Experiment | Explore | Engage

A Level Chemistry LabSkills

School Network Edition

“A fantastic educational resource”
The Royal Society of Chemistry

“A groundbreaking computer program”
The Times Educational Supplement

Transform your chemistry class with innovative, curriculum-focused e-learning activities that are popular, dynamic and easy to use.

Created by
Learning Science

Our Partners
BRISTOL ChemLabS
University of BRISTOL
CHeMnēT
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 classroom and individual study that are interactive, enjoyable and highly effective.

Key Points

• Focuses on A level, International Baccalaureate, Advanced Highers and similar Post 16 chemistry courses.

• Runs on any school network, Virtual Learning Environment (VLE) or Management Learning System (MLS). Supports unlimited users. Teachers can track student progress.

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

• Saves time on lesson planning and resource preparation. It contains a large number of student activities and whiteboard resources which are challenging and fun.

• Can be used from school or home. Students can practise in a safe environment and develop skills by exploring simulations, answering questions and correcting mistakes.

• Works equally well for whole class, group or independent study and is ideal for coursework, homework, revision and exam practice.

LabSkills software is the latest innovation in science technology for schools 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.
Schools using LabSkills

LabSkills has been developed for the full range of abilities present in a typical Post-16 chemistry course and is used by hundreds of schools including:

State Schools

Independent Schools
Cheltenham, Eton, Gordonstoun, Marlborough, Alleyn’s, Bedales, Sherborne, Dulwich, Mill Hill

Sixth Form and Further Education (FE) Colleges
Bridgwater College, Cornwall College, New College Durham, North Devon College, Royal Forest of Dean College

International Schools
Bellerbys International College (UK), British School in the Netherlands, Stella Maris College (Malta)

Implementing LabSkills

The resource can be used in many ways in schools:

• 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 school’s learning platform.

• On the whiteboard
  A whiteboard option allows the screen size to be maximised so that interactive elements can be used for whole class reviews 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.

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.
Resources in LabSkills

LabSkills includes common techniques and experiments, best practice, safety, videos, calculations, tests, revision, exam practice 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 during instrumental analysis

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

We provide great support for our software. The licence includes free support for the first year. When you contact us you’ll get a fast response from a real person.
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.

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<th>Quantitative analysis</th>
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<td>Reflux</td>
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<td>Recrystallisation</td>
<td>Titration curves</td>
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<td>Filtration</td>
<td>Collection of a gas</td>
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<td>Distillation</td>
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<td>Solvent extraction</td>
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<td>Colorimetry</td>
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<td>Thin layer chromatography</td>
<td>Electrochemical cells</td>
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</table>

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.

<table>
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<tr>
<th>Tests and Observations</th>
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<td>Weights and measures</td>
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<td>Tests for organic compounds</td>
<td>Preparing solutions</td>
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<table>
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<th>Lab calculations</th>
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<td>Quantities and concentration</td>
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<td>Errors and significant figures</td>
<td>NMR spectroscopy</td>
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<td>Reaction rates</td>
<td>GC analysis</td>
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<td>Equilibrium constants</td>
<td>HPLC analysis</td>
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</table>

Twenty widely performed experiments covering preparative, qualitative and quantitative practicals common to most exam boards. (These support teachers’ own practical scripts.)

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

Hosting Content: A Level 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

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