NEW GCSE Sciences
Third Edition
New and updated editions for the (9–1) specifications

All Student Books have been approved by AQA apart from the Foundation: Combined Science Trilogy and Entry Level Certificate Student Book, which has been entered into the AQA approval process.
These latest editions of AQA GCSE Sciences have been tailored for the new AQA GCSE (9–1) specifications. They support your students with the new content and increased maths requirements, as well as the new required practicals. All Student Books have been approved by AQA apart from the Foundation: Combined Science Trilogy and Entry Level Certificate Student Book, which has been entered into the AQA approval process.

- **Matched to the new specifications**
  These latest editions have been tailored specifically for the GCSE (9–1) specifications. Student Books are available to cover the separate Biology, Chemistry, and Physics specifications, Combined Science: Trilogy, Combined Science: Synergy, and Entry Level Certificate.

- **Preparing for the new practicals**
  Development of practical skills is embedded throughout the Student Books, with specific exam-style practice questions. Practical resources on Kerboodle cover the new required practicals plus more.

- **Plenty of practice questions**
  Multiple-choice, maths, practical, and synoptic practice questions are included throughout.

- **AQA GCSE Sciences (9–1) Kerboodle**
  Unrivalled digital support including assessment, differentiation, maths skills resources and a bank of support for the new practical exam questions.

- **Supporting students of all abilities**
  Students of all abilities are supported through the new, more demanding GCSE, with ramped questions for every topic in the Student Books, Foundation and Higher Workbooks, and further support and extension material on Kerboodle. Plus, our new Foundation and Entry Level Certificate Student Book has been specially written to support lower-ability students.

- **Building maths skills**
  Worked examples, interactive activities, and practice questions are incorporated throughout the Student Books and on Kerboodle to support your students with the new increased maths requirement. Kerboodle also has direct links to maths learning platform MyMaths.co.uk.

**Course Structure**

<table>
<thead>
<tr>
<th>Biology</th>
<th>Separate Sciences</th>
<th>Student Book&lt;sup&gt;+&lt;/sup&gt;</th>
<th>Teacher Handbook</th>
<th>Revision Guide</th>
<th>Workbook</th>
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<tbody>
<tr>
<td></td>
<td>Biology for Combined Science: Trilogy</td>
<td>978 019 835034 4</td>
<td>978 019 835095 1</td>
<td>978 019 835090 4</td>
<td>978 019 842083 1</td>
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<td>Physics for Combined Science: Trilogy</td>
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<td>978 019 835041 8</td>
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<td>978 019 835046 6</td>
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<td>Physics</td>
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<td>978 019 835069 9</td>
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<td>Combined Science: Synergy</td>
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<td></td>
<td>Foundation Combined Science Trilogy and Entry Certificate</td>
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www.oxfordsecondary.co.uk/aqagcsescience
AQA GCSE Sciences (9–1) provides a five-year progress tracking and assessment solution developed by Dr Andrew Chandler-Grevatt, building on the assessment principles behind Oxford's Key Stage 3 course, Activate. However, the five-year assessment framework is based on the Programme of Study and the new (9–1) grades for Key Stage 4, so it can also be used to dovetail any Key Stage 3 course you're currently using. It also builds on the assessment framework used in new AQA Activate for KS3, tailored for the AQA KS3 Science syllabus. AQA Activate for KS3 is also approved by AQA.

**Five-year assessment model**

<table>
<thead>
<tr>
<th>Key stage 3</th>
<th>Band</th>
<th>Know</th>
<th>Apply</th>
<th>Extend</th>
</tr>
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<tbody>
<tr>
<td>Grade</td>
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<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Demand</td>
<td></td>
<td>Low</td>
<td>Standard</td>
<td>High</td>
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</tbody>
</table>

**Outcomes inform all learning activities**

All learning outcomes are differentiated and linked to lesson activities and questions to help track progress throughout the course.

**Assessment for Learning with our Checkpoint system**

The Checkpoint assessment system assesses students at the end of every chapter, helping to ensure that all students achieve their full potential. Follow-up lessons are provided, with support and extension tasks designed to allow everyone to perform at their best. Use the Checkpoint system for GCSE or right through from Year 7 to Year 11 to ensure all your students make progress and are ready for the challenges of GCSE assessment.
**Section openers highlight key progression areas from KS3 to GCSE**

**2 Chemical reactions and energy changes**

**Introduction**

Chemical reactions are key to all life on Earth. They are the processes that enable living organisms to grow, reproduce, and maintain their internal chemistry. For example, when you eat food, the molecules in your digestive system break down the food into smaller molecules that your cells can use for energy. This process is known as digestion, and it involves chemical reactions.

Chemical reactions can be divided into two main types: exothermic and endothermic. Exothermic reactions release energy, while endothermic reactions absorb energy. These reactions occur at the molecular level, where atoms and molecules interact to form new substances. For example, when you burn a piece of wood, you are causing a chemical reaction that releases energy in the form of heat and light.

**Progression areas**

All Student Books have been approved by AQA apart from the Foundation: Combined Science Trilogy and Entry Level Certificate Student Book, which has been entered into the AQA approval process.
Teacher Handbooks

The Teacher Handbooks provide a page-by-page match to the Student Books, with support for your teaching including lesson plans, differentiation suggestions, and assessment guidance. Use the Teacher Handbooks alongside the Student Books for Biology, Chemistry, Physics, Combined Science: Trilogy, and Combined Science: Synergy.

Revision Guides

The Revision Guides will help students revise key concepts, and provide plenty of differentiated practice questions and support. Use the Revision Guides alongside the Student Books for Biology, Chemistry, Physics, and Combined Science: Trilogy.

Workbooks

The Workbooks are the perfect companion for the series and support your Higher and Foundation students on their journey from KS3 to success in the new AQA GCSE. Use the Workbooks alongside the Student Books for Biology, Chemistry, Physics, and Combined Science: Trilogy.
The online learning, resources and assessment package

AQA GCSE Sciences 9–1 Kerboodle provides excellent digital support for the new AQA GCSE Science (9–1) specifications, with a bank of resources, activities and a complete online assessment package.

Building practical skills

- Student method sheets guide students through each practical step-by-step
- All required practicals are supported by three differentiated worksheets to cater for students of all levels
- Teacher and technician notes provide detailed guidance and example data for each practical

Maths and literacy skills support

- Maths skills interactives include step-by-step worked solutions and practice questions with feedback, as well as exclusive links to resources on MyMaths.co.uk
- Maths calculation worksheets provide worked solutions and ramped practice questions
- Student literacy sheets support and build literacy skills

To request a free in-school Kerboodle demo, contact your local Educational Consultant using www.oxfordsecondary.co.uk/repfinder.

Support and extension

- Extension worksheets stretch higher-ability students and increase depth of knowledge
- Practical activities are fully differentiated, with separate resources for students working at different grades
- Go Further worksheets for higher-ability students bridge the gap between GCSE and A Level
- Webquest research tasks encourage independent learning and study
- Includes access to digital editions of the Student Books
- Checkpoint quizzes with differentiated follow-up activities track students' progress and provide formative feedback

Engage your students

- Interactive activities can be used as starters or plenaries
- Resources are built into each lesson presentation, including practical activity sheets, interactive activities, and progress quizzes
- Each lesson is accompanied by teacher notes to support your lesson delivery
- Ready-to-play lesson presentations are provided for whiteboard use, to help you run creative and effective lessons
- Animations clearly linked to learning objectives help consolidate learning
About the authors

**Chemistry**

**Lawrie Ryan (Series Editor)**
Lawrie Ryan is an experienced author and science educator, having worked for over 20 years in schools as Head of Science, L.A adviser, and inspector. He has written and edited a number of best-selling courses and titles including *Chemistry for You*, *AQA GCSE Science*, *Spotlight Science*, and *Advanced Chemistry for You*, as well as many electronic resources.

**Biology**

**Ann Fullick**
Ann Fullick was a biology teacher and Head of Science for many years. She is a successful published author of more than 90 titles, including many UK A Level and GCSE biology textbooks, as well as a producer of online resources and apps. She also has examining experience, has been closely involved in UK curriculum development, and is a Fellow of the Royal Society of Biology.

**Physics**

**Jim Breithaupt**
Jim Breithaupt has extensive experience of teaching physics in schools and colleges, and was the Physics author for the previous editions of Nelson Thornes’s popular *AQA GCSE Science* series. He has also written a number of highly regarded A Level textbooks including *AQA Physics A* and *Understanding Physics for A Level*.

**Dr Andrew Chandler-Grevatt (Assessment Consultant)**
Dr Andrew Chandler-Grevatt has a PhD in school assessment, and a real passion for science teaching and learning. Having worked as a science teacher for 10 years, of which five were spent as an AST, Andy has a real understanding of the pressures and joys of teaching in the classroom.

Alongside his national and international research in school assessment, Andy is a teaching fellow on the PGCE course at the University of Sussex, and is a successful published assessment author. He is the Assessment Editor for *Activate* and *AQA Activate*, and Assessment Consultant for *AQA GCSE Sciences Third Edition* and *OCR Gateway GCSE Science*. Find out more about Andy’s five-year assessment model at [www.oxfordsecondary.co.uk/aqagcsescience](http://www.oxfordsecondary.co.uk/aqagcsescience)