



Biology Year 1 Reading List, 2024

Course Texts

While you are not required to purchase any books for this course, your lecturers may recommend reference texts to further revise or explore the topic of a given lecture. The majority of these recommended texts can be viewed online via the [Year 1 Recommended Reading List](#), curated by the University library.

If a recommended text is not on the reading list above, they can be accessed through the Oxford Library System, SOLO (<https://solo.bodleian.ox.ac.uk/>), or in some cases your College Library. If you are having difficulty getting access to a text, you can contact your College Librarian for assistance.

Maths, Statistics, and Chemistry resources

Below, we include some maths, statistics, and chemistry resources that may be useful for those who did not study Maths or Chemistry at A-level. This guidance includes the concepts from those fields that are relevant to the Biology Course, and how you can use the recommended resources to revise. The 4-week Orientation period is an ideal time for this revision.

In addition to the resources below, during the Orientation you will have the opportunity to do a Chemistry Self-Assessment, including an answer key. There is a dedicated time during the Orientation period where you will be able to discuss any questions you have about the content with a department biochemist.



Maths, Statistics, and Chemistry Resources

We include here some maths, stats, and chemistry resources that may be useful for those who have not studied these topics at A-level. The Biology course will require *familiarity* with the concepts mentioned below; if you can understand and explain the basic ideas, you will be able to follow what is discussed on the course. Thus, you do not need to work through pages of exercises, but of course a little practice on each topic will greatly assist learning.

Maths

Key concepts

Students should be familiar with the following basic mathematical concepts that are covered in A-level mathematics:

- Partial fractions
- Logs and exponentials
- Simple differentiations: linear functions, powers, sums

In addition, students will be expected to be able to perform simple algebraic manipulations including manipulating algebraic fractions, such as those required at GCSE. Students who have not taken Maths A-level would be wise to revise these manipulations.

Resources

The recommended text is **Bostock and Chandler Mathematics – The Core Course for A-level**. There are various editions, starting in 1978. In 1994, the same text was published under the title **Core Maths Advanced Level**, and continuing until 2013.

Many of the College Libraries contain a copy of this text, and [you can view it online with your Oxford login via the university library system here](#).

The version does not matter as the same content is covered; the relevant chapters of some of the most commonly found editions are as follows:

The 1981 edition:

- Revision of basic algebraic manipulations, including fractions: Chapter 1 ('Algebraic Relationships')
- Partial Fractions – Chapter 1 ('Algebraic Relationships')
- Logs and exponentials – Chapters 2 and 3 ('Algebraic Topics'; 'Functions')
- Simple differentiations – linear functions, powers, sums – Chapter 5 ('Differentiation 1')

1994 and 2013 editions include other content, so information is presented in a different order:



- Revision of basic algebraic manipulations, including fractions: Chapter 1 ('Algebra 1')
- Partial Fractions – Chapter 30 ('Algebra 2')
- Logs and exponentials – Chapters 2 and 17 ('Surds, Indices, and Logarithms'; 'Exponential and Logarithmic Functions')
- Simple differentiations – linear functions, powers, sums – Chapter 13 ('Differentiation 1')

Statistics

Key concepts

- Simple statistics -- mean, median, mode; standard deviation, variance, inter-quartile range
- Basic probability
- Adding and multiplying probabilities
- Binomial distribution
- Normal distribution (including standardising)

Resources

The recommended text is **Bostock and Chandler *Modular Mathematics – Statistics 1 Module C*, from 1995.**

Many of the College Libraries contain a copy of this text, and [you can view it online with your Oxford login via the university library system here.](#)

Chemistry

Key concepts

All students will need to know the following basic chemistry concepts that are covered in A-level chemistry:

- Atoms, atomic structure, electron orbitals
- Bonding (ionic, polar, covalent)
- Chemical formulae and molecular diagrams
- Redox chemistry
- Acids and bases
- The concept of moles and molarity

The Chemistry Self-Assessment included as an attachment to this email is the best way to check your preparedness for the chemistry concepts that will be touched upon in the course. We highly recommend you complete this, and bring any questions to the Chemistry drop-in session scheduled during Orientation.

Resources

Start by watching the video tutorials that can be found at:



1. <https://sciencemusicvideos.com/basic-chemistry-tutorials/>
2. <https://sciencemusicvideos.com/ap-biology/carbon-and-functional-groups/>

You can also use Seneca Learning's '[Foundations in Chemistry](#)' course for to revise the key concepts and to test your knowledge

This will provide all the chemistry knowledge you need to prepare yourself for the first year of the Biology degree course. But if you want to go into more detail, the following textbook is a good reference:

Ritchie & Gent, *A Level Chemistry for OCR Year 1 and AS*, 2015 Oxford University Press.

Many of the College Libraries contain a copy of this text, and [you can view it online with your Oxford login via the university library system here](#).



Books and other resources that will help you engage with the First-Year Biology Course

To keep you thinking about biology in all of its fascinating complexity, and feed your curiosity, we have put together a list of books recommended by the faculty (as well as a few videos and podcasts) that touch on the three topic streams that make up the first-year course. Please note that you are not required to read these texts, but reading one or two that look interesting or useful to you will help expand and deepen your biological knowledge. We emphasise that this list is not exhaustive, and that many great titles exist – so do feel free to read anything that you think looks interesting!

Many of these books are available through the Oxford Library System (search [SOLO](#)) or via the public [Oxfordshire County Library](#).

Recommended Books (See above- do not attempt to read them all!)

Oxford University Press produce a series called *Very Short Introductions*. Many of these are very good, but the level of detail varies. Of particular use for our course are:

- The Animal Kingdom (Peter Holland)
- Plants (Timothy Walker)
- Sexual Selection (Marlene Zuk & Leigh Simmons)
- Ecology (Jaboury Ghazoul)
- Molecular Biology (Aysha Divan & Janice Royds)
- The History of Life (Michael Benton)

Theme 1: Building a phenotype

- The Epigenetics Revolution and/or Junk DNA (Nessa Carey)
- The Gene: an intimate history (Siddharta Mukherjee)
- The Immortal life of Henrietta Lacks (Rebecca Skloot)
- The Emperor of all maladies (Siddharta Mukherjee)
- What is Life? (Paul Nurse)
- Transformer - the deep chemistry of life and death (Nick Lane)

Theme 2: The Diversity of Life

- I Contain Multitudes (Ed Yong)
- Endless Forms most Beautiful (Sean Carroll)
- How to Clone a Mammoth (Beth Shapiro)
- Bugs in the System (May Berenbaum)

Theme 3: Ecology & Evolution

- The Ancestor's Tale (Richard Dawkins)
- Why Evolution is True (J Coyne)
- Guns, Germs & Steel (Jared Diamond)
- Wilding (Isabella Tree)



Podcasts/Videos

- *Biology: The Whole Story* video series (book and videos by Prof Lindsay Turnbull)
<https://www.youtube.com/channel/UCcYya7tZF9U26YMKqerLxhg>
- *Biology: The Whole Story* podcasts <https://podcasts.ox.ac.uk/series/biology-whole-story>
- Back Garden Biology (Lindsay Turnbull): <https://podcasts.ox.ac.uk/series/back-garden-biology>
- Big Biology: <https://www.bigbiology.org/>
- The Ologies Podcast: <https://www.alieward.com/ologies-by-topic>