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| **Biology 2024/2025** |
| **Academic Education** |



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| **Start Date** | 9th September |
| **End Date** | 4th July 2025 (Year 1)  End of June (Year 2) |
| **Level of course** | Level 3 |
| **Awarding Body** | OCR A |
| **Specification** | [OCR A Level Biology A (H420) Specification](https://www.ocr.org.uk/Images/171736-specification-accredited-a-level-gce-biology-a-h420.pdf) |

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| YOUR SUBJECT TEACHERS |

The teachers here to support you

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| **Biology teaching staff** | **Which days are we**  **in college?** | **Email contact:** |
| Yasmin Briggs (coordinator) | Mondays, Tuesdays, Wednesday, Thursdays and Fridays | [Yasmin.Briggs@derby-college.ac.uk](mailto:Yasmin.Briggs@derby-college.ac.uk) |
| Alison Buckenham | Mondays, Tuesdays, Wednesday, Thursdays and Fridays | [Alison.Buckenham@derby-college.ac.uk](mailto:Alison.Buckenham@derby-college.ac.uk) |

Welcome from your Curriculum manager Patrick Ring who is also a Geology A Level teacher:

A picture containing outdoor, person, stone

Description automatically generated

I’m based in G19 by the student services and will be popping into classes from time to time. I’ll be driving your minibus on trips such as visiting universities and many other extracurricular activities. I’m sure you’ll have a great experience at the Joseph Wright Centre but if you have any problems then come see me and I’ll be able to signpost you to rapid assistance.

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| INTRODUCTION & AIMS OF THE COURSE |

**Aim of the course**

The aim of the Biology A-Level is to provide students with the knowledge of key biological concepts underpinned by their ability to show proficiency in laboratory techniques. We will encourage you to develop:

* An essential knowledge and understanding of different areas of the subject and how they relate to each other
* A deep appreciation of the skills, knowledge and understanding of scientific methods
* Your competence and confidence in a variety of practical, mathematical and problem-solving skills
* Your interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with the subject
* Your understanding of how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society

Biology combines well with many other subjects, particularly the other sciences and maths. It also combines well with social sciences such as psychology and with English language.

An A-Level qualification in Biology opens doors to many interesting careers when combined with other subjects. Some examples are:

* Medicine
* Dentistry
* Pharmacy
* Biochemistry
* Nursing
* Midwifery
* Zoology
* Pathology
* Physiotherapy
* Optometry
* Botany
* Environmental Science
* Molecular Biology
* Human Biology
* Academic/Research
* Biotechnology
* Physiology
* Genetics
* Occupational Therapy
* Opthology
* Audiometry
* Forensic Science
* Sports Science
* Marine Biology
* Scientific Journalism
* Veterinary Medicine and Vet Nursing
* Orthotics and Prosthetics

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| COURSE STRUCTURE |

**Assessment overview.**

Content is in six modules and examined at the end of the second year over three exams

Module 1: Development of practical skills in biology

Module 2: Foundations in biology

Module 3: Exchange and transport

Module 4: Biodiversity, evolution and disease

Module 5: Communication, homeostasis and energy

Module 6: Genetics, evolution and ecosystems

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| **Component** | **Marks** | **Duration** | **Weighting** | **Content** |
| Biological processes (01) | 100 | 2 hours 15 mins | 37% | Assesses content from modules 1, 2, 3 and 5 |
| Biological diversity (02) | 100 | 2 hours 15 mins | 37% | Assesses content from modules 1, 2, 4 and 6 |
| Unified biology (03) | 70 | 1 hour 30 mins | 26% | Assesses content from all modules (1 to 6) |

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| **Practical Endorsement**  **in Biology** | A minimum of 12 internally assessed ‘Practical Activity Groups’ (PAGs) must be completed with competence by the end of Year 2. | PAGs do not contribute to the overall grade, but a pass in the ‘practical endorsement’ component is required by most Science related University courses and apprenticeships. |

**All components will include synoptic assessment of experimental methods and mathematical skills**

**Grades: A\* to E (U is unclassified)**

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| KEY COURSE INFORMATION |

Headline

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| Length of Study | 5 hours weekly |
| Your classrooms | Most classes will be held in the third-floor laboratories |
| Key skills you will be developing during the course to be successful | A level Biology provides a solid grounding in analytical thinking, writing skills and clear communication – all of which are useful life skills.  You will undertake lab and field experiments which underpin the theoretical study; they also hone your teamwork and practical abilities. You will gain new mathematical skills particularly statistical analysis. |
| What will lessons look like? | Your lessons in Biology will be varied and incorporate a wide range of activities depending on the topic taught. These will include lecture style lessons, group work, practical work and a variety of learning activities. |
| Informal Assessment Methods | You will be assessed using a wide variety of methods including verbal questions, Kahoots, multiple choice topic tests and observations of your practical skills. |
| Essential Equipment/ Resources | You will need a ring binder to organise your notes (we are a very content heavy subject)  Lined paper  A scientific calculator – bring it to every lesson  Stationary – pens, pencils, ruler, highlighters  Textbook – available from the library |
| Health and Safety | You will be expected to wear appropriate safety equipment during practical lessons and read the chemical and safety briefing on each of your PAG sheets before conducting practical’s.  Inform your teacher if an accident occurs and ask for clarification if you are unsure of what to do. |

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| YEAR PLAN OF STUDY |

Headline

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| w/b | 2 lesson teacher | 1 lesson teacher | Assessment |
| 2/9 | Induction | Induction |  |
| 9/9 | Microscopes | Exchange surfaces |  |
| 16/9 | Microscopes | Lungs |  |
| 23/9 | Cell structure | Spirometer |  |
| 30/10 | Bio membranes | Practical work |  |
| 7/10 | Bio membranes | Tissues in the lungs |  |
| 14/10 | Bio membranes | Fish and insects |  |
| 21/10 | DNA | Need for transport systems, Single/double circulation |  |
| 28 October Half Term | | | |
| 4/11 | DNA | Heart structure/dissection | **FA1** |
| 11/11 | DNA/Biological molecules | Cardiac cycle |  |
| 18/11 | Bio molecules - carbs | Co-ordination of the cardiac cycle |  |
| 25/11 | Bio molecules - carbs | Blood vessels |  |
| 2/12 | Bio molecules - lipids | Exchange at the capillaries |  |
| 9/12 | Bio molecules - protein | ECG’s and exam q practice |  |
| 18/12 | Bio molecules - protein | Oxygen transport/haemoglobin |  |
| 20 December Christmas Break | | | |
| 6/1 | Bio molecules - protein | Carbon dioxide transport | **FA2** |
| 13/1 | Cell division | Enzymes |  |
| 20/1 | Cell division | Enzymes |  |
| 27/1 | Stem cells | Enzymes |  |
| 3/2 | Cellular organisation | Enzymes |  |
| 10/2 | Communicable disease – microbes | Enzymes |  |
| 17 February Half Terem | | | |
| 24/2 | Primary and secondary response | Plant transport – xylem, phloem and other tissues | **FA3** |
| 3/3 | Antibodies | Mechanisms: apoplast/symplast pathway |  |
| 10/3 | Vaccinations | Transpiration and adhesion/cohesion/transpiration stream |  |
| 17/3 | Medicines | Translocation |  |
| 24/3 | Biodiversity | Hydrophytes and xerophytes |  |
| 7 April Easter Break | | | |
| 24/4 | Biodiversity | Classification | **FA4** |
| 28/4 | Biodiversity | Variation |  |
| 5/5 | Biodiversity | Adaptation |  |
| 12/5 | Revision for progression exam | Natural selection and evolution |  |
| 19/5 |  |  |  |
| 27/5 |  |  |  |
| 2/6 | | | |
| 9/6 |  |  | **Progression Exams** |
| 16/6 |  |  |  |
| 23/6 | **AS-A2 transition** | AS-A2 transition | **Broomfield trip** |
| 1/7 | AS-A2 transition | AS-A2 transition |  |
| 2/9 | AS-A2 transition | AS-A2 transition |  |
| Admin week | | | |

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| ASSESSMENT AND FEEDBACK |

**Assessments**

You will have half termly assessments as shown on the year plan of study. Each assessment will include a variety of topics previously taught that year and include a mix of knowledge recall, multiple choice, practical and evaluation style questions.

The progression exam will be a formal paper of 90 minutes covering all topics from year 1.

**Referrals Procedures and Resubmissions Procedures**

You will have a clear plan of what to expect, what assessments will take place during the year and when you can expect these assessments to happen. You can expect your work to be marked and quality assured where appropriate and returned within 15 working days of submission.

Once you have submitted your work, it will be marked and potentially be quality assured by the Internal Quality Assurance team. This is particularly key where the learning outcomes have not been met and a resubmission opportunity has been given.

Where a referral has been given, by the teacher or assessor will provide you with an opportunity to resubmit. However, you must read the feedback carefully to ensure you are clear of what you need to do and where a graded qualification and assessment is in place what you can attempt. This will be time bound and you will be given a re-submission date by your trainer/assessor/lecturer, and you must meet this deadline.

**Academic Malpractice**

DCG is keen to support students and avoid any cases of Academic malpractice. Awarding Organisations take matters of academic malpractice very seriously and require all schools and colleges to have specific policies and procedures in place to both educate staff and students about malpractice, thus deterring them from committing it, whether intentional or not, and report and investigate any suspected malpractice where it may occur.

While we don’t want to see anyone jeopardise their grades or marks, we must ensure the validity of all qualifications and we must investigate any suspected breaches fully. It is your responsibility to ensure you understand the rules and boundaries:

* You must not copy from someone else or give opportunities to another student to copy from you.
* Any wording taken from a published source must be correctly referenced for example:

(Morrison, 2000, p29).

* Where computer-generated content has been used (AI tools such as ChatGPT) you must reference these correctly for example: ChatGPT 3.0 (<https://openai.com/blog/chatgpt/>), 25/01/2024.
* You may also be required to include a bibliography to support referencing.
* You must also avoid working collaboratively with other students beyond what is permitted as this may be deemed to be collusion.

**Academic Malpractice continued:**

Other examples include:

* Falsification or fabrication of results,
* Deliberate destruction of other student’s work
* Any other act that will give you an unfair advantage. This also relates to not following clear guidance in examinations or assessments where examination conditions exist.

You will be required to complete an Authentication Form on submission of any and all assignments/NEA projects. This will confirm that the work is your own, and that it is referenced appropriately, including the use of AI. Where academic malpractice is suspected, this will be reported to your Team Manager who will conduct an investigation and, where relevant, the Awarding Organisation may also be informed and investigate further. Where malpractice is discovered to have occurred, sanctions may be imposed which could include:

* Zero marks for the work or exam.
* Disqualification from the qualification.
* Disqualification from taking any qualification with that Awarding Organisation often over a set period of time.
* Warnings which can last several years.

For further details and to fully familiarise yourself with JCQ guidance please see the Joint Councils for Qualifications (JCQ) website:

[Information for candidates documents - JCQ Joint Council for Qualifications](https://www.jcq.org.uk/exams-office/information-for-candidates-documents)

Further information can be found on the DCG website:

[**Examination Information - DCG (derby-college.ac.uk)**](https://www.derby-college.ac.uk/student-support/examination-information/)

**Appeals Procedures**

Each Awarding Organisation will have slightly different processes for appealing decisions. Appeals can be made where:

* You believe that the awarding body policies and procedures have not been followed correctly in respect of external quality assurance/standards verification (policies and procedures can be found on the relevant awarding body website).
* You believe that the awarding body policies and procedures have not been followed correctly in respect of qualification decisions (policies and procedures can be found on the relevant awarding body website).
* You disagree with the outcome of your internal appeals procedure (for example, a decision in relation to reasonable adjustments or assessment outcomes).

However, should you, as a student wish to appeal, firstly:

* Contact your teacher and discuss your concerns.

If you are still not satisfied with the outcome, the College would usually make an appeals application on your behalf. This would require your consent. It is possible to apply directly to the Awarding Organisation but only once the College’s internal processes have been followed. At this point you would be informed of the next stages and Awarding Organisation communication link. This is time bound and this will also be communicated to you once the internal appeals process has taken place.

Note: you must be aware that through this process the initial grade can go up, stay the same, or go down.

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| ENRICHMENT AND VISITS |



Each year we will have a day at Broomfield Hall to conduct the Biodiversity PAG field work. You will learn about ecology and then finish off with a visit to the animal care centre to visit the many animals including meerkats and wallabies! 

Each year students will have the opportunity to compete in the biology Olympiads. Students will be presented with topics and ideas which they are not familiar with, so will compete with their problem-solving skills and understanding of core principles.

In addition to encouraging and rewarding pupils in their studies, the BBO is the first stage in selecting a team to represent the UK at the International Biology Olympiad (IBO).

Students will receive a log in to an UpLearn account for Biology to support them in their revision.

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| SUCCESSFUL LEARNER HABITS |

To do well you will need to practice, practice, practice.

At the end of each lesson, read the relevant pages in the textbook and add to your class notes – this does not mean copy it! Read and condense the information. Create a set of flash cards/memory aid of your choice.

At the end of each chapter in the textbook is a double page spread of exam questions – do these and MARK them.

We recommend you use the following websites to access notes to supplement your learning and to practice exam questions as part of your independent learning.

[A Level Past Papers & Questions by Topic | Save My Exams](https://www.savemyexams.co.uk/a-level/#ocr)

[Biology Revision - PMT (physicsandmathstutor.com)](https://www.physicsandmathstutor.com/biology-revision/)

[A Level Biology Revision Notes | AQA, OCR & Edexcel Revision](https://alevelbiology.co.uk/notes/)

Useful YouTube channels:

* Snaprevise
* Miss Estruch
* Biorach
* Amoeba sisters

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| **Content Activities**  Make sure your class notes are complete and logically organised  Read through your class notes  Use resources on Moodle  Read your course text book  Create mind maps or diagrams  Re-make or re-order your class notes  Highlight or colour code important content in your class notes  Create Flashcards  Create a revision wall to display your learning |  |
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| **Skills Activities**  Write exam answers under timed conditions  Read model answers  Plan answers to past exam questions |  |
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| **Feedback Activities**  Use a mark scheme to mark your own answers  Study mark schemes or examiners reports  Work with another student(s) to test your knowledge  Compare your own work with a model answer & identify how you can improve your answer  Write your own exam style questions  Hand in extra work to your teacher for marking and feedback  Discuss your progress with your teacher |  |
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| YOUR NEXT STEPS OPPORTUNITIES |

Complete (with team and in liaison with the Careers Team). Add your progression diagrams here.

Your next steps opportunities when you successfully achieve your chosen study program / course.

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| SUBJECT RESOURCES FOR STUDENTS |

Please complete this part with the library team.

**Get the help you need!** Come into the Library or use the resources online and ask any one of the friendly team members for help.  All the Libraries for Learning Team are skilled researchers willing to help you find the information you need and guide you to resources you might not have considered to help you finish those assignments.  On the rare occasions that the library does not have exactly what you want, they will do their best to borrow it through another library.  They can also give you advice on study skills and digital skills via the Skills Hubs too (see Study Skills and Digital Skills on the [Libraries for Learning Pod Page](https://pod.derby-college.ac.uk/course/view.php?id=36)).

Specific resources and recommended reading lists to support your learning can be found below:

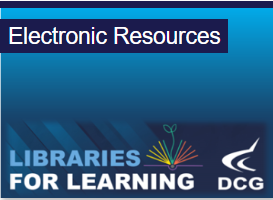
Subject-reading List (with hyperlinks if e-resource)], please look here, [Reading Lists (derby-college.ac.uk)](https://pod.derby-college.ac.uk/mod/glossary/view.php?id=958) to select the reading list for your course, or contact [learningresources@derby-college.ac.uk](mailto:learningresources@derby-college.ac.uk) to send you the link.

Search for more resources using the library catalogue: [Library Catalogue](https://broomx.cirqahosting.com/cirqa-web-app/)



Please delete any resources on the bullet point list below if they are not appropriate for the course.

Take full advantage of more resources available under the Electronic Resources tile resources,



these include:

* [Philip Allan Reviews](https://nam04.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.hoddereducationmagazines.com%2F&data=05%7C01%7Cfrances.booth%40derby-college.ac.uk%7C8d4eb70f07c14c7ca37b08db8134364f%7C7584d7479421477d8345bedc5d73bc46%7C0%7C0%7C638245833467240334%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=cD3LSFxSgBclifsFrK4bpF0KbZAkh%2FVp%2FZvKZGdPhCs%3D&reserved=0) - an archive of A-level magazine reviews, which include, biological sciences, [business](https://pod.derby-college.ac.uk/mod/book/view.php?id=451), [chemistry](https://pod.derby-college.ac.uk/mod/book/view.php?id=452), [economics](https://pod.derby-college.ac.uk/mod/book/view.php?id=458), [geography](https://pod.derby-college.ac.uk/mod/book/view.php?id=470), international baccalaureate, modern [history](https://pod.derby-college.ac.uk/mod/book/view.php?id=475), PE, [physics](https://pod.derby-college.ac.uk/mod/book/view.php?id=489), politics, [psychology](https://pod.derby-college.ac.uk/mod/book/view.php?id=491), religious studies, and [sociology](https://pod.derby-college.ac.uk/mod/book/view.php?id=493).
* [Primal Pictures](https://www.anatomy.tv/) **-** Primal Pictures is a highly accurate and detailed 3D atlas of the human anatomy. It enables you to virtually explore parts of the body such as the nervous system, the skeleton and the cardiovascular system.
* [Gale](https://infotrac.gale.com/itweb/dtc_jisc) – an extensive collection of newspaper and journal articles. The collection includes full-text articles from a selection of UK and international newspapers.
* [Britannica Academic](https://academic.eb.com/) - Britannica Academic provides thousands of academic, credible and citable resources to use in essays.

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| GLOSSARY OF TERMS |

The following list is a brief glossary of terms you will learn or be exposed to during your learning.

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| **Term** | **Definition** |
| **Accuracy** | A measurement result is considered accurate if it is judged to be close to the true value. |
| **Calibration** | Marking a scale on a measuring instrument. This involves establishing the relationship between indications of a measuring instrument and standard or reference quantity values, which must be applied. For example, placing a thermometer in melting ice to see whether it reads 0 °C, in order to check if it has been calibrated correctly. |
| **Data** | Information, either qualitative or quantitative, that has been collected. |
| **Errors** | See also uncertainties. |
| **Measurement error** | The difference between a measured value and the true value. |
| **Anomalies** | These are values in a set of results which are judged not to be part of the variation caused by random uncertainty. |
| **Random error** | These cause readings to be spread about the true value, due to results varying in an unpredictable way from one measurement to the next. Random errors are present when any measurement is made, and cannot be corrected. The effect of random errors can be reduced by making more measurements and calculating a new mean. |
| **Systematic error** | These cause readings to differ from the true value by a consistent amount each time a measurement is made. Sources of systematic error can include the environment, methods of observation or instruments used. Systematic errors cannot be dealt with by simple repeats. If a systematic error is suspected, the data collection should be repeated using a different technique or a different set of equipment, and the results compared. |
| **Zero error** | Any indication that a measuring system gives a false reading when the true value of a measured quantity is zero, eg the needle on an ammeter failing to return to zero when no current flows. A zero error may result in a systematic uncertainty. |
| **Evidence** | Data which has been shown to be valid. |
| **Hypothesis** | A proposal intended to explain certain facts or observations. |
| **Interval** | The quantity between readings, eg a set of 11 readings equally spaced over a distance of 1 metre would give an interval of 10 centimetres. |
| **Precision** | Precise measurements are ones in which there is very little spread about the mean value. Precision depends only on the extent of random errors – it gives no indication of how close results are to the true value. |
| **Prediction** | A prediction is a statement suggesting what will happen in the future, based on observation, experience or a hypothesis. |
| **Range** | The maximum and minimum values of the independent or dependent variables; important in ensuring that any pattern is detected. For example a range of distances may be quoted as either: 'From 10 cm to 50 cm'or 'From 50 cm to 10 cm' |
| **Repeatable** | A measurement is repeatable if the original experimenter repeats the investigation using same method and equipment and obtains the same results. |
| **Reproducible** | A measurement is reproducible if the investigation is repeated by another person, or by using different equipment or techniques, and the same results are obtained. |
| **Resolution** | This is the smallest change in the quantity being measured (input) of a measuring instrument that gives a perceptible change in the reading. |
| **True value** | This is the value that would be obtained in an ideal measurement. |
| **Uncertainty** | The interval within which the true value can be expected to lie, with a given level of confidence or probability, eg “the temperature is 20 °C ± 2 °C, at a level of confidence of 95%. |
| **Validity** | Suitability of the investigative procedure to answer the question being asked. For example, an investigation to find out if the rate of a chemical reaction depended upon the concentration of one of the reactants would not be a valid procedure if the temperature of the reactants was not controlled. |
| **Valid conclusion** | A conclusion supported by valid data, obtained from an appropriate experimental design and based on sound reasoning. |
| **Variables** | These are physical, chemical or biological quantities or characteristics. |
| **categorical variables** | Categoric variables have values that are labels. Eg names of plants or types of material. |
| **Continuous variables** | Continuous variables can have values (called a quantity) that can be given a magnitude either by counting (as in the case of the number of shrimp) or by measurement (eg light intensity, flow rate etc). |
| **Control variables** | A control variable is one which may, in addition to the independent variable, affect the outcome of the investigation and therefore has to be kept constant or at least monitored. |
| **Dependent variables** | The dependent variable is the variable of which the value is measured for each and every change in the independent variable. |
| **Independent variables** | The independent variable is the variable for which values are changed or selected by the investigator |

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| NOTES |