NQ NATIONAL QUALIFICATIONS Review

SCOTTISH QUALIFICATIONS AUTHORITY

National Qualifications Review Report

Biology

Subject Review: Biology

1 Subject summary

Summary of Courses

Intermediate 1 Biology
Intermediate 2 Biology
Higher Biology
Higher Human Biology
Advanced Higher Biology

1.2 Recommendations

Recommendations which can be implemented this session (2001-2002)

1. 20 hour Units in AH
The 20-hour Biology Investigation Unit and optional Units should be retained (see section 2.1).

Recommendations which can be implemented for next session (starting August 2002)

2. Outcome 3 — all Units at Intermediate 1–Advanced Higher (excluding Advanced Higher *Investigation* Unit)
Reduce the volume of internal assessment evidence required for Outcome 3 in Biology Courses at Intermediate 1 to Advanced Higher. This will be achieved by requiring candidates to produce evidence once for Outcome 3 in each Course, and using it for Outcome 3 in all three Units of the Course. This will replace the existing requirement to produce three distinct pieces of evidence. This will require some minor changes to the Units, as currently the Outcomes and evidence requirements make reference to the context of the Unit (see section 2.3).

3. One mark for coherence in extended response question at Intermediate 2
This mark should not be used. It should be reallocated to the other aspects of the extended response question (see section 2.4).

4. Assessment load in Advanced Higher — 2·5 hour Examination, Investigation Report of up to 2000 words, and 20 minute Visiting Examiner Interview
The Examination and Investigation Report should be retained, but the 20-minute interview with a Visiting Examiner should be dropped. Assessment guidelines for the Investigation Report should be revised to reflect this. (See section 2.4. Sections 2.5 and 2.6 also refer to this issue.)

Mid-long term recommendations

There are no mid-long term issues to be addressed.

2 Course report

2.1 Summary of Courses

Component Units

Acc 3 Biology

- Health and Technology (40 hours)
- Biotechnological Industries (40 hours)
- Growing Plants (40 hours)

Int 1 Biology

- Health and Technology (40 hours)
- Biotechnological Industries (40 hours)
- Growing Plants (40 hours)

Int 2 Biology

- Living Cells (40 hours)
- Environmental Biology and Genetics (40 hours)
- Animal Physiology (40 hours)

Higher Biology

- Cell Biology (40 hours)
- Genetics and Adaptation (40 hours)
- Control and Regulation (40 hours)

Higher Human Biology

- Cell Function and Inheritance (40 hours)
- The Continuation of Life (40 hours)
- Behaviour, Populations and the Environment (40 hours)

Advanced Higher Biology

Mandatory Units:

- Biology Investigation (20 hours)
- Environmental Biology (40 hours)
- Cell and Molecular Biology (40 hours)

Optional Units choose one from:

- Biotechnology (20 hours)
- Animal Behaviour (20 hours)
- Physiology, Health and Exercise (20 hours)

Uptake in 2001 (figures for 2000 are in brackets)

Int 1 Biology	308 (38)
Int 2 Biology	3580 (2542)
Higher Biology	9376 (9237)
Higher Human Biology	3030 (2631)
Advanced Higher Biology	401 (CSYS 998) — (This is an increase in the usual total of around 1200)

Do the Courses meet the design criteria (1 - 7)?

Yes, at Access 3–H.

No at AH — it uses 2x20-hour Units. AH Biology also has three optional Units — this is within the design parameters, and can be justified.

Issues and recommendations

1. Issue: use of 20 hour Units in AH

The AH Biology Course was the result of major updating of the CSYS Biology Course to ensure progression from both Higher Biology and Higher Human Biology, to harmonise AH arrangements across the sciences and to achieve broad comparability with first year university courses.

The original consultation document for AH proposed 3 x 40-hour mandatory Units and the removal of the investigation. This proposal did not receive wide support from centres or end-users. The inclusion of a much-reduced 20 hour investigation in AH Biology, Chemistry, and Physics was a compromise developed in response to the consultation findings in the sciences as a whole.

In Biology it was felt appropriate to have two mandatory Units to reduce variability and give greater consistency so that end-users of the qualification were clearer about what the qualification meant compared to CSYS (in which candidates studied 2 topics from a choice of 7). However, since the study of Biology involves so many different aspects, particularly at this level, it was felt appropriate to maintain a degree of optionality in the Course. The 3 optional Units were chosen for their practical, social and economic relevance.

There have been no adverse comments on the impact of the 20-hour Units. The NAB tests for Outcome 1 and 2 have been reduced proportionately. Assessment of Outcome 3 matches that in the 40-hour Units.

Recommendation: use of 20 hour Units in AH

The 20-hour Biology *Investigation* Unit and optional Units should be retained.

2.2 Assessment rationale

Assessment rationale

Internal assessment

Unit assessments assess all Outcomes and PCs at the minimum standard required for a pass, but do not address any of the additional requirements of the Course. The Units are designed for sequential delivery, with Unit assessment taking place immediately after completion of learning and teaching. Unit assessment therefore recognises achievement in a straightforward, familiar context. Unit assessments have been designed to be accessible.

Unit assessment includes assessment of practical work, which is essential in providing a context for the development of important scientific problem-solving and practical skills. It also underpins the development of knowledge and understanding. It is vital that candidates actively participate in experimental work and have opportunities to manipulate experimental data generated first-hand.

The emphasis is on the development and assessment of analytical and evaluative skills, with particular focus on report writing. This is intended to match what goes on in the scientific workplace, and should also contribute to raised attainment in the external examination.

External assessment

The external Course examination samples across all of the Unit Outcomes, and achievement is graded on the basis of cut-off scores.

External assessment goes beyond internal assessment in focusing on integration and application of knowledge and understanding, and problem-solving and practical abilities, in the content/contexts of the component Units. The Units are sampled equally in the Course examination, which includes familiar contexts as well as contexts that are less familiar and more complex than in the Unit assessments. While there are no compulsory practicals for external assessment, questions are set in the examination on practical work in contexts less familiar to candidates.

Relationship between internal and external assessment

The examination is designed to produce evidence against the Grade Descriptions. While similar questions to those that appear in the NABs may be used in the exam, in the exam they are testing the candidate's long-term recall and understanding (grade C). Achievement at grade C goes beyond the sum of achievement in each of the component Units because the question papers are designed to test the candidate's ability to integrate knowledge and understanding, problem solving and practical skills across component Units. Candidates' responses to NABs alone cannot provide valid evidence of attainment against the Course Grade Descriptions.

Estimates and appeals

Valid evidence for an estimate could be generated through the use of a summative assessment instrument, such as a prelim type examination, based on work for at least **two** component Units, which emulates as far as possible, the standard, security and format of the external examination.

Evidence collected for an Assessment Appeal should cover the content of **all** component Units. The evidence gathered for the Estimate should be combined with other evidence gathered towards the end of the Course for the remaining component Unit.

A high scoring performance in a NAB, covering the content not assessed in the prelim, would lend weight to the Appeal for a grade C award. For Appeals for grade A, additional Course questions covering content not assessed in the prelim, and providing evidence of attainment against the Grade Description for grade A, should be included in the submission. Evidence produced from NABs alone (because of the lack of headroom for grade A) will not be sufficiently compelling for appeals at this grade.

Appendix 1 summarises the total assessment load for each Course.

Does the assessment approach meet the assessment criterion (8)?

Yes

Issues and recommendations

None

2.3 Internal assessment of Units

Description of the overall approach to internal assessment

A common approach was taken to internal assessment in the sciences, building on the experiences of Standard Grade. All Units of Int 2 & H Biology and H Human Biology, and the mandatory Units of AH Biology (Cell & Molecular Biology/ Environmental Biology) have three Outcomes:

- Outcome 1 – knowledge and understanding
- Outcome 2 – problem-solving
- Outcome 3 – practical abilities

Outcomes 1 and 2 are assessed by a single holistic test worth 40 marks, which lasts 55 minutes (commonly referred to as a NAB test). A test specification for each Unit ensures that the test has the

potential to generate evidence against each of the Performance Criteria (PC). A pass mark of 26 is applied for achievement of both Outcomes.

Outcome 3 is assessed by a report on a piece of experimental work (one report per Unit). This is not a separate assessment event — the evidence for assessment is generated during the on-going learning and teaching time. Typically an experiment would take about one hour of class time to generate the data, and a further hour would be required to write up the report. The experimental activity is likely to be performed by a small group of candidates together.

After collection of the data, each candidate must complete a report individually. There is a widely accepted structure to a scientific report, which comprises of a number of different aspects, all of which must be present — these are defined by the Performance Criteria for Outcome 3. Supportive criticism of the reports is encouraged as part of this process and to produce evidence for assessment. Re-drafting of the report after this criticism is also to be encouraged as part of the learning and teaching process. Re-drafting should focus on the Performance Criteria concerned. The Outcome is achieved when there is evidence for each PC in the report.

AH Biology *Investigation* Unit

This Unit has two Outcomes, which are assessed through a lab record (log/diary) which gives brief summaries of the planning stage and records the collection and analysis of data.

A formal report of this activity contributes to the external assessment of the Course (see next section).

Optional (20 hour) Units in AH Biology

These are assessed in a similar way to the mandatory Units. The holistic tests for Outcomes 1 and 2 have been reduced proportionately to a test worth 20 marks, with a pass mark of 13. The test is likely to take around 30 minutes to complete.

Outcome 3 is assessed by a report, as in the mandatory Units. A scientific report has a well-defined structure; this could not be reduced for a 20-hour Unit (as in other Units, the practical work is likely to take 1 hour, and the write-up 1 hour). Since the optional Units are very practically based — the practicals are used as a vehicle to deliver the content — the time and assessment burden is not an issue in these Units.

There have been no adverse comments about these 20-hour Units.

All Units in Int 1 Biology

Each of the three Units has three Outcomes:

- Outcome 1 – Knowledge and Understanding
- Outcome 2 – Techniques
- Outcome 3 – Investigation

The approach taken in Int 1 Biology is different to Biology Courses at other levels and to Chemistry and Physics. Int 1 Biology is designed for progression from Standard Grade Science, and the Units chosen are from areas of potential employment prospects, social interest, and economic importance, and where lateral progression into other Courses of study may be possible, eg Care, Biotechnology, MER.

The content of the Units is common to Int 1 and Acc 3 to allow bi-level delivery. Differentiation is on the basis of the investigation, which is required for Int 1 but not Acc 3.

Outcome 1 is assessed by a 15-mark test lasting 30 minutes, with a pass mark of 10.

Outcome 2 is assessed by practical activity as part of the on-going learning and teaching — the evidence consists of an observation checklist completed by the teacher, and a record sheet of measurements and scientific observations completed by the candidate. There are varying numbers of techniques to be

assessed in each Unit — where it might seem that a greater number of techniques has to be assessed (eg in the *Growing Plants* Unit) these techniques form part of a continuous process (ie sowing seeds, watering, and so on). The techniques are carried out by the candidates individually.

Outcome 3 involves the submission of one completed report of an investigation in which the candidate has been involved. Assessment of this Outcome is not a special assessment event but is part of the on-going learning and teaching process. The investigation must be carried out by the candidates individually. For Outcome 3 it is appropriate for the teacher/lecturer to support the candidates in producing a report to meet the Performance Criteria. Re-drafting the necessary parts of the reports after supportive criticism is to be encouraged as part of learning and teaching and to produce evidence for assessment.

All Units in Acc 3 Biology

Each of the three Units has two Outcomes:

- Outcome 1 – Knowledge & understanding
- Outcome 2 – Techniques

Outcome 1 is assessed by a 15-mark test, lasting 30 minutes, with a pass mark of 9.

Outcome 2 is the same as Outcome 2 in the Intermediate 1 Course (details above), to facilitate bi-level teaching and give some flexibility to allow candidates to find their own level.

Note on comparability with other Courses in the same broad subject area

The approach taken at Int 2 to AH in Biology is broadly similar to that taken in the other sciences. There are minor differences in Outcome 3 — Biology (Int 1), Physics (Int 1) and Chemistry (Int 1–H) all use structured reports and have structured questions to help candidates frame their report. Biology (Int 2–AH), Physics (Int 2–AH) and Chemistry (AH) require candidates to write a report without this support.

Int 1 and Acc 3 Biology take a more practical approach than other science Courses — this has not added to assessment load, since the activities are integral to learning and teaching and should not be set up as separate assessment events.

Does the internal assessment of the Units meet the assessment criterion (9)?

No, approximate assessment loads are as follows (totals per Unit):

Acc 3, all Units	30 minutes plus approximately 1 hour of practical and investigative work (which would be assessed as a normal part of teaching and learning)
Int 1, all Units	30 minutes plus approximately 2 hours of practical and investigative work (which would be assessed as a normal part of teaching and learning)
Int 2, Higher, all Units	2 hrs 55 minutes, including 1 hour of experimental work
AH, mandatory Units	2 hrs 55 minutes, including 1 hour of experimental work
AH – 20 hour optional Unit	2 hrs 30 minutes (the 1 hour of experimental work included in this total is a normal part of teaching and learning)
AH – 20 hour investigation Unit	lab notebook completed as part of ongoing activity (report and interview completed for external assessment)

There are different approaches at different levels to suit the differing needs of candidates.

Issues and recommendations

Issue: Outcome 3, Int 2 – AH

There has been some concern about the time taken up by the assessment of Outcome 3. In September 2000, centres were informed that the completion of the report and subsequent re-drafting of the report could be completed outwith class time, provided the teacher/lecturer took measures to ensure the authenticity of the work produced. This clarification has led to significant improvements in this area, although a few comments indicate that this has not been popular with all teachers

Members of the examining teams and Assessment Panel tend to feel that difficulties with Outcome 3 stem from the fact that many teachers/ lecturers have been too demanding in terms of the amount of detail required, and in re-drafting requirements — much of the workload stems from re-assessment rather than assessment. Some centres have thought, incorrectly, that a report that did not initially meet all of the PCs had to be completely re-written — in fact, only those parts which do not meet the PCs need to be re-drafted or modified. Other centres have required candidates to correct every minor imperfection before they have judged the report to be satisfactory. This could be addressed by staff development and exemplification of standards.

Comments submitted to the review suggest that there is a clear feeling among significant numbers of subject specialists that Outcome 3 places undue burdens on assessors and candidates, although there is no consensus on how this issue should be addressed (a collation of comments is available on SQA's website).

Outcome 3 — all Units at Intermediate 1–Advanced Higher (excluding Advanced Higher *Investigation* Unit)

Reduce the volume of internal assessment evidence required for assessment of Outcome 3 in Biology Courses at Intermediate 1 to Advanced Higher. This will be achieved by requiring candidates to produce evidence once for Outcome 3 in each Course, and using it for Outcome 3 in all three Units of the Course. This will replace the existing requirement to produce three distinct pieces of evidence for Outcome 3 for the Course. This change will require some minor changes to the Units, as currently the Outcomes and evidence requirements make reference to the context of the Unit.

2.4 External assessment of the Courses

Description of the overall approach to external assessment

Each Biology Course is assessed by a single question paper with the following duration:

Intermediate 1	1 ½ hr paper worth	75 marks
Intermediate 2	2 hr paper worth	100 marks
Higher Biology & Human Biology	2 ½ hr paper worth	130 marks
Advanced Higher	2 ½ hr paper worth	100 marks

Structure of question papers:

Int 1:

- Section A has 25 multiple choice questions.
- Section B has structured questions worth 50 marks.

Int 2:

- Section A has 25 multiple choice questions.
- Section B has structured questions worth 65 marks.
- Section C has 4 extended response questions: the candidate answers one structured question, and one open question — each is worth 5 marks. The open question carries one mark for coherence of response, and one mark for relevance.

H:

- Section A has 30 multiple choice questions.
- Section B has structured questions, including questions on data handling, worth 80 marks.
- Section C has 4 extended response questions: the candidate answers one structured question, and one open question — each is worth 10 marks. The open question carries one mark for coherence of response, and one mark for relevance.

The question papers at Int 1 – H sample across all component Units of the Course and are designed to generate evidence against the Course Grade Descriptions. All three Outcomes are assessed in the external examination.

AH:

- Section A has 25 multiple choice questions, sampling across the two mandatory Units.
- Section B has structured questions, including questions on data handling, worth 30 marks, sampling across the two mandatory Units.
- Section C has 4 extended response questions. The candidate answers one question on each mandatory Unit — 15 marks each.
- Section D has 6 extended response questions (two for each optional Unit). The candidate answers one question for 15 marks.

Advanced Higher external assessment of the Course

In addition to the question paper at Advanced Higher, candidates are required to do a 20-hour Unit *Biology Investigation*. For internal/Unit assessment, candidates are required to keep a record of the investigation (in a lab notebook or daybook) with respect to the planning and collection of experimental data. For external assessment, candidates are required to write up a formal report (of about 2000 words) which is sent to a Visiting Examiner who marks the report and carries out an interview at the candidate's centre. 25 marks are available for the external assessment of the Investigation Report: three marks are awarded by the centre for the candidate's ability to manage resources; four marks are awarded for the candidate's performance in the interview, but up to another 4 marks can be awarded on the basis of the candidate providing additional evidence during the interview, not present in the report, against the other assessment categories. In total, then, the Visiting Examiner can award up to eight marks not able to be assessed by alternative means.

The mark for the Investigation is added to the mark achieved in the Course exam (out of 100) to arrive at the total mark for Course assessment.

Note on comparability with other Courses in the same broad subject area

The sciences have adopted a similar approach, in that the exam at each level is the same length. The structure of the papers varies across the sciences. Biology (Int 2-AH) and Biotechnology (Int 2-H) are the only sciences to include a section with extended response questions.

Use of an interview with a Visiting Examiner as an additional means of assessing and quality assuring the Advanced Higher Investigation is unique to the sciences. Most Advanced Highers include assessment of an investigation or dissertation, with no use of Visiting Examining.

Does the external assessment of the Course meet the assessment criterion (10)?

Yes, at Int 1 – H
No, at AH - the external assessment load is:
Examination — 2 hrs 30 minutes
Investigation report — 2000 words
Interview with Visiting Examiner — 20 minutes

Issues and recommendations

1. Issue: one mark for coherence in extended response question at Intermediate 2

In one of the questions in the extended response section of the examination, candidates are awarded one mark for the coherence of their response, and four marks for the knowledge and understanding presented in their answer (total 5 marks). The purpose of this approach was to encourage candidates to present their answer in a logical order and not as a jumble of facts.

Feedback from the Principal Assessor, exam team members and markers is that the coherence mark is not functioning effectively for a variety of reasons. Questions are difficult to set, fair marking schemes are very difficult to develop and the mark is difficult to apply consistently. This mark was the most likely source of difference in marking found at Marker Check stage.

Recommendation: one mark for coherence in extended response question at Intermediate 2

This mark should not be used. It should be reallocated to the other aspects of the extended response question.

2. Issue: Assessment load in Advanced Higher — 2·5 hour Examination, Investigation Report of up to 2000 words and 20 minute Visiting Examiner Interview

The examination samples the content of all of the component Units, except *Investigation*. The Investigation allows candidates to carry out an open-ended piece of practical work for which they have sole responsibility — a reflection of the way real scientists work.

The investigation draws on all previously acquired practical skills and knowledge and understanding of the subject; in a sense, it is a culmination of all of the scientific education that has gone before. The report can be used effectively to discriminate between candidates not only in relation to their production of an extended piece of scientific writing but also their understanding of the underlying science, and their application of theory and principles.

A Visiting Examiner assesses the report and carries out a 20-minute interview with each candidate.

While there are strong arguments for retaining both an examination and an investigation, and this would be in line with other Advanced Higher Courses, the use of visiting examining can be questioned in terms of:

- possible candidate stress, and additional workload
- additional workload for the teacher/lecturer in preparing the candidate and helping to organise the Visiting Examination
- additional workload for the SQA co-ordinator
- administrative burden for SQA
- potential for errors in data (see section 2.6, below)

It is important to note the marks allocation for this component:

- Total marks for the investigation- 25 (total for Course 125)
- Centre awards up to 3 marks
- Interview — up to 4 marks, with an additional 4 marks available to supplement marks for report
- Report — 18 marks

In summer 2001, SQA commissioned a consultant to produce a report based on a quantitative and qualitative analysis of the effect of the interview on the marks given for the Investigation Report in Advanced Higher Biology, Chemistry and Physics in diet 2001. This report suggests that removing the interview from the assessment procedure would improve validity, reliability and cost-effectiveness in the assessment of the Investigation Report.

The report recommended that the interview be removed and the marks allocated elsewhere in the report — one option would be to allocate marks for the quality of the context of the subject of the investigation.

Recommendation: Assessment load Advanced Higher

The Examination and Investigation Report should be retained, but the 20-minute interview with a Visiting Examiner should be dropped. Assessment guide

2.5 Quality Assurance

Description of the overall approach to quality assurance

Quality Assurance of Biology Examinations

SQA's standard setting, vetting and marking procedures apply. Markers' attendance at markers' meetings is mandatory.

Quality Assurance of Investigation Report at Advanced Higher

Allocation of Visiting Examiners (VEs) to centres cannot be done within SQA's Awards Processing System and is carried out manually. Centres send reports direct to their named VE, who contacts the centre to arrange an appropriate time for carrying out the interviews.

Does the quality assurance of the Courses meet criterion 11?

Yes, at Int 1 – H
No, at AH — the use Visiting Examining for the AH Investigation is neither effective nor efficient, since it requires a huge amount of manual administration by SQA and centre staff.

Issues

Advanced Higher Investigation – visiting examining

In terms of its effectiveness and efficiency as a quality assurance mechanism, the independent report on Visiting Examining has found that is it no more effective than standard marking and marker check procedures.

2.6 Administration

Issues

Advanced Higher Investigation – administration of visiting examining

The organisation required for Visiting Examining for AH is complex and labour-intensive, as the procedure is not standard and cannot be processed on SQA's computerised Awards Processing System. As a result, it is difficult to track data, and this increases the risk of data errors and/or loss.

Staff in centres have to fill in a special 'AH 5 supplement' form on which they enter centre details, Visiting Examiner numbers, candidate names in alphabetical order of surnames, (dates of birth if required to distinguish between two or more candidates with the same name), the titles of the candidates' Investigation Reports, and marks out of 3 for assessment category (g) 'Management of resources'. Centre staff send the completed top copies together with the Investigation Reports directly to the Visiting Examiner(s). A third copy is sent to SQA.

Visiting Examiners have to complete the forms 'AH 5 Supplement' when they have completed the visiting examining process, by entering marks for assessment categories (a) to (f), adding the centre marks for assessment category (g), and noting the total mark out of 25 for each candidate. The Visiting Examiners are then required to return the Investigation Reports, together with the top copy of the AH 5 Supplement form to SQA. The VEs retain one copy until the end of July as a contingency against the loss of the reports and/or other copies of the form.

SQA staff have to manually transfer marks to a form which can be used by data processing bureaux — this has the potential for introducing data errors. As there are no links between APS and allocations of centres and candidates to Visiting Examiners, normal procedures cannot apply to Marker Check and Finalisation. These procedures are only possible as the result of massive manual intervention of SQA staff and examiners.

SQA will take steps to reduce the administration associated with Visiting Examining in session 2001-2002.

3 Summary of review process and issues raised

Who	Mechanism	Feedback received
Subject specialists	Comments received by post and e-mail. Implementation evidence — research report on Visiting Examination for AH Investigation	A full summary and collation of these comments will be made available separately. Main recommendations are referred to in the report.
SQA co-ordinators	SQA SAMs and CRMs	No issues raised
Principal Assessors and Senior Moderators	All Examination Team Members (64) as well as Assessment Panel members (12) invited by letter to comment on specific Biology issues. These issues were also discussed with Moderation team members during central moderation events. The Science Advisory Group also discussed these issues at the meeting on 27 September 2001.	22 responses were received and discussed at the Biology Assessment Panel meeting of 2 October 2001.This feedback has been incorporated into the report.
Units within SQA	Internal views sought — especially Assessment Moderation Unit	Issues raised about manageability of the Visiting Examining at AH in terms of cost effectiveness and added value.
Candidates and parents	SPTC survey	No issues raised
Other surveys and reports	HMIE August 2001 MORI January 2001 SFEU/Higher Still May 2001	High proportion of Biology PTs commented on difficulties caused for students by the volume of assessment Teachers of Sciences (80%) are more inclined to maintain that students are not prepared for the external exam Science teachers (72%) are more inclined to feel that implementation of internal assessment had not worked One college commented that science Courses have additional demands in practical assessments and the need for 3 assessments in this area. Makes evening class provision more time-consuming. Many students in this market are unwilling to devote more than one day a week to class-based study.

Appendix 1 – facts and figures

Approximate total assessment loads

Biology, Int 1

1hours 30 minutes per Unit x 3 = 4 hours 30 minutes
1 hours 30 minutes exam
Total: 6 hours

Biology, Int 2

1 hours 55 minutes per Unit x 3 = 5 hours 45 minutes
2 hours exam
Total: 7 hours 45 minutes

Biology and Human Biology, H

1 hours 55 minutes per Unit x 3 = 5 hours 45 minutes
2 hours 30 minutes exam
Total: 8 hours 15 minutes

Biology, AH

1 hours 55 minutes per 40-hour Unit x 2 = 3 hours 50 minutes
2 hours 30 minutes for 20-hr Unit
lab daybook for Investigation Unit - ongoing
2000 word report
20 minute interview
2 hours 30 minute exam
Total: 9 hours 10 minutes + investigative work + 2000 word report + prelim (2 hours 30 minutes) + re-assessment of Units (up to 6 hours 10 minutes)