

Pearson Baccalaureate for IB Diploma

The Pearson Baccalaureate promise - Supporting every learner across the entire continuum



- ▶ A library of comprehensive textbooks
- ▶ Interactive eBooks
- ▶ The only IB Diploma EAL-specific support available
- ▶ Online subscription services

FREE SUPPORT

All supported by
www.pearsonbacconline.com,
 a free, online teaching support service

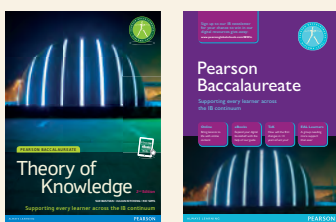
Digital learners

In our fast-moving, digital world we have changed the way we offer our resources for students wanting to learn on-the-go and interactively. Nearly all our resources now have an interactive eText too, which provides the same high-quality content found in our printed textbooks. *Look out for our textbook + eText packages on each subject page.*



EAL learners

You've been telling us about the need for resources for your growing group of English as an additional language learners. This year we have published a unique series of resources that help support EAL learners. Those who struggle with academic vocabulary are now able stay on-level by learning the same content as their peers using more readily accessible language.



ToK

We've almost completed our new edition of ToK for the 2013 curriculum change.



Group 4 Sciences

The Group 4 Sciences curriculum change is also keeping us busy, but we are lucky enough to be working with expert authors on updating our extensive suite of resources.

Read more...

Some of our authors have taken time out from writing manuscripts to provide an overview of just some of the changes happening in the IB. Read more about curriculum changes, EAL support and online, digital learning in the classroom in our latest IB magazine, available to download online at: www.PearsonSchool.com/IBprograms

Visit www.pearsonbaccalaureate.com to sign up for regular eNewsletters, download sample chapters and read author biographies.

PearsonSchool.com/IBprograms
 800-848-9500

Copyright Pearson Education, Inc., or its affiliates.
 All rights reserved.

581D013
 PDF0114.PC.JW/MM



The Pearson Baccalaureate Series

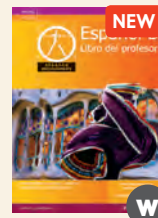
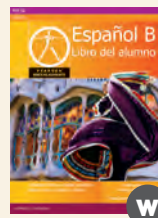
The Pearson Baccalaureate promise - Supporting every learner across the entire continuum

NEW COMPONENTS

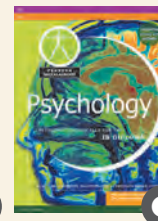
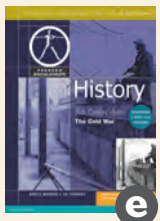
Group 1 Language A



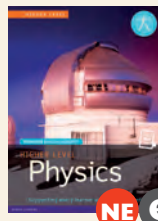
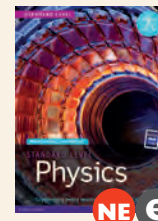
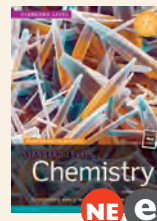
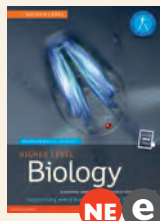
Group 2 Second Language



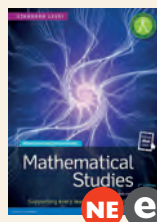
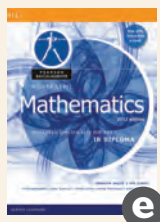
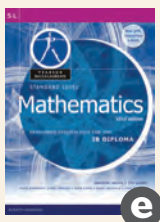
Group 3 Individuals and Societies



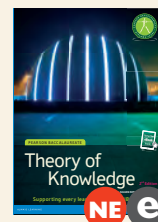
Group 4 Experimental Sciences



Group 5 Mathematics and Computer Science



Core Curriculum



- e** Also available as eText
- w** Supporting subscription website
- NE** New edition

PearsonSchool.com/IBprograms
800-848-9500

Copyright Pearson Education, Inc., or its affiliates.
All rights reserved.

NEW EDITION

Biology, and Physics for the IB Diploma

The market-leading titles for IB sciences



Each of the Pearson Baccalaureate science titles provide comprehensive coverage of all the latest syllabus requirements and options for each subject.

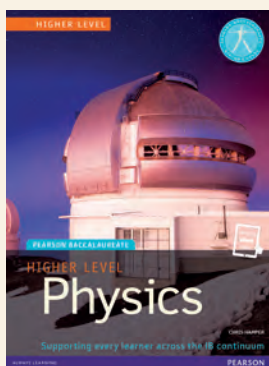
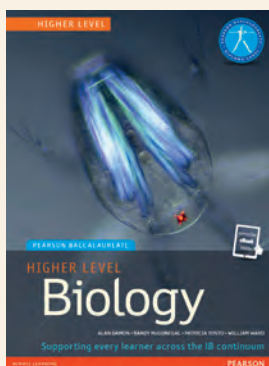
- ▶ Thoroughly differentiated at both Standard and Higher Level.
- ▶ Makes very effective use of illustrated examples throughout to help students understand and reinforce key concepts.
- ▶ Contains worked examples, practice questions from past IB papers and advice on Internal Assessment and the Extended Essay to support students and offer opportunities for exam preparation.

New Enhanced eTexts*

Each new Pearson Baccalaureate textbook for Group 4 Sciences is accompanied by four year student access to an enhanced eText, containing the following assets:

- ▶ simulations
- ▶ animations
- ▶ videos
- ▶ worksheets
- ▶ quizzes
- ▶ worked solutions
- ▶ labs.

*Download *Pearson eText App* to access eText.



BIOLOGY

Biology Higher Level 2nd Edition Print and eText Bundle	978 447959 00 7
Biology Higher Level 2nd Edition eText only edition	978 447959 01 4
Biology Standard Level 2nd Edition Print and eText Bundle	978 447959 04 5
Biology Standard Level 2nd Edition eText only edition	978 447959 05 2

PHYSICS

Physics Higher Level 2nd Edition Print and eText Bundle	978 447959 02 1
Physics Higher Level 2nd Edition eText only edition	978 447959 03 8
Physics Standard Level 2nd Edition Print and eText Bundle	978 447959 08 3
Physics Standard Level 2nd Edition eText only edition	978 447959 09 0

UPDATED

Updated for the 2014 Group 4 curriculum review

PearsonSchool.com/IBprograms
800-848-9500

Copyright Pearson Education, Inc., or its affiliates.
All rights reserved.



Chemistry for the IB Diploma

The market-leading titles for IB sciences



Each of the Pearson Baccalaureate science titles provide comprehensive coverage of all the latest syllabus requirements and options for each subject.

- Thoroughly differentiated at both Standard and Higher Level.
- Makes very effective use of illustrated examples throughout to help students understand and reinforce key concepts.
- Contains worked examples, practice questions from past IB papers and advice on Internal Assessment and the Extended Essay to support students and offer opportunities for exam preparation.

CHEMISTRY	
Chemistry Standard Level 2nd Edition Print and eText Bundle	978 447959 06 9
Chemistry Standard Level 2nd Edition eText only edition	978 447959 07 6
Chemistry Higher Level 2nd Edition Print and eText Bundle	978 447959 75 5
Chemistry Higher Level 2nd Edition eText only edition	978 447959 76 2

UPDATED
Updated for the 2014 Group 4 curriculum review

02 Atomic structure

Following this example, the formation of water (described above) can be written using modern notation:

$$2\text{H} + 1\text{O} \rightarrow \text{H}_2\text{O}$$

But what are atoms really like? It can be useful to think of them as hard spheres (Figure 2.1), but this tells us little about how the atoms of different elements differ. To understand this, it is necessary to probe deeper.

Figure 2.1 A model of a water molecule made from two hydrogen atoms and one oxygen atom. Dalton's picture of the atom as a hard ball is the basis behind the molecular models we use today.

2.2 Thomson's 'plum pudding' model of the atom. The electrons (yellow) are scattered in a positively charged substance (pink).

2.3 Rutherford's model of the atom. The nucleus (red) is at the center, and the electrons (blue) orbit in shells.

2.4 The European Organization for Nuclear Research (CERN) is run by twenty European Member States, with involvement from scientists from many other countries. It operates the world's largest particle physics research centre, including particle accelerators and detectors used to study the fundamental constituents of matter.

2.5 PET (positron-emission tomography) scanners give three-dimensional images of tracer concentration in the body and can be used to detect cancers. The patient is injected with a tracer compound labelled with a positron-emitting isotope. The positrons collide with electrons after travelling a short distance (4.1 mm) within the body. Both particles are destroyed with the production of gamma photons, which are collected by the scanner and used to generate an image.

Table 2.1: Sub-atomic particles

Particle	Relative mass	Relative charge
proton	1	+1
electron	0.0005	-1
neutron	1	0

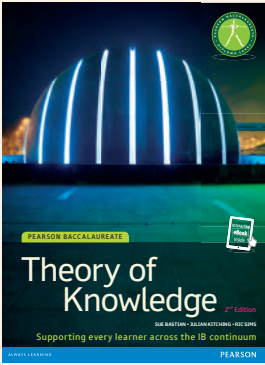
Nature of science
Central to the new curriculum is an emphasis on the nature of science. Margin boxes promote an understanding of the proof and justification of scientific knowledge and the scientific world view.

ToK
Clear and imaginative links to ToK - of interest to the student as an individual, and easily integrated into classroom discussion.

Utilization
Utilization boxes support the new curriculum aims to provide synoptic links to other areas of science, as well as examples of a variety of real-world applications.

Sample pages from Higher Level Chemistry

PearsonSchool.com/IBprograms
800-848-9500
Copyright Pearson Education, Inc., or its affiliates.
All rights reserved.



NEW EDITION

Theory of Knowledge

2nd edition for the IB Diploma

The TOK book rewritten to exactly match the new curriculum



- Provides comprehensive coverage of the new Knowledge Framework and additional Areas of Knowledge.
- Engages students in critical thinking relevant to their other courses and life outside the classroom.
- Enables clear links to the Learner Profile, the IB core values and all the IB curriculum framework areas.
- Offers assessment opportunities using questions from past Prescribed Essays.
- Provides guidance on the Prescribed Essay and Student Presentation.
- Combined with online enhanced eText.



eTexts*
(Online, PC/Mac/Tablet)

*Download Pearson eText App to access eText.

THEORY OF KNOWLEDGE

Theory of Knowledge, 2nd edition print and eText Bundle 978 | 447944 157
 Theory of Knowledge, 2nd edition eText only edition 978 | 447944 140

contents

- Chapter 1: Introduction
- Chapter 2: Ways of Knowing
- Chapter 3: Areas of Knowledge
- Chapter 4: Natural Sciences
- Chapter 5: Human Sciences
- Chapter 6: Mathematics
- Chapter 7: History
- Chapter 8: Arts
- Chapter 9: Ethics
- Chapter 10: Religious Knowledge Systems
- Chapter 11: Indigenous Knowledge Systems
- Chapter 12: Shared and Personal Knowledge Systems
- Chapter 13: Assessment
- Bibliography
- Glossary
- Index

04 Natural sciences

Prescribed essay title 6: A model is a simplified representation of some aspect of the world. In what ways may models help or hinder the search for knowledge?

© International Baccalaureate Organization November 2010 and May 2011

Modelling – electron shells

Figure 4.11 is one that most of us recognize from chemistry lessons in lower school. The nucleus in the centre and the electrons orbit the nucleus like planets orbiting the Sun. This metaphor helps us understand the structure of the atom. But it is more than a metaphor. By understanding this picture, we can understand how elements bond together chemically.

Representations like this predict the chemical properties of elements. For example, the outer electron shell for the inert or noble elements He, Ne, Ar is full with electrons. This means, broadly speaking, that they have no electrons free to make bonds with other elements. But high-school chemistry classes debunk this picture completely. This is not at all how electrons are in relation to the nucleus. Electrons are treated as probability waves satisfying Schrödinger's equation. We need to remember that our simple picture is a model (and so is the Schrödinger equation – just a more sophisticated one). It does a good job in the limited area in which it operates, it allows us to build and understand the Periodic Table and do basic chemistry.

Exercises

95 Why do you think astronomers have to use computer simulations when investigating phenomena such as the collision of two galaxies?

96 Is there a difference between a simulation and a model?

97 What are the strengths and weaknesses of simulation like this?

98 List three models that you studied in your group 4 subject. What simplifying assumptions does each model make? What are the consequences of making such assumptions?

99 Pick each of your models on the nation-understanding diagram below.

Function of scientific models

Understanding

90 Does it matter that simplifying assumptions make a model inaccurate?

91 What other functions might a model have apart from accuracy or predictive power?

92 Can an inaccurate model still give us knowledge?

03 Areas of knowledge

In TOK, we classify disciplines using a scheme that is similar in some ways to that in the IB diploma program, but not quite the same. This arrangement gives rise to what we call areas of knowledge.

Some of the areas of knowledge refer to groups of related disciplines, for example:

- natural sciences include most group 4 subjects (biology, chemistry, physics)
- human sciences include some group 3 subjects (economics, psychology)
- arts include group 6 subjects (visual arts, music, theatre arts, dance, film) and group 1 (literature).

Other areas of knowledge represent single disciplines:

- history (from group 3)
- mathematics (from group 5).

And yet others represent forms of knowledge not explicitly recognized as subjects in the IB diploma:

- ethics
- religious knowledge systems
- indigenous knowledge systems.

So there are eight areas of knowledge in the TOK programme, of which you are expected to study six in depth. Your teacher will organize your course to achieve this requirement. Figure 3.2 shows all the areas of knowledge, with some disciplines (many of which are offered in the IB diploma) placed tentatively around the outside.

You might ask why areas of knowledge take precisely this form, this pattern of disciplines, as opposed to any other. This is something we will investigate in this book. To start the process, consider this exercise.

What are the grounds for your answers? You may have mentioned the kind of subject matter of each discipline. Or possibly the ways in which they go about their business. Or even the kind of language they use. In doing this, you are starting to analyse the nature of academic disciplines and make comparisons between them.

Exercises

1 On what basis would you explain the following? Could these statements be contested?

- Chemistry and biology belong together in the same area of knowledge.
- Physics and economics belong in separate areas of knowledge.
- Literary studies and dance belong together in the same area of knowledge.
- History and mathematics should be considered areas of knowledge on their own.
- Religious knowledge is an area of knowledge.
- Geography is a human science.
- Algebra and geometry are not separate areas of knowledge.

2 What do others think?

3.2 Introduction to the knowledge framework

As you identified in the last exercise, each area of knowledge possesses certain types of feature that can be analysed. These features also function as ways of comparing different areas of knowledge.

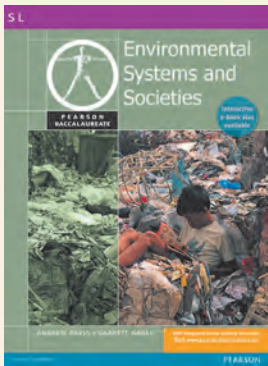
We can formalize these methods of analysing and comparing areas of knowledge by creating a knowledge framework (Figure 3.3). If you create a knowledge framework for each of the eight areas of knowledge in the TOK programme, you will be able to get a clearer picture of how they are different and how they are similar.

Knowledge framework	
Scope and applications	<ul style="list-style-type: none"> What is the area of knowledge about? What practical problems can be solved through applying this knowledge? What makes this area of knowledge important? What makes the current open questions in this area – important questions that are currently unanswered? Are there ethical considerations that limit the scope of this inquiry? If so, what are they?
Language and concepts	<ul style="list-style-type: none"> What role does language play in the accumulation of knowledge in this area? What are the roles of the key concepts and key terms that provide the building blocks for knowledge in this area? What metaphors are appropriate to this area of knowledge? What is the role of convention in this area?
Methodology	<ul style="list-style-type: none"> What are the methods or procedures used in this area and what is it about these methods that generates knowledge? What counts as fact in this area of knowledge? What role do models play in this area of knowledge? What critical thinking constraints the methods used to gain knowledge?
Historical development	<ul style="list-style-type: none"> What is the significance of the key points in the historical development of this area of knowledge? How has the history of this area led to its current form?
Links to personal knowledge	<ul style="list-style-type: none"> Why is this significant to the individual? What responsibilities rest upon the individual knower by virtue of his or her knowledge in this area? What are the implications of this shared area of knowledge for one's own individual perspective? What assumptions underlie the individual's own approach to the knowledge?

Using this knowledge framework as a tool, we look in this book at what kind of subject matter each area of knowledge is focused on, and how the knowledge produced is useful. We examine how this knowledge is packaged and shared, and how a common understanding of it is achieved among communities of knowers. We look at how this knowledge is produced, appreciate the contributions of important individuals to its development, and ask what it means to us as individuals. To help us with this goal, we use two metaphors along the way:

- the idea that knowledge is a kind of map (Chapter 10)
- the idea that disciplines and areas of knowledge are rather like cultures.

PearsonSchool.com/IBprograms
 800-848-9500
 Copyright Pearson Education, Inc., or its affiliates.
 All rights reserved.




Environmental Systems and Societies for the IB Diploma

Comprehensive coverage of all topics

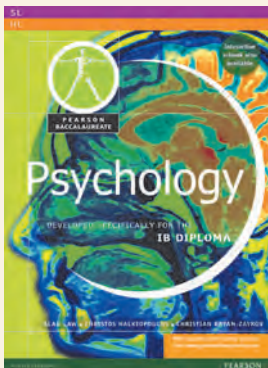


- ▶ This title provides comprehensive coverage of the syllabus with all the support you'd expect from a Pearson Baccaureate series title.
- ▶ Integrated with free online learning resources at www.pearsonbacconline.com, to support and extend study. These include practice exam questions, worksheets and a monthly series of topical updates.

 eTexts*
(Online, PC/Mac/Tablet)
*Download *Pearson eText* App to access eText.

ENVIRONMENTAL SYSTEMS AND SOCIETIES	
Environmental Systems and Societies (eText only edition)	978 447938 50 7
Environmental Systems and Societies (print and eText bundle)	978 447960 41 6

PERFECT PARTNER
Pearson Baccaureate Essentials:
Environmental Systems
and Societies




Psychology for the IB Diploma

The popular choice for psychology



- ▶ This title provides comprehensive coverage of the syllabus with all the support you'd expect from a Pearson Baccaureate series title.
- ▶ Also contains integrated online learning resources at www.pearsonbacconline.com, to support and extend study.

 eTexts*
(Online, PC/Mac/Tablet)
*Download *Pearson eText* App to access eText.

ENVIRONMENTAL SYSTEMS AND SOCIETIES	
Psychology (eText only edition)	978 447938 53 8
Psychology (print and eText bundle)	978 447960 42 3

PERFECT PARTNER
Pearson Baccaureate Essentials:
Psychology

PearsonSchool.com/IBprograms
800-848-9500

Copyright Pearson Education, Inc., or its affiliates.
All rights reserved.

581D013
PDE0114.PC.JW.MM