

Biology Stage 6

Draft Writing Brief

October 2015

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1. Introduction

In 2014, the Board of Studies, Teaching and Educational Standards NSW (BOSTES) commenced a review of NSW senior secondary syllabuses for English, Mathematics, Science and History learning areas to determine directions for the incorporation of senior secondary Australian curriculum. BOSTES conducted consultation in August and September 2014 on proposed directions outlined in the [NSW Senior Secondary Review & Evaluation: English, Mathematics, Science and History](#) document.

The Broad Directions for each learning area, developed following consultation, were endorsed by BOSTES in December 2014 and are available in Section 2 of this Draft Writing Brief.

The development of the *Biology Stage 6 Draft Writing Brief* takes account of the Broad Directions.

The Draft Writing Brief:

- proposes the nature and number of courses within each learning area
- proposes options for course structures
- provides information about how Australian curriculum content may be modified, reordered and supplemented for inclusion in the draft syllabus.

Following consultation on the Draft Writing Brief, a Consultation Report, detailing feedback received and the key matters arising from consultation will be published. The BOSTES endorsed final Writing Brief will inform the directions for draft syllabus development.

The draft syllabus for Biology will be available for consultation during 2016. It will include the elements of a syllabus and Australian curriculum content identified with codes, learning across the curriculum content identified by icons, further information about meeting the diversity of learners, and internal and external assessment.

A summary of the BOSTES syllabus development process is available at <http://www.boardofstudies.nsw.edu.au/syllabuses/syllabus-development/>.

Diversity of learners

NSW senior secondary syllabuses will be inclusive of the learning needs of all students. The draft syllabuses will be designed to accommodate teaching approaches that support student diversity under the sections: Students with special education needs; Gifted and talented students; Students learning English as an additional language or dialect (EAL/D).

For example:

Special education needs

All students with special education needs are entitled to participate in and progress through the curriculum. Some students may require additional support or adjustments to teaching, learning and assessment activities. Adjustments are measures or actions taken in relation to teaching, learning and assessment that enable a student to access syllabus outcomes and content and to demonstrate achievement of outcomes.

Most students with special education needs will undertake regular Board Developed courses and/or Board Endorsed courses. Students with special education needs can access Years 11 and 12 outcomes and content in a range of ways. They should choose the most appropriate courses for the HSC in keeping with their goals, interests and learning needs.

Students may engage with:

- syllabus outcomes and content with adjustments to teaching, learning and/or assessment activities
- selected outcomes and content appropriate to their learning needs
- selected Years 11–12 Life Skills outcomes and content appropriate to their learning needs.

2. Broad directions


The following broad directions for syllabus development have been informed through consultation with stakeholders. These broad directions guide development of the NSW Science Stage 6 syllabuses.

1. In the revision and development of the courses, consideration be given to how the courses provide flexibility to meet the needs of all students.
2. In the revision of the current content-heavy courses, provision be made for the reduction and integration of content. This may be organised using the concept of 'Big Ideas' of science.
3. The nature and practice of Science is reflected in the inclusion of working scientifically using first-hand investigations, secondary sources, models and modelling.
4. The Science courses be reviewed to allow flexibility of pedagogy and delivery. This may include cross-disciplinary study, project-based research and STEM learning.
5. Opportunities be considered to extend students' learning in Science by revising each course's content and requirements.
6. The Senior Science course rationale, structure and assessment requirements be reviewed to focus on developing scientifically literate students.
7. The Senior Science course rationale, structure and assessment requirements be reviewed with a focus to support a range of post-school contexts.
8. Assessment and HSC examination specifications be reviewed to ensure appropriate opportunities for assessment of a wide range of student performance including assessing analytical and critical thinking, first-hand investigations, the use of secondary sources and research projects.
9. The Science syllabuses should provide for the continual inclusion of contemporary and relevant material.
10. The rationale, outcomes and content of the Science Life Skills Stage 6 course be reviewed to better meet the needs of the students for whom the course is intended, as well as to provide an appropriate progression from Science Life Skills Stage 5 outcomes and content and alignment with the regular Science Stage 6 courses where appropriate.

Australian curriculum


BOSTES began its syllabus development process for Stage 6 English, Mathematics, Science and History in 2014. This follows state and territory education Ministers' endorsement of senior secondary Australian curriculum in these learning areas as the agreed and common base for development of state and territory senior secondary courses. It was also agreed that states and territories would have the flexibility to integrate the approved senior secondary Australian curriculum as appropriate. The development of Draft Writing Briefs will determine how Australian curriculum content can be modified, reordered and supplemented in each learning area while remaining compatible with the NSW senior years assessment and examinations structures.

3. Rationale

 for your information

The rationale describes the distinctive nature of the subject and outlines its relationship to the contemporary world and current practice. It explains the place and purpose of the subject in the curriculum:

- why the subject exists
- what the theoretical underpinnings are
- what makes the subject distinctive
- why students would study the subject
- how it contributes to the purpose of the Stage 6 curriculum.

 consult

Proposed rationale for Biology Stage 6

Students of Biology Stage 6 will expand their knowledge of the living world and develop and use a range of skills including the ability to think and work scientifically, make evidence-based judgements, use their creativity and imagination, and communicate abstract ideas succinctly and concisely. This subject provides a foundation for students to critically consider information and to make informed decisions about contemporary biological issues in their everyday lives.


The course is designed for students who have substantial achievement in Science Stage 5 including those who wish to continue with the study of science and specifically biology at tertiary level.

Scientific knowledge and understanding and methods of working scientifically have led biologists to gain a better understanding of how biological systems interact. By working scientifically students design and conduct qualitative and quantitative investigations both individually and collaboratively to investigate aspects of the Big Ideas of science, in particular, the diversity of species and structure of organisms, their use of energy and materials and their ability to reproduce and evolve.

Thinking in Biology involves using differing scales, including macro-scales, micro-scales and nano-scales, to investigate biological systems and their interactions to expand our knowledge and find solutions to biological issues. The study of Biology provides a foundation for participation in further studies in Science as well as in a variety of related fields, often providing the unifying link across interdisciplinary studies.

Biological knowledge and its application is required to tackle major local, national and global issues and challenges now and into the future. These include the enduring issues of environmental health and sustainability, biosecurity and resilience of ecosystems, and analysing the impact of human activity and the strategies proposed to address these issues.

4. Aim

 for your information

In NSW syllabuses, the aim provides a succinct statement of the overall purpose of the syllabus. It indicates the general educational benefits for students from programs based on the syllabus.

The aim, objectives, outcomes and content of a syllabus are clearly linked.


 consult

Proposed aim for Biology Stage 6


The aim of the Biology Stage 6 Syllabus is to develop students’:

- appreciation of biology as an experimental science where models and theories are refined, and new models and theories are developed through independent and collaborative research that continues to have significant impacts on society
- abilities to debate and critically evaluate scientific arguments and claims, to communicate to a range of audiences biological understanding or findings and to propose possible solutions to problems
- understanding of the theories and models used to describe, explain and make predictions about biological systems, structures and properties by considering the factors that affect these and how they can be controlled to produce desired products or outcomes
- respect for all living things and the environment, and understanding of how biology and biological practices are used and are integral to developments in many fields of human endeavour

5. Objectives

 for your information

In NSW syllabuses, objectives provide specific statements of the intention of a syllabus. They amplify the aim and provide direction to teachers on the teaching and learning process emerging from the syllabus. They define, in broad terms, the knowledge, understanding, skills, values and attitudes to be developed through studying the subject. They act as organisers for the intended outcomes.

 consult

Proposed objectives for Biology Stage 6

Values and attitudes

Students:

- develop positive, informed values and attitudes towards biology
- recognise the importance and relevance of biology in their lives now and for the future.

Skills

Students:


- develop skills in applying the processes of Working Scientifically.

Knowledge and understanding


Students:

- develop knowledge and understanding of the Earth's biodiversity
- develop knowledge and understanding of the structure and function of organisms
- develop knowledge and understanding of heredity and evolution
- develop knowledge and understanding of living things and their ability to maintain a balance.

6. Outcomes

 for your information

In NSW syllabuses, outcomes provide detail about what students are expected to achieve at the end of each Stage in relation to the objectives. They indicate the knowledge, understanding and skills expected to be gained by most students as a result of effective teaching and learning. They are derived from the objectives of the syllabus.

 consult

Proposed outcomes for Biology Stage 6

Outcomes will be developed for each year. The following table presents a sample of some of the proposed outcomes.

Values and attitudes

Objectives

Students:

- develop positive, informed values and attitudes towards biology
- recognise the importance and relevance of biology in their lives now and for the future

Skills

Objective

Students:

- develop skills in applying the processes of Working Scientifically

Preliminary course outcomes

A student:

BIP-1 proposes questions or hypotheses to be investigated scientifically and predicts outcomes

BIP-2 designs investigations, considers risks and ethical issues, identifies appropriate materials and suggests related data for collection

HSC course outcomes

A student:

BIH-1 evaluates questions and/or hypotheses to be investigated scientifically and predicts evidence based outcomes

BIH-2 justifies the design of risk-assessed, ethical investigations involving appropriate materials and selects and collects relevant primary- and secondary-sourced data

Knowledge and understanding


| | |
|-----------------------------------|--|
| Preliminary course Unit 1 | |
| Objective | Students: develop knowledge and understanding of the Earth's biodiversity |
| Preliminary course outcome | A student: |
| BIP-8 | describes biological diversity by explaining the relationships between a range of organisms in terms of specialisation for selected habitats |

| | |
|---------------------------|--|
| HSC course Unit 3 | |
| Objective | Students: develop knowledge and understanding of heredity and evolution |
| HSC course outcome | A student: |
| BIH-8 | explains the structures of DNA and analyses the mechanisms of inheritance and how processes or reproduction ensure continuity of species |

| | |
|-----------------------------------|--|
| Preliminary course Unit 2 | |
| Objective | Students: develop knowledge and understanding of the structure and function of organisms |
| Preliminary course outcome | A student: |
| BIP-10 | describes single cells as the basis for all life by analysing and explaining cells' ultrastructure and biochemical processes |


| | |
|---------------------------|---|
| HSC course Unit 4 | |
| Objective | Students: develop knowledge and understanding of living things and their ability to maintain a balance |
| HSC course outcome | A student: |
| BIH-10 | analyses homeostatic mechanisms, structures and functions, both internal and external, that organisms utilise to survive changes in their environment |

7. Course structure and options

 for your information

Rather than stipulate a single approach the Draft Writing Brief proposes options for possible course structure. The consultation process will inform the final structure which may be one of the options, or may involve a combination of the ideas presented.

The following provides an outline of some proposed Preliminary and HSC course structures for the Biology Stage 6 Syllabus with indicative course hours and the arrangement of course content, along with outlining relationships between specific components and between core and options.

 consult

Overview of Preliminary course structures – Biology 2 Unit course 120 hours

| Preliminary course | Option 1 | Option 2 | Option 3 |
|---------------------------|---|--|--|
| Structure | Maintain the current (120 hour) Preliminary course structure | Four topics of equal length (30 hours) | Four topics of equal length (25 hours) and a depth study component (20 hours) |
| Content | Review and update the content to include the relevant aspects of the Australian curriculum Eg: <ul style="list-style-type: none"> • A Local Ecosystem (20 hours) • Patterns in Nature (40 hours) • Life on Earth (30 hours) • Evolution of Australian Biota (30 hours) | Revise the course content to integrate the relevant aspects of the Australian curriculum and consider the quantitative analytical aspects of the course. Eg: <ul style="list-style-type: none"> • Biological Diversity (30 hours) • Ecosystem Dynamics (30 hours) • Cells as the basis for life (30 hours) • Multicellular organisms (30 hours) | Eg: <ul style="list-style-type: none"> • Biological Diversity (25 hours) • Ecosystem Dynamics (25 hours) • Cells as the basis for life (25 hours) • Multicellular organisms (25 hours) • Depth Study (20 hours) |
| | | Focus on delivering content through practical experiences | |
| Practical content | Update practical experiences to reflect revised content | | |
| Investigation/ PBL | Maintain at least one open-ended investigation (OEI) | Include practical investigation/depth study component related to core | |

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| | | |
|--|--|------------|
| | | (20 hours) |
|--|--|------------|

Overview of HSC course structures – Biology 2 Unit course 120 hours

| HSC course | Option 1 | Option 2 | Option 3 |
|---------------------------|--|---|---|
| Structure | Maintain current HSC structure | Four topics of each of (30 hours) | Four topics of equal length (25 hours) with a PBL component (20 hours) and an opportunity for depth study |
| Content | <p>Review and update content to include the relevant aspects of the Australian curriculum</p> <p>Eg:</p> <ul style="list-style-type: none"> • Maintaining a Balance (30 hours) • Blueprint of Life (30 hours) • The Search for Better Health (30 hours) • One of five Options (30 hours) | <p>Revise the course and integrate the relevant aspects of the Australian curriculum content</p> <p>Eg:</p> <ul style="list-style-type: none"> • DNA (30 hours) • Continuity of Life on Earth (30 hours) • Homeostasis (30 hours) • Infectious Disease (30 hours) | <p>Revise the course and integrate the relevant aspects of the Australian curriculum content</p> <p>Eg:</p> <ul style="list-style-type: none"> • DNA (25 hours) • Continuity of Life on Earth (25 hours) • Homeostasis (25 hours) • Infectious Disease (25 hours) • Depth Study (20 hours) |
| Practical content | Update practical experiences to reflect revised content | Focus on delivering content through practical experiences | |
| Investigation/ PBL | Maintain at least one open-ended investigation (OEI) | | Includes a practical investigations/projects/ (Depth Study) component (20 hours) |
| Options | Update the current five options | No options | |

Proposed options and course structure for Biology Stage 6

Option 1 – Biology 2 Unit (240 hours) course

This model maintains the current course structures with a view to review and update the content where required. Consideration would be given to providing for greater depth of study and allowing more time for practical learning.

The subject matter of the Biology course would recognise the different needs and interests of students and provide a structure that builds upon the foundations laid in Stage 5, yet would acknowledge that students entering Stage 6 have a wide range of abilities, circumstances and expectations.

The proposed Biology 2 Unit course would be examined for the HSC.

Revise current Preliminary course – 120 indicative hours

- A Local Ecosystem (20 indicative hours)
- Patterns in Nature (40 indicative hours)
- Life on Earth (30 indicative hours)
- Evolution of Australian Biota (30 indicative hours)

Revise current HSC course – 120 indicative hours

- Maintaining a Balance (30 indicative hours)
- Blueprint of Life (30 indicative hours)
- The Search for Better Health (30 indicative hours)
- Choice of one option (30 indicative hours):
 - Communication
 - Biotechnology
 - Genetics: The Code Broken?
 - The Human Story
 - Biochemistry

Option 2 – Biology 2 Unit (240 hours) course

This model proposes a revision of course content to allow for practically based learning to encourage students to learn science as it is practised.

The quantitative analytical demands of the content in this course will be considered.

The proposed Biology 2 Unit course would be examined for the HSC.

Example Preliminary course (120 indicative hours)

| Example unit | Example modules and areas of study |
|---|---|
| <p>Unit 1 The Earth’s Biodiversity (60 hours)</p> | <p>Biological diversity (30 hours)</p> <ul style="list-style-type: none"> • Adaptation • Classification • Biotic and abiotic factors • Relationships |
| | <p>Ecosystem dynamics (30 hours)</p> <ul style="list-style-type: none"> • The cycles of life • Population dynamics • Past ecosystems • Future ecosystems |
| <p>Unit 2 The Structure and Function of Organisms (60 hours)</p> | <p>Cells as the basis for life (30 hours)</p> <ul style="list-style-type: none"> • Cell structure and function • Movement of materials • Prokaryotic and eukaryotic cells • Biochemical processes |
| | <p>Multicellular organisms (30 hours)</p> <ul style="list-style-type: none"> • Cells, tissues, organs and systems • Movement of materials in cells • Transport systems in animals • Transport systems in plants |
| <p>Nature of the course</p> <p>The Biology Preliminary course is designed to focus on learning science as it is practised. It is suggested that at least 50% of the Preliminary course time is allocated to practical aspects of the course including project work.</p> <p>At least ONE open-ended investigation is to be completed.</p> | |

Example HSC course (120 indicative hours)

| Example unit | Example modules and areas of study |
|---|---|
| <p>Unit 3 Heredity and Evolution (60 hours)</p> | <p>DNA (30 hours)</p> <ul style="list-style-type: none"> • Replication • DNA and protein synthesis • Variation • Biotechnology |
| | <p>Continuity of life on Earth (30 hours)</p> <ul style="list-style-type: none"> • Changes to life on earth over time • Mutation • Speciation • Extinction |
| <p>Unit 4 Maintaining a Balance (60 hours)</p> | <p>Homeostasis (30 hours)</p> <ul style="list-style-type: none"> • Stimulus/response • Metabolic and physiological responses • Hormones • Regulation mechanisms |
| | <p>Infectious disease (30 hours)</p> <ul style="list-style-type: none"> • Pathogens • Responses to pathogens • Immunity • The cause and spread of disease |
| <p>Nature of the course</p> <p>The Biology HSC course is designed to focus on learning science as it is practised. It is suggested that at least 40% of the HSC course time is allocated to practical aspects of the course including project work.</p> <p>At least ONE open-ended investigation is to be completed.</p> | |

Option 3 – Biology 2 Unit (240 hours) course with depth studies

This model introduces an investigative/project/depth study opportunity in the Preliminary and HSC course years.

The investigative depth study is designed to allow time for all students to engage more deeply with chosen aspects of the course content and to study in depth aspects of biology they may continue with at the tertiary level.

Example Preliminary course (120 indicative hours)

| Example unit | Example modules and areas of study | |
|---|--|---|
| Unit 1 The Earth’s Biodiversity (60 hours) | Biological diversity (25 hours) <ul style="list-style-type: none"> • Adaptation • Classification • Biotic and abiotic factors • Relationships | Depth study related to core (10 hours) |
| | Ecosystem dynamics (25 hours) <ul style="list-style-type: none"> • The cycles of life • Population dynamics • Past ecosystems • Future ecosystems | |
| Unit 2 The Structure and Function of Organisms (60 hours) | Cells as the basis for life (25 hours) <ul style="list-style-type: none"> • Cell structure and function • Movement of materials • Prokaryotic and eukaryotic cells • Biochemical processes | Depth study related to core (10 hours) |
| | Multicellular organisms (25 hours) <ul style="list-style-type: none"> • Cells, tissues, organs and systems • Movement of materials in cells • Transport systems in animals • Transport systems in plants | |
| Nature of the course The Biology Preliminary course is designed to focus on learning science as it is practised. It is suggested that at least 50% of the Preliminary course time is allocated to practical aspects of the course including project work. | | |

Example HSC course (120 indicative hours)

| Example unit | Example modules and areas of study | |
|--|---|---|
| <p>Unit 3 Heredity and Evolution (60 hours)</p> | <p>DNA (25 hours)</p> <ul style="list-style-type: none"> • Replication • DNA and protein synthesis • Variation • Biotechnology | <p>Depth study related to core (10 hours)</p> |
| | <p>Continuity of life on Earth (25 hours)</p> <ul style="list-style-type: none"> • Changes to life on earth over time • Mutation • Speciation • Extinction | |
| <p>Unit 4 Maintaining a Balance (60 hours)</p> | <p>Homeostasis (25 hours)</p> <ul style="list-style-type: none"> • Stimulus/response • Metabolic and physiological responses • Hormones • Regulation mechanisms | <p>Depth study related to core (10 hours)</p> |
| | <p>Infectious disease (25 hours)</p> <ul style="list-style-type: none"> • Pathogens • Responses to pathogens • Immunity • The cause and spread of disease | |
| <p>Examples of depth studies/investigative projects Infectious diseases and travel – ‘How to lower my risk of suffering from them?’ Contamination of foods – ‘What can be done to reduce this in the home?’ Local ecosystem – ‘Analysing the effects of construction runoff and suggestions for mitigation’</p> | | |
| <p>Nature of the course The depth study/investigative project aspect is designed to allow for deeper engagement with specific content of interest to the students. The HSC course includes 20 hours of depth study using investigative project(s) related to the core units. These could be implemented through a range of approaches with a minimum of 5 hours and a maximum of 10 hours for each depth study. The Biology course is designed to focus on learning science as it is practised. It is suggested that at least 40% of the HSC course time is allocated to practical aspects of the course including project work.</p> | | |

Practical nature of the Biology course

Practical experiences are a core component of the Biology course.

Practical experiences should be designed to integrate the skills and knowledge and understanding outcomes in both the Preliminary and HSC courses.

Practical experiences should emphasise hands-on activities including:

- undertaking laboratory experiments including the use of appropriate ICT technologies
- fieldwork
- the use of computer simulations for modelling or manipulating data
- use of, reorganisation and representation of acknowledged secondary data
- the extraction and reorganisation of information in the form of flow charts, tables, graphs, diagrams, prose and keys
- the use of digital media to capture, obtain, manipulate, calculate and present data, information and solutions to problems.

Depth study - Investigative project(s) (5–10 hours)

It is proposed that investigative project(s) be incorporated into each of the Preliminary and HSC courses based upon the principle of learning science as it is practised. This may be a single 10 hour project or two 5 hour projects completed anytime within each unit.

Investigative project(s) opportunities are suggested for inclusion to allow schools to cater for the full range of students undertaking the course. They are incorporated to provide a vehicle for content coverage, to aid engagement and to provide students with further opportunities to demonstrate what they know and can do.

Investigative projects in both the Preliminary and HSC years may be considered for inclusion in the school-based assessment components for the HSC.

The investigative projects are to focus on:

- reviewing current knowledge/literature review
- producing an explanation or proof of a problem(s) posed or area researched
- including evidence of validity, reliability and precision in data analysis
- involving students in peer review of other students' work
- formulating logical explanations/conclusions and suggesting further research
- developing skills in designing and managing projects
- developing communication skills, including presentation skills, using relevant forms of media and reporting techniques.

The project may be a product, design, system, model, report or solution to problems posed and may be associated with fieldwork undertaken.

Extension courses

Extension courses build on the content of the 2 Unit courses. They are set at a more demanding level and have a more intensive focus. Extension courses involve complex levels of conceptualisation and provide the opportunity for students to work in increasingly independent ways. They enable high performing students to reach their potential in their senior secondary years.

BOSTES criteria ensure that Extension courses are only developed where there is a compelling educational justification. Equity across subjects is not in itself a reason for the development of Extension courses. The following criteria are applied to the establishment and maintenance of Extension courses:

- There is additional subject content necessary to achieve the purpose of the subject beyond that which can be accommodated in the 2 Unit course; which build on the content of the 2 Unit course; which is at a more demanding level; and which requires additional curriculum time for students to learn.
- It can be demonstrated that study of the Extension course will lead particular target groups to substantial, positive gains in relation to the prime purpose for each course.
- Study of the Extension course may be required or assumed necessary by tertiary institutions for study in courses beyond those in the same subject area.
- The likely candidature for the Extension course and whether there are significant resource constraints or issues in developing and offering the extended study course.

An argument for a new Extension course would have to establish that the current 2 Unit courses are not sufficiently challenging. It would need to be shown that a new Extension course could cover completely new higher level content with higher order outcomes without overlapping with the content of University courses.

Extension courses in Science could take the form of one of the following options:

- A. An Extension Chemistry course and an Extension Physics course
- B. A combined Extension course drawing on elements of Chemistry and Physics
- C. A combined Extension course that draws from across the four science disciplines.


Some advantages and disadvantages for each option include:

- A. Chemistry and Physics are high demand courses that are important to the nation's STEM initiatives. More demanding study in these sciences will better prepare students to engage in related courses at university. Some schools will be forced to make a decision about which course they can support as an Extension course.
- B. These two high candidature subjects complement each other in cross-discipline aspects of science. There may be a perception that this Extension course is only accessible by students who study both Chemistry and Physics.
- C. This course could appeal to a broader range of students. A breadth in working across disciplines could act against the essential requirement of greater depth.

Extension course content could include:

| A. Extension Chemistry | A. Extension Physics | B. Extension Chemistry & Physics | C. Extension Science |
|---|---|--|--|
| <ul style="list-style-type: none"> • Equilibrium constants and the effect of temperature on their value • Design an industrial process that could be used for producing an economically viable chemical | <ul style="list-style-type: none"> • Effects of gravity on photons of light • Emerging technologies that use the quantum theory | <ul style="list-style-type: none"> • Equilibrium constants and the effect of temperature on their value • Effects of gravity on photons of light | <ul style="list-style-type: none"> • Research emerging technologies and manipulation of DNA • Equilibrium constants and the effect of temperature on their value • Renewable and non-renewable resources in terms of cost, extraction methods & environmental impacts • Effects of gravity on photons of light |

8. Learning across the curriculum

 for your information

NSW syllabuses provide a context within which to develop core skills, knowledge and understanding considered essential for the acquisition of effective, higher-order thinking skills that underpin successful participation in further education, participation in work and everyday life including problem-solving, collaboration, self-management, communication and information technology skills.

BOSTES has described learning across the curriculum areas that are to be included in syllabuses. In Stage 6 syllabuses, the identified areas will be embedded in the descriptions of content and identified by icons. Learning across the curriculum content, including the cross-curriculum priorities and general capabilities, helps students to achieve the broad learning outcomes defined in the BOSTES *Statement of Equity Principles*, the *Melbourne Declaration on Educational Goals for Young Australians (December 2008)* and in the Australian Government's *Core Skills for Work Developmental Framework (2013)*.

Knowledge, understanding, skills, values and attitudes derived from the learning across the curriculum areas will be included in BOSTES syllabuses, while ensuring that subject integrity is maintained.

Cross-curriculum priorities enable students to develop understanding about and to address the contemporary issues they face.

The cross-curriculum priorities are:

- Aboriginal and Torres Strait Islander histories and cultures 🖐️
- Asia and Australia's engagement with Asia 🇦🇺
- Sustainability 🌱

General capabilities encompass the knowledge, skills, attitudes and behaviours to assist students to live and work successfully in the 21st century.

The general capabilities are:

- Critical and creative thinking ⚙️
- Ethical understanding ⚖️
- Information and communication technology capability 💻
- Intercultural understanding 🌐
- Literacy 📖
- Numeracy 📊
- Personal and social capability 👤

BOSTES syllabuses include other areas identified as important learning for all students:

- Civics and citizenship 🗳️
- Difference and diversity 🏳️
- Work and enterprise ⭐

9. Glossary

A glossary will be developed for the draft Biology Stage 6 Syllabus, which explains terms that will help teachers to interpret the subject.

10. Assessment and reporting

BOSTES continues to promote a standards-referenced approach to assessing and reporting student achievement in NSW, and the importance of assessment for, of and as learning as essential components of quality teaching and learning.

Information on assessment and reporting for Preliminary and HSC courses will be developed for the draft syllabus consultation in 2016.

The information will include:

- suggested components and weightings for school-based assessment of the Preliminary course
- mandatory components and weightings for school-based assessment of the HSC course
- HSC examination specifications which describe the format of the HSC examination program for Biology.

Advice about assessment relating to the Biology syllabus is contained in [Assessment and Reporting in Science Stage 6](#). This document provides general advice on assessment in Stage 6 as well as the specific requirements for the Preliminary and HSC courses.

Consultation on assessment and reporting during the Draft Writing Brief phase will focus on providing feedback about assessment and reporting practices in schools, school-based assessment requirements, the use of technology in assessment, and external assessment programs.