>) and one of
the following browsers:

Windows: Internet Explorer 6 and later, Firefox 1.x
and later, Safari 3 and later, Google Chrome,
Opera 9.5 and later

Macintosh: Firefox 1.x and later, Safari 3 and later

Linux: Firefox 1.x and later

Visit our website at **www.labskills.co.uk**



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