

**IGCSE  
Human  
Biology**

# Introduction

Welcome to your IGCSE Human Biology course. This introduction will serve as a guide to what you can expect from the course, and it will show you how to plan your study of this course effectively. Take your time to read this Introduction thoroughly before you start the lessons.

The course is designed to prepare students for the **Edexcel IGCSE Human Biology specification (syllabus)**.

The Edexcel subject code is **4HBO IGCSE Human Biology**.

## The Arrangement of Lessons

The lessons are planned so that all the material and preparation required for the final examination papers is in the following five course modules:

- Module 1: Cell Processes
- Module 2: Human Physiology A
- Module 3: Human Physiology B
- Module 4: Reproduction and Heredity
- Module 5: Microorganisms, Disease and Environment

It is advisable that you do the modules in order as the content has been written to enable you to develop your knowledge and skills as you progress through the lessons.



## The Course

The course is designed to develop a positive attitude to human biology in the twenty-first century. It attempts to look at the way biology affects your everyday life and how you can evaluate the scientific material that you come across in newspapers, magazines and on the television.

In combination with other suitable IGCSE entry subjects the course is an ideal preparation for those who wish to go on to study Biology or Human Biology at AS and A2 level.

The course is designed to be accessible to students who may have only a limited previous background in science. If you have some background in biology then you should find that some of the lessons build upon things that you have met before in your earlier studies.

The practical work described at various places in this course is to help to develop your skills for the practical-based components of the theory exams. It is not essential to carry out this work yourself, but if you can undertake some of it at home, or have the opportunity to perform supervised laboratory work in the course of your studies, this will be a great help. Three of the lessons are devoted to the development of practical skills, and there is a very useful Appendix at the back of the textbook (pages 221-228) to help you further.

## Textbook

The textbook that is referred to throughout this course is:

***Edexcel IGCSE Human Biology (2010)***

Authors: **Phil Bradfield and Steve Potter**

Publisher: **Pearson Education** ISBN: **978 0 435044 13 8**

You will need to use a copy of this textbook throughout the course; you can buy a copy through the Oxford Open Learning website. It is referred to in every lesson and provides excellent coverage of the material. By using the textbook and the course you will have very full coverage of all the material.

Full answers to the Student Book questions are available to teachers and parents by emailing

[customersolutions@pearson.com](mailto:customersolutions@pearson.com) (for UK teachers and parents) or [icsorders@pearson.com](mailto:icsorders@pearson.com) (for all other teachers and parents).

You should not need other books throughout the course but you may like to look in other biology books from time to time. If you feel that you would like to use a revision guide before the examination you should ask your tutor which one they recommend.

## Tiering and IGCSE Examination Entry

Science IGCSE examinations are not divided into different entry tiers.

## Lesson Contents and Textbook References

<b>Human Biology IGCSE</b>		
<b>Module 1: Cell Processes</b>		
<i>Lesson</i>	<i>Title</i>	<i>Book Reference</i>
<b>1</b>	Cells and Tissues	Chapter 1, pages 1-3 & 13-16.
<b>2</b>	Movement of Substances into and out of Cells <b>TMA A</b>	Chapter 1, pages 8 -13.
<b>3</b>	Investigative Skills A: Design	Appendix A, pages 221, 226-228
<b>4</b>	Respiration and Enzymes <b>TMA B</b>	Chapter 1, pages 3-8.
<b>5</b>	Investigative Skills B: Carrying Out	Appendix A, pages 221-222 & 226-227

<b>Module 2: Human Physiology A</b>		
<i>Lesson</i>	<i>Title</i>	<i>Book Reference</i>
<b>6</b>	Nutrition <b>TMA C</b>	Chapter 3, pages 33-41.
<b>7</b>	Investigative Skills C: Interpreting	Appendix A, pages 223-226
<b>8</b>	Digestion <b>TMA D</b>	Chapter 3, pages 42-50.

<b>9</b>	Blood and Circulation	Chapter 4, pages 53-68.
<b>10</b>	Breathing and Gas Exchange <b>TMA E</b>	Chapter 2, pages 20-31 & Chapter 4, 66-67.

**Module 3: Human Physiology B**

<i>Lesson</i>	<i>Title</i>	<i>Book Reference</i>
<b>11</b>	Homeostasis and Excretion	Chapter 8, pages 106-113 & 116-120.
<b>12</b>	Nervous System <b>TMA F</b>	Chapter 5, pages 70-85.
<b>13</b>	Form and Movement	Chapter 7, page 95-104.
<b>14</b>	Hormones, Liver, Rehydration and Kidney Failure <b>TMA G</b>	Chapter 6, page 87-94 & Chapter 8, pages 113-115

**Module 4: Reproduction and Heredity**

<i>Lesson</i>	<i>Title</i>	<i>Book Reference</i>
<b>15</b>	Reproduction	Chapter 9, pages 122-136.
<b>16</b>	Chromosomes, genes and DNA <b>TMA H</b>	Chapter 10, pages 139-147.
<b>17</b>	Cell Division	Chapter 11, pages 149-156.
<b>18</b>	Genes and Inheritance <b>TMA I</b>	Chapter 12, pages 158-172.

**Module 5: Microorganisms, Disease and Environment**

<i>Lesson</i>	<i>Title</i>	<i>Book Reference</i>
<b>19</b>	Pathogens and Disease	Chapter 13, pages 174-188.
<b>20</b>	Defence against Disease <b>TMA J</b>	Chapter 13, pages 189-197.
<b>21</b>	Decomposers	Chapter 13, pages 197-199 & Chapter 14, pages 208- 212.
<b>22</b>	Ecosystems <b>TMA K</b>	Chapter 14, pages 203-208.
<b>23</b>	Environmental Threats <b>TMA L</b>	Chapter 14, pages 212-218.
<b>24</b>	Mock Examinations <b>TMA M</b> <b>TMA N</b>	

## Twig Resources

We hope that students of this course will also take the opportunity to learn from the wealth of Twig resources to which this course is linked. Twig have produced more than a thousand educational films, particularly for science, maths and geography and these complement the lesson materials here to enhance the learning experience.

To view the films, you will need an e-mail account, internet access and a password, supplied to you on enrolment. As you work through the lessons, you will come across Twig-links quite regularly, looking like this:



Log on to Twig and look at the film titled: **Deforestation**

[www.ool.co.uk/1257ud](http://www.ool.co.uk/1257ud)

Discover how the destruction of the rainforest impacts ecosystems, and begins a cycle that contributes to global warming.

To reach the film, you would either type the URL into your web-browser (here [www.ool.co.uk/1257ud](http://www.ool.co.uk/1257ud)) or search the Twig site ([www.twig-world.co.uk](http://www.twig-world.co.uk)) for 'Deforestation'. Having watched it, you return to the lesson.

Access to these resources is offered on the following terms:

1. OOL is not responsible for the content of the Twig films or for the technology which transmits them.
2. The films may not be accessible at certain times.
3. OOL cannot be responsible for any technical difficulties students may have in viewing the films and cannot advise on any software or hardware issues.
4. Access is limited in any case to the period until the student's expected exam date.
5. Students are responsible for remembering their own passwords.
6. Passwords are supplied for the use of the named student only and should not be passed on to any third

parties under any circumstances – because each password is unique it will be apparent if it is used on numerous machines.

7. The films are of greater or lesser relevance and it is probable that some parts of many of the films will be too “advanced” for your needs, include ideas you have not yet covered, or introduce information that is not required for the Edexcel specification.
8. If you find that a film is not helpful or interesting, stop watching it! It is possible to study the course successfully without watching *any* of the films. Remember that this is bonus material only, adding depth and context to the course, and this pack forms the spine of the learning material. But each film we have selected should make studying that little bit easier and more enjoyable.
9. Alongside each film, the Twig site offers various additional resources. You can download a transcript of the film, take a quiz or even an advanced quiz. These are optional extras if you have time and inclination.

## Other Internet Resources

In most lessons of the course other internet sites are also given which have been carefully selected to provide additional activities. Some of these have been designated as “Extension” activities.

These internet sites are an important tool to help your understanding of your human biology course, and you should make every effort to view at least the ones not designated as Extension.

If you find that any of these links do not work, try finding alternative sites that provide similar information. To do this you need to follow these steps:

- Decide what your search terms should be
- Enter these key words into a search engine such as Google, Google Images or Yahoo (there are many others you could also use)

- On the search results page look carefully at details of the resource providers and pick out one or two that are authoritative and reliable.\*
- Click to access those sites. You may need to enter your search term(s) again once you are in the sites you have accessed in order to find the right page.

\*Whatever your subject, it is important always to consider the **source** of information you are about to access. If it is provided by a professional institution or society (such as The Royal Society, the British Medical Association, the BBC, or a recognised educational organisation), the information given is **more likely to be reliable** than if it is provided by a commercial company with a vested interest in a product (which may lead it to give a biased or partial view), or an individual whose work has not been validated by a professional body or scholarly community. One of the skills you need to learn is how to find relevant and useful information about your subject. So if you come across a broken link, see what you can do to find out for yourself. If in doubt, ask your tutor for help. (And please let us know about the problem link via our weblinks email address: [weblinks@ool.co.uk](mailto:weblinks@ool.co.uk)).

If you do not have an internet connection at home, consider building in regular trips to a library or internet café as part of your study schedule.

## The Structure within each Lesson: How to Study

### Front Page

The front page of each lesson shows:

- The title.
- **Aims** for the lesson. These set out the position that you should reach after working through the lesson; keep these in mind while reading the lesson material.
- **Context**. This shows how the lesson relates to the Specification.
- **Reading**. The individual textbook references for each lesson. This is additional reading to accompany this course.

## Lesson Notes

There then follow the notes; these are an outline of the subject material to be studied in the lesson. Read the notes carefully several times and carry out the activities until you feel that you have understood the broad outline of the theory involved, and then tackle the reading references.

The textbook may deal with the subjects in greater detail, and, as with the notes, you will probably need to read the passages several times. The textbook also contains relevant questions and at revision time you may want to return to these to further test your knowledge.

At the end of each lesson there is a list of new technical words whose meanings you should know. There is also a summary to which you can add your own comments.

## Activities

Activities are placed in the notes at the relevant point. They are indicated as follows:

<b>Activity 7</b>	Find out your own breathing rate per minute. How does this compare to the results shown above.
	

The pencil symbol indicates that you should make your own notes in the space provided.

## Self-Assessment Tests

Every lesson is concluded with either a Self-Assessment Test or a Tutor-Marked Assignment. Only tackle these when you feel that you have fully mastered the material in the lesson.

If it is a Self-Assessment Test, first try to check your answers by referring back to the lesson, and then compare your answers with those given right at the end of the lesson.

## Tutor-Marked Assignments

After every two lessons there is a Tutor-Marked Assignment (TMA). These are in IGCSE examination style and will thoroughly check your understanding of the previous two lessons. You should send your answers to your tutor, who will return your marked script, together with a set of suggested answers.

## Revision

Do **not** leave all your revision until the end of the course! You will need to revise thoroughly for your examination, but frequent revision throughout the course is **essential**. Plan your revision sensibly, and re-read as you feel necessary, if your knowledge is beginning to fade.

The last two TMAs in the course are mock exams, following closely the format of the exam itself. You are recommended to study the online practice exam and mark scheme (see the section Past Papers below) before attempting these TMAs and sending them to your tutor. It is also a good idea to restrict yourself to the time specified for the paper, so you have practice writing under time pressure.

## Checking the Specification

As you know, this course has been written to cover the contents of the **Edexcel Specification 4HBO** which is available to download at the Edexcel website. You should look particularly at:

- The Qualification Content on pages 3 -10
- The Assessment Objectives on page 12

The Edexcel International General Certificate of Secondary Education (IGCSE) in Human Biology is designed for use in schools and colleges. It is part of a suite of IGCSEs in Science offered by Edexcel. The course gives students the

opportunity to experience human biology within the context of their general education.

The Edexcel IGCSE in Human Biology enables students to:

- study the structure and functions of human biology
- appreciate how the human organism maintains itself
- study human relationships with other animals and the dependence on plants
- learn how humans can best modify their environment and habits to produce healthy conditions for present and future populations.

### Key Features and Benefits of the Edexcel Specification

The IGCSE in Human Biology:

- includes comprehensive and detailed subject content
- includes aspects of modern human biology, appropriate for the 21st century
- includes straightforward linear assessment
- assesses investigative skills through examination.

The precise web address is:

[http://www.edexcel.com/migrationdocuments/IGCSE%20New%20IGCSE/IGCSE2009 HumanBiology \(4HB0\) Specification.pdf](http://www.edexcel.com/migrationdocuments/IGCSE%20New%20IGCSE/IGCSE2009%20HumanBiology%20(4HB0)%20Specification.pdf)

There are no forbidden combinations, so you can do Biology *and* Human Biology.

## The Examination

The examination you will sit consists of two papers. There is no separate practical exam and no practical coursework component; testing of practical skills is built into both of the theory papers.

### Human Biology Paper 1

Paper code: 4HB0/01

This is a two-hour examination paper. The total number of marks is 120, two thirds of the overall total. The paper examines all of the Specification content and all of the assessment objectives. There will be a range of compulsory

short-answer, structured questions, which are ramped to ensure accessibility for less able students, as well as to stretch more able students.

## Human Biology Paper 2

Paper code: 4HB0/02

This is a one-hour examination paper. The total number of marks is 60, one third of the overall total. This paper also examines all of the Specification content, but will focus on investigation and the analysis of data.

In both papers, students may be required to perform calculations, draw graphs and describe, explain and interpret biological phenomena. Some of the question content will be unfamiliar to students; these questions are designed to assess data-handling skills and the ability to apply biological principles to unfamiliar information. Questions targeted at grades A\* – B will include questions designed to test knowledge, understanding and skills at a higher level, including some questions requiring longer prose answers.

The IGCSE qualification will be graded and certificated on an eight-grade scale from A\* (A-starred) to G. Individual unit results will be reported. Students whose level of achievement is below the minimum standard for Grade G will receive an unclassified U. Where unclassified is received it will not be recorded on the certificate.

You should read the Specification throughout the course, and more especially when you are revising to check you have covered everything. Keep a copy on your computer or print it out.

If you do not have access to the Internet, it is possible to buy a paper copy from Edexcel. The contact details are:

Edexcel Publications  
Adamsway  
Mansfield  
Notts NG18 4FN

Tel: 01623 467 467  
Fax: 01623 450 481  
Email: [publication.orders@edexcel.com](mailto:publication.orders@edexcel.com)

## Past Papers

At the time of writing, past exam papers for the previous issue of the specification are available for download from the Edexcel website at [www.ool.co.uk/0012hb](http://www.ool.co.uk/0012hb).

You can also use these as exam practice. You will find the past papers under the link 'Exam paper'. You may send up to two past papers to your tutor for marking but only after you have successfully completed all the other assignments in your course.

Please liaise with your tutor concerning news of the availability and use of past papers.

## Your Tutor

You have a lot of resources to help you in your studies; your course blue file, your textbook, internet resources and your tutor. You should make good use of your tutor to help you with any difficulties that you may have during the course especially at the start.

**And finally... very good luck with your studies!**

Phil West

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