science 2005

Includes new software from Cambridge-Hitachi
Successfully publishing for schools and colleges for 130 years

As the printing and publishing house of the University of Cambridge we are dedicated to raising standards in education and are a charitable, not-for-profit organisation.

Content
that is curriculum led but teacher focused

Ideas
that inspire and provide enjoyment for all

Quality
that can withstand the rigours of classroom life

Design
that is eye-catching, clear and accessible

www.cambridge.org/education
As members of the Educational Publishers Council we work to ensure that schools and colleges have access to the learning resources they need for the effective implementation of the government’s education policies.

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Spectrum

Supporting the Science Strategy and Framework for key stage 3

Spectrum is a science course for key stage 3 designed to meet the needs of both teachers and pupils, and is matched to the QCA Scheme of Work.

‘This extensively resourced scheme is very, very good …’

Physics Education

‘... covers all of KS3 with panache ... The material is imaginative and makes good use of technology.’

Times Educational Supplement

‘The central team behind the development of the Spectrum scheme has thought through its task and produced a very useful resource.’

Education in Chemistry

‘Best textbook we’ve ever had!’

Head of Science, Lings School, Northampton

Clear differentiation throughout

Differentiated questions are embedded in the Class Book to consolidate the understanding of key concepts. Colour coding and icons are used to identify different levels of difficulty. The Teacher File includes worksheets at three levels – support, main and extension – for use in class, for homework and for practicals.

Comprehensive and flexible resources

Class Books are available in two formats, allowing you to teach by year group or as separate sciences (see page 6 for Spectrum separate sciences). The accompanying teacher material is comprehensive, with a two-page introduction to each topic, plus a range of differentiated worksheets and other materials. Other resources include Technician Notes, TestMaker Assessment CD–ROMs and new CD-ROMs to help with Reviewing and Checking Progress.

Scientific Enquiry integrated throughout

Unit 9M Scientific Investigations has been split across the three years as advised by the Framework, and integrated into each pupil book. The teacher resources include worksheets for practicals allowing you to conduct experiments, focus on a specific investigation skill, or conduct a complete investigation using a combination of skills. Teacher-led demonstration practicals are also included. Additional support is provided by the Technician Notes and by planning documents available on the course website.

Promotes thinking skills in line with QCA recommendations

The questions and activities are designed to develop thinking skills, challenging pupils to think about why or how things happen, to apply the knowledge they have acquired and to conduct their own research.

Wide range of free planning documents

A large number of planning documents is available free on the course website, www.cambridge.org/spectrum. These provide strategies for creating starters and plenaries, support for investigations, mapping grids and much more.
Class Books

The Class Books for Spectrum are engaging and modern, and are intended to appeal directly to pupils.

- The Class Books introduce the key ideas and concepts that pupils need at key stage 3 in a modern, fun and clear way.
- The language level takes into account literacy levels from key stage 2, and has been carefully monitored to be accessible to a range of pupils.
- Core content from the QCA Scheme of Work is covered, with Unit 9M Scientific Investigations split across the three years as advised by the Framework.
- Each Unit starts with an introductory page, providing a link to the relevant QCA Unit and a list of key words, and ends with a Unit Summary.
- Questions are included throughout each Unit to check understanding and to build thinking skills.
- Additional questions, practical activities, discussions, starters and homework needed to build on this core content are contained in the teacher's material.
Support Materials

**Teacher File**

The Teacher File is a central resource for *Spectrum*, available both as a ringbinder and in adaptable form on CD. It covers the QCA Scheme of Work in detail, with each Unit broken down into several Topics. Every Topic comprises:

- three sets of Learning Outcomes, suited to different pupils' abilities: main, support and extension;
- a Resources Map, outlining what is available in the Teacher File and Class Book to achieve the Learning Outcomes;
- extensive Guidance Notes on each activity, with additional ideas for class discussion, group work, homework, integrating ICT and tips on troubleshooting; and
- a set of activities for the three different ability levels suitable for use in class, as practicals or for homework.

The file also contains answers to the Class Book questions and a collection of activities based on the Unit Summaries.

**NEW EDITION**

**Teacher File and ResourceMaker CD-ROM**

The Teacher File and ResourceMaker CD-ROMs for *Spectrum* provide the full content of the Teacher File in both pdf and adaptable formats.

- Easy installation to help you start using the materials quickly.
- Produce your own copy of the Teacher File from the pdf document supplied for reference or photocopying.
- Clear navigation helps you choose the pages you want to edit, with a keyword search facility for word, page title or artwork.
- Editing software in ResourceMaker allows you to adapt the materials, and print and save your documents and worksheets.
- An artwork library includes a large number of colour artworks from the Class Book, allowing you to compile worksheets using the vast bank of illustrations available.

**Technician Notes**

- The Technician Notes pack has been written by an experienced technician, tailoring it to technicians' needs.
- It lists the equipment, chemicals and specimens that might be needed for the activities referred to in *Spectrum*, along with recipes, safety pointers and other practical tips.
- The introduction provides further advice and information on safety issues and the role of a technician. It also reinforces the need to carry out risk assessments specific to your individual situation.
**TestMaker Assessment CD-ROMs**

- Each year of *Spectrum* has its own TestMaker disc, which contains question banks, allowing you to build tests and analyse the results.
- TestMaker is designed to enable you to find out prior knowledge and misconceptions before teaching, check progress as you go, develop the thinking skills of your more able pupils and bring everything together in a final practice run for SATs.
- Choose from our range of differentiated multiple choice and SATs-style questions to construct tests to suit your students.
- TestMaker includes a built-in analysis tool so you can process the results of these or any other multiple choice tests, whether they are done on-line or on paper.
- TestMaker enables you to quickly find gaps in your pupils’ knowledge, find out how individual pupils are progressing and even compare different classes.

### Minimum system requirements

**PC**
- Pentium II processor, 266 MHz
- Microsoft Windows® 98/ME/NT/2000/XP
- 64MB of RAM
- Internet Explorer 5.5 or above

**Apple Mac**
- G3 processor, 266 MHz
- System OS 8.6 or above
- 64MB of RAM
- Internet Explorer 5.1 or above

### TestMaker Assessment CD-ROMs

<table>
<thead>
<tr>
<th>Year</th>
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<tbody>
<tr>
<td>Year 7</td>
<td>0 521 75013 X</td>
<td>TestMaker CD-ROM</td>
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<td>Year 8</td>
<td>0 521 75353 8</td>
<td>TestMaker CD-ROM</td>
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<tr>
<td>Year 7</td>
<td>TestMaker CD-ROM</td>
<td>£85.50 + VAT</td>
</tr>
<tr>
<td>Year 8</td>
<td>TestMaker CD-ROM</td>
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</tr>
<tr>
<td>Year 9</td>
<td>TestMaker CD-ROM</td>
<td>£85.50 + VAT</td>
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</table>

Visit the Spectrum website for more information on the published resources, including a tour of the Y7 Class Book. A wide range of free downloads is available, including:

- strategies for creating starters and plenaries,
- support for investigations,
- technical support,
- flash cards,
- key ideas cards,
- mapping grids for the five key ideas, numeracy, literacy and more.
Spectrum Separate Science

Support for the Science Strategy and Framework through separate science teaching

The popular Spectrum materials have been repackaged into separate resources for biology, chemistry and physics, allowing you to teach separate sciences at key stage 3 and still follow the QCA Scheme of Work.

- Offers you flexibility in delivering science at key stage 3
  The new format is ideal for separate science teaching at key stage 3, but also gives you the reassurance of complete curriculum coverage with the inclusion of recommendations from the key stage 3 strategy and framework. The books provide excellent preparation for pupils going on to study separate sciences for GCSE.

- Clear differentiation and development of thinking skills
  The materials are clearly differentiated, with colour coding and icons to identify different levels of ability for the questions and activities in both the Class Book and Teacher File. The activities are designed to show progression in the development of thinking skills, challenging pupils to first think about how or why things happen, then apply the knowledge they have acquired, and finally to undertake their own research.

- Covers the requirement of Common Entrance Examination at 13+
  Spectrum Separate Science provides full coverage of the science required for Common Entrance Examinations. The extension worksheets, combined with questions designed to develop higher thinking skills, will stretch even the most able students, enabling them to reach level 7 and beyond by age 14.

- Comprehensive teacher support on CD-ROM
  The Teacher Files for Spectrum have also been reorganised to support the new separate science format, and are available in non-editable pdf format on disc for you to produce your own print-quality copy.

Minimum system requirements
- Pentium II processor, 266 MHz
- Microsoft Windows® 98/ME/NT/2000/XP
- 64MB of RAM
- Acrobat Reader 5.0 or above

Titles available

<table>
<thead>
<tr>
<th>Subject</th>
<th>Class Book ISBN</th>
<th>Teacher File ISBN</th>
<th>Price</th>
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<tr>
<td>Biology</td>
<td>0 521 54921 3</td>
<td>0 521 54924 8</td>
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<tr>
<td>Chemistry</td>
<td>0 521 54922 1</td>
<td>0 521 54925 6</td>
<td>£9.50</td>
</tr>
<tr>
<td>Physics</td>
<td>0 521 54923 X</td>
<td>0 521 54926 4</td>
<td>£9.50</td>
</tr>
</tbody>
</table>

* Available on firm order only.
Core Science

A flexible and accessible science course for key stage 3

Core Science is an accessible course for key stage 3 science, suitable for a wide range of ability. It comprises pupil books and accompanying photocopiable supplementary material, plus a separate workbook.

Accessible materials

The carefully-controlled language level and extensive use of illustrations makes these resources accessible to most pupils. Each double-page spread provides a balance of illustrations, text and questions to support the introduction of new concepts. The text is broken up into easily digested sections that introduce only one or two new ideas at a time.

Cost-effective two-book format

Core Science is available as two pupil books to cover the whole of key stage 3. Core Science 1: Key Concepts, for use in years 7 and 8, provides full coverage of all the key science concepts required for key stage 3. Core Science 2: Consolidation revisits and extends coverage of the key concepts in year 9 in preparation for SATs. It is clearly differentiated for lower and higher tier pupils, and includes extension material that will enable pupils to reach level 7 in key stage 3 SATs.

Separate Science format also available

Core Science is also available to support separate science teaching at key stage 3, with the material reorganised into separate books for biology, chemistry and physics. The resources provide full coverage of key stage 3, with topics arranged thematically for ease of use. The science required for the Common Entrance Examination at 13+ is also included, and the books are ideal for pupils going on to study separate sciences in key stage 4.

Additional Homework Book

Core Science Homework provides concise summaries of all the main scientific ideas required at key stage 3, along with questions and activities to test pupils’ understanding. It is an ideal homework and revision resource and can be used alongside the Core Science materials or with any other key stage 3 resource. The language, layout and artwork have been carefully prepared to be accessible to all pupils.

Auxiliary Pack

An Auxiliary Pack is available for users of Core Science. It is up-to-date, matches curriculum changes and shows how Core Science can be used with the QCA Scheme of Work.
Titles available

<table>
<thead>
<tr>
<th>Titles available</th>
<th>CD-ROM</th>
<th>Price</th>
</tr>
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<tr>
<td>Reviewing and Checking Progress</td>
<td>Year 7</td>
<td>1 84565 018 2</td>
</tr>
<tr>
<td></td>
<td>Year 8</td>
<td>1 84565 019 0</td>
</tr>
<tr>
<td></td>
<td>Year 9</td>
<td>1 84565 020 4</td>
</tr>
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</table>

Prices are for Single User plus Site Licence. For Network Licence, please see order form.

Minimum system requirements

**PC**
- Pentium II processor, 266 MHz
- Microsoft Windows® 98/ME/NT/2000/XP
- 64MB of RAM
- 16 bit high colour

**Apple Mac**
- G3 processor, 266 MHz
- System OS X or above
- 64MB of RAM
- Thousands of colours

‘A range of revision and assessment tasks are offered, including drag-and-drop sentence completion activities, the option to construct mind maps of key ideas, and animated presentations.’

ICT for Education

**NEW**

Reviewing and Checking Progress CD-ROMs

**Helping you with formative assessment**

A set of CD-ROMs containing activities specially designed to review elements of the QCA Scheme of Work and check pupil progress.

- **Assessing progress without testing**
  Reviewing and Checking Progress CD-ROMs will help you to assess your pupils’ progress during key stage 3 without formal testing. It uses a range of innovative electronic activities based on suggestions from the QCA Scheme of Work to ensure full coverage of the curriculum.

- **Flexible for use with individuals or groups**
  The activities are suitable for whole-class or group teaching using a whiteboard or data projector. They can also be used on individual computers, allowing pupils to work through the material at their own pace for consolidation and revision, or to catch up with work they may have missed in class.

- **Incorporates a varied range of activities**
  The CD-ROMs include a wide range of simulations and animated activities to involve and motivate pupils. Pupil answers can be printed out and compared to exemplars in the teacher notes for guidance on performance and for use as revision notes.

- **Free teacher support**
  A set of free teacher notes to accompany Reviewing and Checking Progress is available from the Spectrum website. It provides guidance on interpreting pupil performance and relating it to their overall progress. Model answers, to help with assessing progress, and blank answer sheets, allowing you to set the activities as paper-based tasks, are also available.

www.cambridge-hitachi.com/reviewingandchecking

Visit the Reviewing and Checking Progress website to try a fully functioning demo. Users can also access the FREE teacher notes, model answers and blank answer sheets.
Navigation is straightforward – topics match the units of the QCA scheme of work, with activities suitable for the Checking Progress or Reviewing Work elements.

A key feature is the statement map builder. You can complete statement maps for key ideas and key words, or make your own using the tools available.

As pupils work through the activities they compile a record that can be printed off and used for revision or to assess progress. Where help is used during the activities, this is noted on the printed record sheet.

**NEW**

Authors

Sam Holyman
Kevin Frobisher

**Scientific Enquiry CD-ROMs**

Integrates scientific enquiry skills into science teaching

*Scientific Enquiry* is a set of three fully networkable CD-ROMs for key stage 3, covering the scientific enquiry objectives set out the Science Framework. There is one CD per year, each containing twelve topics comprising activities designed for use within the units of the QCA Scheme of Work. By breaking down the teaching of scientific enquiry skills into topics matched to the QCA units, the CDs provide you with a way to teach scientific enquiry as small chunks within your normal teaching, as suggested by the Science Strategy. All activities can be saved, and there is a print option providing pupil record sheets to help with assessing progress.

- Integrates scientific enquiry skills into teaching in line with the Framework objectives and QCA Scheme of Work guidance.
- Helps with transition of skills learning from key stage 2 to key stage 3.
- Allows you to record and build on pupil progress with scientific enquiry skills.

**Authors**

Sam Holyman
Kevin Frobisher

**Titles available**

<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Code</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>7</td>
<td>Scientific Enquiry</td>
<td>84565 100 6</td>
<td>£150.00 + VAT</td>
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Prices are for Single User plus Site Licence. For Network Licence, please see order form.

For year 8 and 9 ordering information, please call Education Marketing on 01223 325013 or visit our website, www.cambridge-hitachi.com

Available from mid 2005
NEW

Reactive Science

 Giving you the power to react to your students’ needs

*Reactive Science* is a new one-book resource for double-award GCSE science that is ideal for use with AQA or OCR specifications.

- **Reactive Science is cost-effective**
  With just one textbook covering both years of GCSE, *Reactive Science* helps you to respond to funding concerns and properly resource your science teaching on a limited budget.

- **Full coverage of foundation and higher tier**
  Material for higher tier students is clearly differentiated and placed alongside the relevant foundation tier material. This allows continuity of coverage and helps you to manage the demands of mixed-ability teaching.

- **Clear opportunities for progression**
  *Reactive Science* is structured to provide clear progression through topics, allowing you to develop ideas and concepts in response to your students’ needs. Knowledge required from key stage 3 is summarised where appropriate; new ideas are explained clearly, with concepts getting progressively more difficult; and higher tier material provides opportunities for extension.

- **Affordable electronic resources help you to add value to your teaching**
  Excite and instruct your students at the same time with the range of easy-to-use electronic products available for *Reactive Science* that help you to maximise your department’s eLC allocation. The *Interactive Glossary and Statement Maps CD-ROM* provides clear definitions of key words, and helps you to build statement maps to review and consolidate. The *Activities CD-ROM* supports key areas of the book. A *Data Handling CD-ROM* contains additional material to help you teach data handling skills.
Each section of the class book is broken down into a number of topics, each of which covers several key concepts or ideas.

Artwork, diagrams and photographs are used to support the explanation of concepts.

A carefully-controlled language level is used throughout.

Class Book

- The Reactive Science Class Book includes material for biology, chemistry and physics. Each subject is colour coded and broken down into a number of sections for ease of use. These sections are further broken down into topics, comprising several key concepts or ideas.
- The number of pages devoted to each topic varies according to the complexity of the concepts covered. Coverage is not restricted to double-page spreads.
- Concepts are presented in small, easily digested chunks to aid student comprehension, with a section of text accompanied by questions.
- There are questions to check facts students have just learnt and questions requiring students to apply their knowledge.
- There is progression in topic coverage. Summaries introduce ideas from key stage 3 or earlier studies, followed by coverage of concepts that gets progressively more difficult, and concluding with extension material for higher tier students.
- Free matching grids for the AQA and OCR double-award specifications are available on the Reactive Science website: www.cambridge.org/reactivescience
Interactive Glossary and Statement Maps CD-ROM

The Reactive Science Interactive Glossary and Statement Maps CD-ROM is ideal for introducing ideas and reviewing work. It sits alongside the Class Book to provide the essential course materials for Reactive Science.

- Provides clear definitions of key words with animations and illustrations to help you introduce new concepts.
- Flexible for use on an interactive whiteboard, with a data projector, or on individual computers.
- The statement map builder is a powerful tool for reinforcing and reviewing key ideas.

To use the glossary, just enter key words into the search box, or select from the list displayed. A definition will then be displayed with supporting illustration if available. An icon indicates where an animation has been included to support the definition. Where relevant, there are also links to related definitions.

To build a statement map, select a concept from the topics available, or make your own by typing into the textbox and clicking on the ‘Create’ button. You can then link the boxes, add relevant artwork, edit the layout and change the style of the boxes. A save/load/print feature allows you to save and access earlier work, and print maps for reference. There is also a ‘quiz me’ feature to test understanding of concepts in the preselected list.

Minimum system requirements

- PC with Pentium/Celeron processor, 500 MHz
- 128MB of RAM
- Microsoft Windows® 98/ME/2000/Professional/XP
- Screen with 16-bit colour display, 800 x 600 resolution
- Internet Explorer 5.5 or above
- Flash Player 6 or above (6.5 recommended)
Data Handling CD-ROM

The Reactive Science Data Handling CD-ROM has been produced to sit alongside the other Reactive Science components, but it is equally relevant and useful when used with any other GCSE resources. The CD-ROM is divided into three areas: Obtaining data, Using graphs to interpret data, and Charts and diagrams. Each area comprises a number of tutorials containing explanations of concepts accompanied by related questions and activities.

- Navigation options provide two routes to access the material available, by tutorial or by activity.
- Provides an excellent introduction and reinforcement to this important area of the specification.
- Particularly appropriate for AQA – written by a former Chief Examiner.
- Covers all of the skills required by GCSE science students.
- Flexible for use on an interactive whiteboard, with a data projector, or on individual computers.

Activities CD-ROM

The Reactive Science Activities CD-ROM can be used alongside the Class Book to support the teaching of key concepts, or to provide enrichment when used with other materials.

- Provides activities to support key topics from the Class Book and is flexible for use on an interactive whiteboard, with a data projector, or on individual computers.
- Also includes multi-choice and end-of-unit tests.

Visit the Reactive Science website for more information about the course components, to view sample material, for cross-matching grids and to try out demos of the CD-ROMs.

www.cambridge.org/reactivescience
Science Foundations

Appropriate for both Foundation and Higher tiers

The popular Science Foundations materials have been updated for the revised GCSEs. They retain the accessible approach of the first edition with content closely matched to the AQA modular and coordinated specifications for single and double award science.

- Comprehensive coverage of single and double award
  Science Foundations includes all of the material required for the single and double award science specifications from AQA, and will also be appropriate for use with other specifications. Guidance on content required by single award students is provided in the Supplementary Materials, available on CD-ROM.

- Full coverage of Foundation and Higher tiers
  All of the material required by Foundation students has been incorporated, and is presented in an accessible style. The books also provide full coverage of the additional material required by Higher-tier candidates, allowing you to use the same accessible resources for mixed-ability groups.

- Clear progression through topics
  Sections are structured to become progressively more difficult. They start with consolidation material, which is followed by work to develop students’ understanding of concepts. Material is clearly differentiated, and sections required only by Higher-tier candidates are clearly marked.

- Key stage 3 revision material
  The revised National Curriculum does not assess key stage 3 science material at key stage 4. However, there will be some topics that need to be revisited by students as they work through their GCSE studies. This edition of Science Foundations introduces these revision topics via clearly identified ‘Ideas you need from key stage 3’ spreads.

- Science Foundations Plus for triple award science
  All the additional material students need to move from double-award science to full separate science GCSEs is provided in three supplementary textbooks, one each for biology, chemistry and physics. The content and structure closely match the AQA modular specification, although they can be used with other awarding bodies.
Summary passages at the end of spreads reinforce key ideas

Clear diagrams help explain concepts

New concepts introduced clearly

Each spread is broken down into small, manageable sections

Key words are highlighted in bold

Supplementary Materials

- The Supplementary Materials are available on CD-ROM in both pdf and adaptable formats to support each student textbook.
- This format provides extra flexibility for teachers, and includes modifiable worksheets, guidance on syllabus requirements, end-of-module tests and answers.
- Also includes extra material to focus on Scientific Enquiry and ICT.

See page 16
For Science Foundations Presents ..., a new range of visual presentations of key concepts on CD-ROM.

See page 13
For Reactive Science Data Handling and Activities CD-ROMs – these materials can also be used with Science Foundations, and their interactivity provides additional flexibility.

www.cambridge.org/sciencefoundations
For more information on Science Foundations, including interactive exercises and downloads, see the dedicated website.
Science Foundations Presents … CD-ROMs

A new approach to difficult concepts at GCSE

*Science Foundations Presents …* provides animated demonstrations of key science topics that students frequently have difficulty with at key stage 4.

**Support for the teaching of key concepts**

*Science Foundations Presents …* contains animated presentations of science concepts and interactive activities. Coverage focuses on concepts that are difficult to present or that students have particular difficulty understanding at key stage 4, giving you an alternative resource to support your science teaching.

**Linked to Science Foundations and the AQA specifications**

Topic coverage is linked to the *Science Foundations* textbooks and fully covers the AQA GCSE specifications. This material will add a new dimension to the teaching of key concepts in any GCSE science course.

**Suitable for whole-class teaching or individual use**

*Science Foundations Presents …* will be ideal for whole-class teaching using a whiteboard or data projector, to introduce new concepts or for reinforcement. The material can also be used on individual computers as a revision or reference tool.

**Minimum system requirements**

**PC**
- Pentium processor, 166 MHz
- Microsoft Windows® 9x/NT/2000/ME/XP

**Apple Mac**
- Power G4 processor
- Mac OS 9.2, OS X

**Plus**
- 32MB of RAM
- 25MB of free hard disc space
- Super VGA monitor with 16-bit colour display, 800 x 600 resolution
- Internet Explorer 5.5, Netscape 7 and above
- Flash Player 6 or above

For full contents plus an interactive demo, visit the Science Foundations website.
Science Support

Flexible worksheets for use with less able pupils

*Science Support* comprises a series of photocopiable resource sheets designed for use with less able pupils at key stage 4. It is particularly appropriate for students working towards the Entry Level Certificate.

- **Flexible photocopiable resource**
  This practical resource has been carefully designed to be flexible and cost-effective. The photocopiable sheets allow teachers a range of options in how to use them, and a large proportion of the sheets can be re-used, keeping costs down.

- **Highly accessible**
  To ensure the materials are accessible to even the lowest attainers, the layout and language levels have been carefully controlled. The key ideas in science are presented and reinforced using a variety of different approaches. The materials also provide opportunities for students to further develop their literacy skills within the context of the science lesson.

- **Fully trialled**
  The *Science Support* series has been extensively trialled and tested in both mainstream and special schools.

Titles available

- **Biology**
  - 0 521 57915 5
  - 124 pp.
  - Spiral bound
  - £50.75

- **Chemistry**
  - 0 521 57914 7
  - 112 pp.
  - Spiral bound
  - £50.75

- **Physics**
  - 0 521 57913 9
  - 112 pp.
  - Spiral bound
  - £50.75

Available on firm order only

‘The key ideas of physics are presented and reinforced in a variety of ways covering a range of abilities.’

*School Science Review*

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**Teaching and Assessing Practical Skills in Science**
David Hayward

This handbook gives clear, practical and up-to-date guidance on teaching and assessing skills in science for 14–16 year-olds. It provides guidance to teachers, especially those new to the profession, on effective classroom practice, coursework setting and integrating different skill areas.

- 0 521 75359 7
  - 96 pp.
  - Paperback
  - £13.25

**Moles**
A survival guide for GCSE science
Keith Brown

Helpful mole-guides lead students through the book, helping them to understand the mole concept. This book will be invaluable for students taking GCSE double-award science or GCSE chemistry courses.

- 0 521 42409 7
  - 40 pp.
  - Paperback
  - £5.95
Biology

Biology is ideal for students taking biology as a separate science GCSE. It covers all current GCSE syllabuses, the IGCSE syllabus and Scottish Standard Grade. It will also be useful to many overseas O-level students.

- The carefully controlled language level and extensive use of high-quality colour illustrations from Geoff Jones ensure that the material is accessible to students with a range of abilities.
- Questions throughout the text help reinforce students’ understanding.
- End-of-chapter exercises aid revision.
- The text is punctuated with relevant practical work.
- Full equipment lists are supplied.

Chemistry

Richard Harwood has used his extensive teaching experience to convey knowledge of and enthusiasm for chemistry in a truly accessible manner. The content is clearly differentiated.

- Core material has been written to be accessible to students of average ability; extension sections stretch more able students.
- Summaries of core and extension material aid revision.
- A study skills section, with guidance on revision and exam questions with answers, helps prepare students for GCSEs.
- Provides comprehensive coverage of all GCSE chemistry syllabuses, IGCSE and the Cambridge ‘O’ level, Scottish Standard Grade, CCEA and WJEC.

Physics

Truly comprehensive coverage of all GCSE physics specifications in an accessible and student-friendly volume. Physics provides comprehensive topic coverage with worked examples, questions and opportunities for revision.

- Includes key topic lists at the start of each chapter, key ideas summaries at the end of each chapter, self-assessment questions throughout the text and sections of longer examination-style questions.
- Makes extensive use of detailed worked examples to guide students through the concepts, particularly the mathematical ideas, helping them to fully understand all key concepts.
- Extension material for higher achievers is colour coded.
Bioscope has been developed by the University of Cambridge Local Examinations Syndicate (UCLES) and the University of Derby Centre for Interactive Assessment Development. It is a simulation of a real microscope and includes a large number of botanical and zoological microscope slides at a range of magnifications, accompanied by paper-based tasks. Biology students can use these tasks to practice their observation skills, and develop and improve their practical skills such as focusing, stage movement and measurement. The tasks also reinforce the learning of key concepts and help integrate practical work with learning.

- Contains 56 microscope slides of plant and animal specimens.
- Suitable for GCSE, IGCSE, O Level, AS and A Level.
- 56 paper-based tasks (in word and PDF format) of 20 minutes to 2 hours duration to accompany the slides.
- Ability to search for slides and tasks using key words.
- Versatile – can be used for whole class teaching via a whiteboard or data projector, or by individual students on PCs.
- Ensures all students are using the same slide.
- Includes microscope features such as a graticule and stage scale.
- For more information, please visit our Bioscope website, www.cambridge-hitachi.com

Science Artwork Library

The Cambridge Science Artwork Library is a premium collection of illustrations taken from respected series such as Spectrum and Science Foundations, published by Cambridge University Press. The library is hosted by Digitalbrain plc as part of their Digital Asset Library.

- 10,000 illustrations have been individually indexed by National Curriculum keyword.
- The library can also be searched by subject and key stage to find the perfect image.
- Individual artworks can be downloaded and used in your own worksheets or resources.

The Science Artwork Library can be accessed via the Digitalbrain Online Digital Asset Library. Please contact Digitalbrain direct to subscribe on tel: 01273 201700.
Human Body Systems CD-ROMs

Multi-media resources to support GCSE and AS/A Level biology

*Human Body Systems* is a set of three CD-ROMs providing a range of animations, illustrations, video clips and activities on a range of topics relevant to courses in biology, human biology and health sciences at both GCSE and AS/A Level.

- **Clear, high quality animations and illustrations**
  Clear animations, including powerful 3-D models and simulations, present challenging concepts in an accessible way. Video clips, photographs and diagrams also help to illustrate topics, and are supported by activities to consolidate learning.

- **Simple navigation options**
  Standard navigation is clear and easy to use, providing information on topic and media type, and showing your route through the materials. An innovative ‘Radar’ option shows how topics interrelate, allowing you to explore linked topics with ease.

- **Flexible for group or individual use**
  *Human Body Systems* can be used with a whiteboard or data projector for whole class or group teaching. It can also be used on individual computers or networked with a suite of machines for simultaneous use.

### Titles available

**Human Body Systems 1**
- 1 84565 029 8 CD-ROM
- £220.00 + VAT

**Human Body Systems 2**
- 1 84565 030 1 CD-ROM
- £220.00 + VAT

**Human Body Systems 3**
- 1 84565 031 X CD-ROM
- £220.00 + VAT

Estimated prices are for Single User plus Site Licence. For Network Licence, please see order form.

### Minimum system requirements

**PC**
- PC with Pentium III processor, 500MHz
- Microsoft Windows® 98/NT4.0/ME/2000/XP
- 128MB of RAM
- 24x speed CD-ROM drive
- Super VGA-compatible graphics card with 16.7m colours

**Apple Mac**
- G3 with 350 Mhz processor
- System OS 8.6, 9.x or OSX classic
- 64MB RAM (128MB recommended)
- 24x speed CD-ROM drive
- 16.7m colours

**www.cambridge-hitachi.com/hbs**

Visit the *Human Body Systems* website for more information, full contents and a product tour.
NEW

Human Biology for AS/A2

Full coverage of the new OCR specification for AS and A Level human biology

Two brand-new textbooks from successful authors Mary Jones and Geoff Jones, providing comprehensive syllabus coverage in a flexible way, with separate books for AS and A2.

Complete coverage of the new specification from OCR

Human Biology provides full coverage of the new specification from OCR, and has been examined by a Quality Assurance editor from the awarding body so teachers and students can be confident they have all the material they need at the appropriate level. The books have been structured to fit the order of the new specification for ease of use.

Separate textbooks for AS and A2

Coverage is provided in a flexible format, with separate textbooks for AS and A2, providing comprehensive coverage of the material required at each level. The AS book covers the two content modules Blood, Circulation and Gaseous Exchange, and Growth, Development and Disease for the first year of study. The A2 book covers Energy, Control and Reproduction, and Genetics, Homeostasis and Ageing for the second year.

From a well-known author and illustrator team

Human Biology has been written by Mary Jones who is the author of numerous textbooks for advanced biology courses. It contains high-quality illustrations from Geoff Jones to support the explanation of concepts and topics covered.

Emphasis on the application of science

The presentation of topics strikes a balance between academic theory and everyday applications. Case studies and ‘Just for interest’ sections show how scientific knowledge is applied by professionals in the workplace.

Authors

Mary Jones
Geoff Jones

Titles available

Human Biology for AS
0 521 54891 8
304 pp.
full colour
paperback
£15.95

Human Biology for A2
0 521 54892 6
304 pp.
full colour
paperback
£15.95
Available early 2005

www.cambridge.org/humanbiology
Visit the website for more information, full contents and sample chapters.

See pages 19, 20
For Bioscope and Human Body Systems – new e-Learning resources to support human biology courses.
Cambridge Advanced Sciences: Biology

Tailored to the OCR specification for biology

A range of textbooks for AS and A Level specifications in biology with new teacher support materials.

Praise for Applications of Genetics:

‘... an excellent introduction to this complex yet fascinating subject.’

Biologist

Complete coverage of the specifications

Cambridge Advanced Sciences provides flexible and comprehensive coverage of AS and A Level qualifications. All syllabus material has been included. Concepts are explained clearly and concisely, making these books ideal for students coming from a GCSE double-award science background.

Endorsed by OCR

All of these titles have been endorsed by OCR for use with their specification for biology. Teachers and students can be confident that the books cover the full specification, and are written at the appropriate level.

Single core book for AS

Biology 1 contains the material required for all three AS modules (Foundation Biology, Transport, Human Health and Disease) and has been written for AS students. Students need no other textbook for the first year of their biology course.

Core plus options for A2

Biology 2 provides full coverage of the core A2 module (Central Concepts) for the second year of study. A range of supplementary books provides coverage of all five options included in the A2 specification.

New Teacher Support Materials on CD-ROM

New support materials will be available from mid 2005 to accompany the popular student textbooks. The materials will comprise three CD-ROMs, one for AS, one for A2 core material, and a third covering the options available. The materials are available in pdf format, allowing you to produce your own print-quality copy.
Teacher Materials

A set of CD-ROMs providing:
- Checklists
- Chapter summary activities
- Teacher guidance
- Practical guidance
- Worksheets
- Answers to worksheets

Teacher Materials CD-ROMs
For further information and ordering details please call
Education Marketing on 01223 325013 or visit our website:
www.cambridge.org/casbiology
Available from mid 2005

Core titles

Biology 1
Mary Jones, Richard Fosbery, Dennis Taylor
Biology 1 covers the three core modules required for the AS qualification, Foundation, Transport and Human Health and Disease. Topics include cells, transport systems in mammals and multicellular plants, the heart, diet, gaseous exchange, smoking, disease and immunity.

0 521 78719 X
272 pp. Paperback
£14.95

Biology 2
Mary Jones, Jennifer Gregory
Biology 2 covers the A2 core module, Central Concepts. The main topics include energy, respiration, photosynthesis, genetics, classification, selection, evolution, control, coordination and homeostasis.

0 521 79714 4
152 pp. Paperback
£13.95

See pages 19, 20
For Bioscope and Human Body Systems – new e-Learning resources to support biology courses.

A2 option titles

Mammalian Physiology and Behaviour
Mary Jones, Geoff Jones
Examines the main concepts, including mammalian nutrition, the liver, support and locomotion, the nervous system, sense organs and behaviour.

Applications of Genetics
Second edition
Jennifer Gregory
Explores the main areas of this subject, including variation, selective breeding, genetic diversity, genetic engineering and human genetics.

Microbiology and Biotechnology
Second edition
Pauline Lowrie, Susan Wells
Explains the main concepts of microbiology, including techniques in cell culture and large-scale production, and the use of biotechnology in food production, medicine, industry and public health.

Environmental Biology
Michael Reiss, Jenny Chapman
Covers the main topics including agriculture, pollution, conservation and ecological fieldwork.

Growth, Development and Reproduction
Second edition
Dennis Taylor
Examines the main concepts of growth and development, asexual reproduction, and sexual reproduction in plants and animals.

See pages 24, 25
For Advanced Biology and Biological Science for AS and A Level biology.
Advanced Biology

Full coverage of the core material for AS and A Level biology

Advanced Biology is an accessible, full-colour textbook from the same popular author team as the successful GCSE text Biology.

‘... it is the quality and variety of illustrations that make this full-colour textbook outstanding.’
Times Educational Supplement

‘It provides exhaustive coverage of biological topics …’
School Science Review

- Full coverage of core material
  Advanced Biology provides full coverage of the core material included in all advanced syllabuses. It is suitable for students studying for a range of qualifications, including AS and A Level.

- Accessible to a range of students
  Written for students starting from a double-award GCSE science base, the material contains clear explanations of facts and concepts. Boxes containing extension material are clearly differentiated, and cover more difficult concepts to stretch more able students.

- Up-to-date coverage of applications
  Where relevant, the applications of biology to industry have been given. The text has been reviewed by practising teachers and academic specialists for relevance and accuracy, and includes material from current research projects.

- Supporting illustrations and questions
  High-quality illustrations have been produced by biologist Geoff Jones. These support the explanation of topics, and provide additional material to aid the comprehension of concepts. Questions have been included throughout the text and at the end of each chapter to reinforce concepts and provide exam practice.
Biological Science

Biological Science provides the most comprehensive coverage of biological information required by AS Level and A Level students. It covers both core and option material to meet revised syllabus requirements. Relevant practical investigations have been included, with detailed equipment lists, step-by-step methodology and suggestions for analysing results. These have been thoroughly pre-tested to ensure their suitability for the school laboratory. Questions throughout the text help reinforce concepts and aid revision. Full answers and discussions are provided. Useful appendices cover biological chemistry, biological techniques, common names and measurements, and the geological time scale.

Ecology
Principles and applications

The second edition of a popular textbook for students taking courses in biology, geography and earth sciences who require an introduction to ecology. This clear introduction provides truly comprehensive subject coverage. The book begins with the ecology of individual organisms and moves on, through communities and ecosystems, to global considerations of biogeography, co-evolution and conservation. Case histories, historical perspectives, controversial theories and extension material are highlighted throughout the book. The second edition has been brought up to date with current syllabuses by the addition of further material on the key issue of conservation, giving excellent coverage of the principles of conservation and using case studies to provide examples of conservation policies in practice.
Cambridge Advanced Sciences: Chemistry

Tailored to OCR specification A for chemistry

A range of textbooks for AS and A Level specifications for chemistry with new teacher support materials.

Praise for Chemistry 1:

‘This is a well-thought-out text aimed at the OCR specification. The treatment is clear and straightforward with a lot of detail.’

*Times Educational Supplement*

‘... stylish, modern and very user-friendly ... an excellent textbook, and good value in every way.’

*School Science Review*

Praise for Environmental Chemistry:

‘... authoritative introduction to the topic, with chemical concepts explained clearly and concisely.’

*Science Education Newsletter*

- **Complete coverage of the specifications**
  
  *Cambridge Advanced Sciences* provides flexible and comprehensive coverage of AS and A Level qualifications. All syllabus material has been included. Concepts are explained clearly and concisely, making these books ideal for students coming from a GCSE double-award science background.

- **Endorsed by OCR**
  
  All of these titles have been endorsed by OCR for use with specification A for chemistry. Teachers and students can be confident that the books cover the full specification, and are written at the appropriate level.

- **Single core book for AS**
  
  *Chemistry 1* contains the material required for all three AS modules (*Foundation Chemistry, Chains and Rings, How Far, How Fast?*) and has been written for AS students. Students need no other textbook for the first year of their chemistry course.

- **Core plus options for A2**
  
  *Chemistry 2* provides full coverage of both core A2 modules (*Chains, Rings and Spectroscopy, Trends and Patterns*) for the second year of study. A range of supplementary books provides coverage of all five options included in the A2 specification.

- **New Teacher Support Materials on CD-ROM**
  
  New support materials will be available from spring 2005 to accompany the popular student textbooks. The materials will comprise three CD-ROMs, one for AS, one for A2 core material, and a third covering the options available. The materials are available in pdf format, allowing you to produce your own print-quality copy.
NEW

Teacher Materials

A set of CD-ROMs providing:
- Checklists
- Chapter summary activities
- Teacher guidance
- Practical guidance
- Worksheets
- Answers to worksheets

Available from Spring 2005
For information about A2 options, please contact Education Marketing on 01223 325013 or visit our website: www.cambridge.org/caschemistry

Core titles

Chemistry 1
Brian Ratcliff, Helen Eccles, David Johnson, John Nicholson, John Raffan
Chemistry 1 covers the three core modules required for the AS qualification, Foundation Chemistry, Chains and Rings, and How Far, How Fast? Topics include atomic structure, chemical bonding and structures, periodic patterns, Group II and VII elements, organic chemistry and chemical reactions.

0 521 78778 5
216 pp. full colour Paperback £14.95

Chemistry 2
Brian Ratcliff, Helen Eccles
Chemistry 2 covers the A2 core modules Chains, Rings and Spectroscopy, and Trends and Patterns, and includes a section on Unifying Concepts for the synoptic module. Coverage includes new families of organic compounds, stereoisomerism, polymers, spectroscopy, lattice enthalpy, elements and compounds of Period 3, and transition elements.

0 521 79882 5
176 pp. full colour Paperback £13.95

A2 option titles

Biochemistry
Richard Harwood
Explains the concepts of biochemistry, including amino acids and proteins, enzymes, carbohydrates, lipids and membranes, and nucleic acids and protein synthesis.

0 521 79751 9
96 pp. full colour paperback £9.50

Gases, Liquids and Solids
Philip Matthews
Examines the main areas, including states of matter, phase equilibria, distribution between phases, and Roualt’s law and distillation.

0 521 79750 0
80 pp. paperback £8.50

Environmental Chemistry
Second edition
Alan Winfield
Covers the main topics required, including the atmosphere, the hydrosphere, the lithosphere and the treatment of waste.

0 521 78720 3
64 pp. paperback £7.50

Methods of Analysis and Detection
Second edition
Anne McCarthy
Explains the main ideas, including separation techniques, mass spectrometry, atomic emission spectroscopy, ultraviolet/visible absorption spectroscopy and spectral techniques.

0 521 78724 6
64 pp. paperback £7.50

Transition Elements
David Acaster
Explores the concepts relating to transition elements, including electrode potentials, ligands and complexes, colour, and provides case studies of four metals.

0 521 79752 7
64 pp. full colour paperback £8.50
Cambridge Advanced Sciences: Physics

Tailored to OCR specification A for physics

A range of textbooks for AS and A Level specifications in physics with new teacher support materials.

Praise for Physics 1:

‘Accessibility is the strength of this book. The use of colour and space, as well as the content, make it enjoyable to use and to read for any student embarking on the new AS course.’

*Physics Education*

- **Complete coverage of the specifications**
  *Cambridge Advanced Sciences* provides flexible and comprehensive coverage of AS and A Level qualifications. All syllabus material has been included. Concepts are explained clearly and concisely, making these books ideal for students coming from a GCSE double-award science background.

- **Endorsed by OCR**
  All of these titles have been endorsed by OCR for use with specification A for physics. Teachers and students can be confident that the books cover the full specification, and are written at the appropriate level.

- **Single core book for AS**
  *Physics 1* contains the material required for all three AS modules (*Forces and Motion, Electrons and Photons, Wave Properties*) and has been written for AS students. Students need no other textbook for the first year of their physics course.

- **Core plus options for A2**
  *Physics 2* provides full coverage of the core A2 module (*Forces, Fields and Energy*) for the second year of study. A range of supplementary books provides coverage of all five options included in the A2 specification.

- **New Teacher Support Materials on CD-ROM**
  New support materials will be available from mid 2005 to accompany the popular student textbooks. The materials will comprise three CD-ROMs, one for AS, one for A2 core material, and a third covering the options available. The materials are available in pdf format, allowing you to produce your own print-quality copy.
Teacher Materials

A set of CD-ROMs providing:
- Checklists
- Chapter summary activities
- Teacher guidance
- Practical guidance
- Worksheets
- Answers to worksheets

Available from mid 2005
For information about the CDs covering A2, please contact Education Marketing on 01223 325013 or visit our website: www.cambridge.org/casphysics

Core titles

Physics 1
David Sang, Keith Gibbs, Robert Hutchings
Physics 1 covers the three core AS modules, Forces and Motion, Electrons and Photons, and Wave Properties.

Physic 1 0 521 78718 1
216 pp. Paperback
£14.95

Physics 2
David Sang
Physics 2 covers the A2 core module, Forces, Fields and Energy. Topics include work and energy, collisions and explosions, circular motion, oscillations, gravitational and electric fields, capacitors, electromagnetism, ideal gases, thermal and nuclear physics, atomic structure and radioactivity.

Physic 1 0 521 79715 2
176 pp. Paperback
£13.95

NEW

A2 option titles

Telecommunications
Stuart Kennedy
Examines the main areas of telecommunications, including waveforms, modulation, digital and analogue signals, multiplexing, satellite and telephone systems, optic fibres, the internet and operational amplifiers.

Physic 2 0 521 79747 0
128 pp. paperback
£8.95

Cosmology
Second edition
Bryan Milner
Explains the main concepts of cosmology from early models to the present day, looking at the solar system, the radiation and life histories of stars, the origins and future of the universe, and theories of relativity.

Physic 2 0 521 78722 X
96 pp. full colour paperback
£9.50

Health Physics
Second edition
Andrew McCormick, Alexander Elliott
Studies the relevance of physics to body mechanics, the eye and the ear, and how it can be used in analysis and therapy, including radiation, radiology, nuclear medicine, ultrasound, MRI, radiotherapy and the use of light.

Physic 2 0 521 78726 2
96 pp. includes colour section paperback
£8.50

Nuclear and Particle Physics
Bryan Milner
Examines the main concepts of nuclear physics and particle physics in two independent sections of the book.

Physic 2 0 521 79837 X
96 pp. full colour paperback
£9.50

Materials
Janet Taylor
Explains the mechanical, electrical, magnetic and optical properties of materials.

Physic 2 0 521 79748 9
88 pp. paperback
£8.50
Biology
International Edition for IGCSE and O Level

This textbook has been written to accompany the University of Cambridge International Examinations syllabuses for IGCSE and O Level Biology (0610, 5090). It closely matches the content of both syllabuses, and has been endorsed by CIE. The accessible language and extensive use of high-quality colour illustrations ensure that the material is suitable for all students, including those for whom English is not their first language.

- Comprehensive coverage of both IGCSE and O Level syllabuses (0610, 5090).
- Straightforward descriptions and explanations of facts and concepts.
- Revision questions at the end of each chapter.
- A section listing apparatus required for practicals.
- An appendix of CIE exam questions.

The Cambridge Biology Revision Guide
GCE O Level

Using a topic-by-topic structure, The Cambridge Biology Revision Guide explains essential biological concepts using accessible language and clear illustrations. Students are encouraged to apply their knowledge through practical investigations and multiple choice questions. This is a fundamental tool for students sitting the Cambridge O Level syllabus (5090), and is also of great value to those taking GCSE and IGCSE examinations.

- Endorsed by CIE for use with their O Level syllabus (5090).
- Includes tips on effective subject revision.
- Contains a section of questions from past exam papers with answers.
- Uses illustrations to explain biological concepts.

See page 17
For information on Chemistry by Richard Harwood, endorsed by CIE for use with their syllabuses for IGCSE and O level Chemistry (0620, 5070).

See page 18
For Teaching and Assessing Practical Skills in Science, which gives clear practical advice for teaching and assessing skills in science for IGCSE and O Level.

See page 19
For Bioscope, a biological microscope simulation with accompanying tasks written specifically for IGCSE.
Biology
AS and A Level
Mary Jones, Richard Fosbery, Jennifer Gregory, Dennis Taylor

*Biology: AS and A Level* has been written specifically to meet the requirements of the University of Cambridge International Examinations AS and A Level Biology syllabus (9700). In one volume, this full colour textbook covers both the AS and core A Level syllabus. Full coverage of the A2 option modules (Mammalian Physiology and Behaviour, Microbiology and Biotechnology, Growth, Development and Reproduction, and Application of Genetics) is provided by the books on page 23.

- Endorsed by CIE for use with syllabus (9700).
- Cost-effective single-volume format.
- Self-assessment questions, with answers, offering excellent opportunities for independent study.
- Chapter introductions and summaries provide a basis for structured revision.
- Extensive glossary providing explanations of technical terms.

Chemistry
AS and A Level
Brian Ratcliff, Helen Eccles, John Raffan, John Nicholson, David Johnson, John Newman, David Acaster, Philip Matthews

This new student textbook has been written specifically for the University of Cambridge International Examinations syllabus (9701). The single volume format includes coverage of both AS and A Level material. The material for AS and A Level is clearly distinct, making the book ideal for use with both one-year AS courses and two-year A Level courses.

- Endorsed by CIE for use with their AS and A Level syllabus for Chemistry (9701).
- Available in a practical single-volume format.
- Material for AS and A Level is clearly separated.
- Contains chapter learning objectives which are related directly to the syllabus.
- Uses accessible language throughout.

Physics for the IB Diploma
Fourth edition
K. A. Tsokos

This fourth edition of *Physics for the IB Diploma* has been written for the IB student. It covers the entire new IB syllabus including all options at both Standard and Higher levels. It includes a chapter on the role of physics in the Theory of Knowledge along with many discussion questions with answers. There is a range of questions at the end of each chapter with answers at the back of the book. The book also includes worked examples and answers throughout, and highlights important results, laws, definitions and formulae. Part I of the book covers the core material and the additional higher level material (AHL). Part II covers the optional subjects.

See pages 23, 27, 29
For teacher material to support AS and A level teaching.
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