IGCSE SCIENCE (EDEXCEL)

• DOUBLE AWARD : SCIENCE (4SC0)
• TRIPLE AWARD : BIOLOGY (4BI0) ; CHEMISTRY (4CH0) ; PHYSICS (4PH0)

A study of Biology, Chemistry and Physics leading to the award of 2 or 3 IGCSEs

Introduction

Beginning in Y9, students at Tanglin will study the International GCSE Science syllabuses. The Double Award course takes approximately two-thirds of the subject content of each of the Edexcel IGCSE single sciences (Biology, Chemistry and Physics), and combines them into an IGCSE in Science (Double Award) qualification worth two IGCSEs.

More able students will study the additional material required to give them access to the three full IGCSEs in Biology, Chemistry and Physics (‘Triple Award’). All students will be taught by subject specialists for each of the disciplines, and they will experience science as a study of three distinct, but interdependent, disciplines.

The grading, awarding and certification of these qualifications follows the code of practice published by the UK Qualifications and Curriculum Authority, and the IGCSE is regarded as equivalent to the GCSE by UK universities.

Achievement of A*-B in either Double Award, or the relevant individual IGCSE, offers excellent preparation for further study at IB or A-level.

Aims

• to develop students’ knowledge and understanding of scientific concepts
• to develop scientific literacy
• to develop students’ questioning, analytical and evaluative skills in approaching scientific problems and issues
• to develop students’ practical skills in science and an understanding of how science works
• to engender enthusiasm about science leading to continued study

Content

Both Double Award and Triple Award candidates study the sciences under the following broad topic headings. Triple Award candidates will study additional material within each of these topics.

<table>
<thead>
<tr>
<th>Biology</th>
<th>Chemistry</th>
<th>Physics</th>
</tr>
</thead>
<tbody>
<tr>
<td>The nature and variety of living organisms</td>
<td>Principles of chemistry</td>
<td>Forces and motion</td>
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<tr>
<td>Structures and functions in living organisms</td>
<td>Chemistry of the elements</td>
<td>Electricity</td>
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<tr>
<td>Reproduction and inheritance</td>
<td>Organic chemistry</td>
<td>Waves</td>
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<tr>
<td>Ecology and the environment</td>
<td>Physical chemistry</td>
<td>Energy resources and energy transfer</td>
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<tr>
<td>Use of biological resources</td>
<td>Chemistry in society.</td>
<td>Solids, liquids and gases</td>
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<td></td>
<td></td>
<td>Magnetism and electromagnetism</td>
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<td></td>
<td></td>
<td>Radioactivity and particles</td>
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Scheme of Assessment

Double Award candidates are awarded two IGCSEs. The scores on each of the three examination papers (Biology, Chemistry, Physics - see below) are aggregated, and they are graded on a 15-grade scale: A*A*, A*A, AA, AB, ..., FG, GG, of which Grade A*A* is the highest and Grade GG is the lowest. The examination papers are designed to address the full range of attainment: there are no tiered papers.

Triple Award candidates are awarded separate IGCSEs in Biology, Chemistry and Physics. Each can range from A* - G. The grades for each subject are independent and students will not necessarily achieve the same grade in each subject.

Assessment Components

External Assessment

All students will sit paper 1 in each of Biology, Chemistry and Physics. For Double Award candidates each paper will represent one third of their Double Award qualification (i.e. two thirds of an IGCSE).

Triple Award candidates will sit a second paper in each subject which examines the additional material.

The relationship of assessment to the qualifications available is summarised below:

<table>
<thead>
<tr>
<th>Core Content</th>
<th>Extension</th>
<th>IGCSE</th>
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</thead>
<tbody>
<tr>
<td>Biology Paper 1 2 hours</td>
<td>+</td>
<td>Biology Paper 2 1 hour</td>
</tr>
<tr>
<td>Chemistry Paper 1 2 hours</td>
<td>+</td>
<td>Chemistry Paper 2 1 hour</td>
</tr>
<tr>
<td>Physics Paper 1 2 hours</td>
<td>+</td>
<td>Physics Paper 2 1 hour</td>
</tr>
</tbody>
</table>

IGCSE Science (Double Award)

Internal Assessment

There is no formal internal assessment (coursework) demanded by these qualifications. However, the examination papers will address the practical element of science, and the application of science to society. In addition, both the A-level and IB science courses place stringent practical demands on students. The Science Faculty has therefore developed an in-house programme which will develop students’ skills in three areas:

- Application of Scientific Knowledge
- Scientific Inquiry (Investigative Skills)
- Scientific Literacy

Each term, throughout the two years, students will carry out a number of assignments designed to develop these skills. These will include topic tests, research projects and laboratory investigations. Students’ attainment in each area will be reported to parents on the progress report and the full written report.

Suitability

Science is a compulsory GCSE subject. All students will study for at least two IGCSEs in science (Double Award Science). The most able science students will work towards the three full GCSEs in Biology, Chemistry and Physics. Either of these two pathways will allow students to study the sciences at IB or A-level, while offering a stimulating and relevant grounding in science for those not wishing to pursue the subject.
Frequently Asked Questions:

**In the Double Award IGCSE, what do the grades actually mean?**

The two grades AA, AB, BC etc are not intended to represent the individual science disciplines – they represent a general level of achievement across the sciences. Only these two grades appear on the certificate. However, the examination board will inform us of the scores in individual papers, which will aid us in advising students about their post-16 choices.

**The IGCSE courses are rigorous courses - will this lead to high stress levels amongst the students?**

We hope not! By spreading the course over three years we think we can strike a balance between content coverage and pace. Triple Award candidates will have enough time to cover the extra material, without relying on super-fast ‘spoon-feeding’ whilst Double Award candidates will have ample time to consolidate the material and have time for revision at the end of the course.

We are, however, committed to delivering an appropriate level of challenge to the students, as we feel that this will better prepare students for post-16 study in the Sciences, and ease the transition into these courses.

**Will IGCSE lead to lower grades?**

Again, we hope not! We think that, with three years available, we can ensure that weaker students are supported to achieve good pass grades in Double Award, whilst the very brightest have room to really shine, with potential to achieve 3 A* grades in the curriculum time allocation of 2 GCSEs.

**Do any other subjects do IGCSE?**

Yes. English and ICT are studying for IGCSE currently. Maths have two classes in a pilot scheme, for examination in 2012.

**How will selection for Double / Triple take place?**

We want as many students as possible to do the Triple Award examination. However, we must acknowledge that teaching time is limited, and some students will be better advised to aim for higher grades on less material. At present, about half of the current Y11 cohort are thought likely to do the Triple Award exams – it is not intended to be a highly elitist option.

At the end of Y8 your child will be placed in a top, middle or support set. Top set students are likely to do the Triple Award, and middle and support sets will most likely do Double Award at the end of Y11. That said, members of the current Y11 were moved into top sets, on the basis of excellent effort and attainment in their Science sets, at Christmas, Easter and at the end of Y10. Student progress is carefully monitored, and placement at the end of Y8 is not final.

Some students in the current Y11 opted to move down to a Double Award group to lessen the pressure and workload as they work towards their full set of GCSEs.

**Are there any revision guides available?**

Yes. A set of guides specific to our Edexcel IGCSE Syllabus has recently been published, so if you are considering purchasing any revision books, these are the ones we would recommend. I have included the titles and ISBN numbers below to enable you to obtain the correct titles. These books are available from Amazon, or from Book Depository ([www.bookdepository.co.uk](http://www.bookdepository.co.uk)), which has the advantage of offering free postage worldwide. They cost GBP 6.99 each.


These books should be used with care as we have obviously selected only the most accessible material from the syllabus to start the IGCSEs in Y9. Your child’s Science teacher will offer advice about the relevant chapters in the books for each topic studied. These books will be suitable right through the course to the end of Y11, for both double award and triple award candidates.

Chris Coates
Head of Science
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