

# Year 11 and 12 Diploma Programme Curriculum Handbook 2026

*Inspiring Great Minds*



Queensland Academy  
for Science Mathematics  
and Technology



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## 1.0 INTRODUCTION

We have written this handbook to help guide our Year 10 students as they enter the International Baccalaureate Diploma Programme (DP) for Year 11 and 12 at the Queensland Academy for Science Mathematics and Technology (QASMT).

Students will be commencing their DP at the beginning of next year. Each student should be continuing with the subjects they have studied in the Year 10 Diploma Preparation Program (DPP).

During Term 2, Year 10 students are required to identify the level of study as either Standard Level (SL) or Higher Level (HL) for their six subjects.

**Students must study three SL subjects and three HL subjects to comply with Diploma requirements.**

**All students will be recommended a level to study for their six subjects, based on their success in their current subjects. Students may only pick a HL subject level if they have been recommended - and thus invited - to study that subject at HL.**

This handbook provides an overview of the curriculum as one of several strategies to ensure that students make informed choices that comply with the arrangements of the Academy and the rules of the IB Diploma Programme.

While the Academy aims to offer all subjects and levels listed in this booklet, it is important to note that this will be dependent on class numbers and the Academy's staffing capacity. Some subjects may not be able to be offered if minimum numbers are not met.

Students have had access to many different sources of information to assist them with their selections and these include:

- The Senior Education and Training (SET) Plan process with the Guidance Officer and House Deans.
- Individual academic performance data.
- Subject selection presentations from the Deputy Principal Performance, and Deputy Principal Senior Years & IB Coordinator.
- This Year 11 and 12 IB Diploma Programme Curriculum Handbook.

**Students are required to complete their IB Diploma Programme subject selection online.**

Details, including web address, username and password, for the online selection will be provided to all families and students by email. The subjects available are listed at the back in this booklet.

The checklist on the subject selection page should be used as a guide to decide on your subject selections. Students should complete the online subject selection when requested.

If a student wishes to discuss their recommended subject levels, they should first meet with their House Dean or the curriculum Head of Department.

We wish our students well as they enter this next exciting phase of their learning journey at QASMT.

## 2.0 QASMT VALUES AND MISSION

### Our Vision

Inspiring great minds through the provision of a world-class education that nurtures personal excellence and develops young people who are able to contribute positively to an ever-changing world.

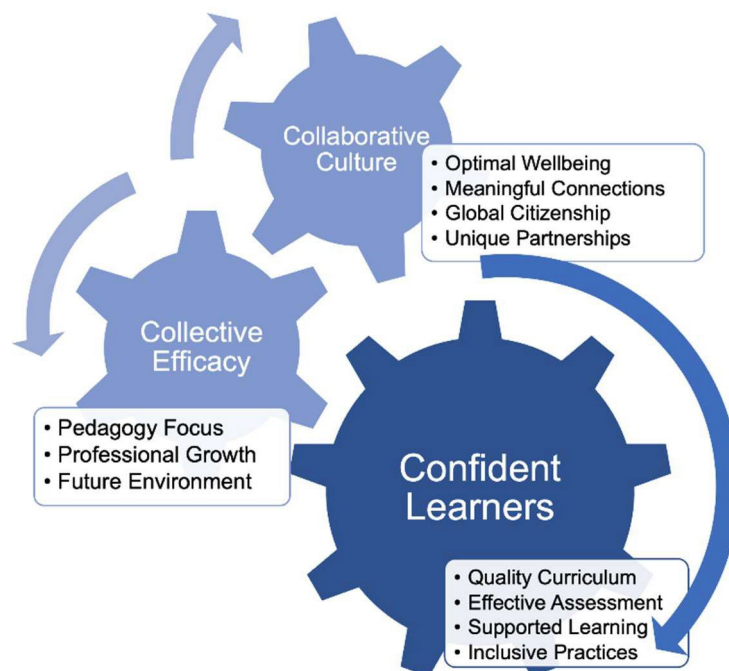
### Our Values

We value the ten aspirational qualities of the International Baccalaureate (IB) Learner Profile, which go beyond academic success to instil a sense of personal excellence, striving to improve in every aspect of our lives. The aim is not perfection but instead to achieve our potential; and flourishing as defined in positive psychology.

Inquirers	Thinkers	Balanced
Open-minded	Risk-takers	Principled
Knowledgeable	Communicators	Reflective
Caring		

### Our Mission

To achieve the IB aims of developing inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect. Through the IB, we develop challenging programmes of international education and rigorous assessment. These programmes encourage our students to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.



*(Adapted from the IB Mission Statement)*

## 2.1 KEY ASPECTS OF THE IB DIPLOMA PROGRAMME

The International Baccalaureate (IB) Diploma Programme is a rigorous and academically challenging pre-university curriculum for students aged from 16 to 19 years. The Programme emphasises the importance of breadth and depth in academic study whilst maintaining a focus on the very way we understand knowledge through the *Theory of Knowledge* course. Students are encouraged to become active global citizens and understand the importance of care and compassion in an increasingly globalised world. The Diploma encourages students to develop their physical, emotional, intellectual and ethical selves and as such is well regarded and recognised by the world's leading universities.

## 2.2 THE IB DIPLOMA PROGRAMME CURRICULUM

The IB curriculum can be best understood through the *IB Circle* (Figure 1). Students must study six subjects when undertaking the Diploma Programme, with one subject being chosen from each of Groups 1 to 5. The sixth subject may come from Group 4 or 6. Three subjects must be studied at Standard Level (equivalent of 150 teaching hours each subject) and three at Higher Level (equivalent of 240 teaching hours each subject).

During the two-year Programme students will also complete an *Extended Essay*, follow a *Theory of Knowledge* course and participate in the *Creativity, Activity, Service* course.

The International Baccalaureate Organisation (IBO) has comprehensive guidelines that must be adhered to for students to receive the IB Diploma qualification. A summary of these requirements is provided in this guide.

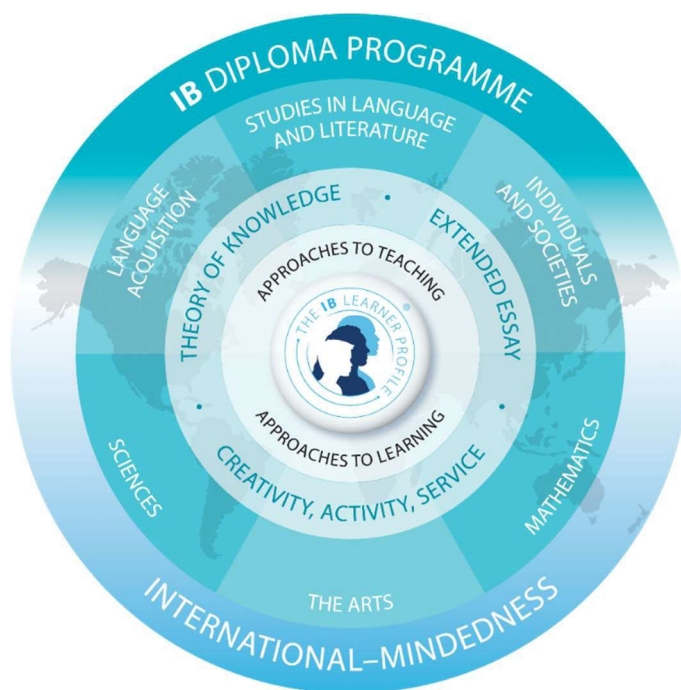


Figure 1: The IB Diploma Programme curriculum overview

## 2.3 THE IB DIPLOMA PROGRAMME CORE

At the core of the Diploma Programme are the three course requirements that broaden the Diploma Programme experience and require students to apply their knowledge and understanding. The core includes the *Theory of Knowledge* course, the *Extended Essay*, and *Creativity, Activity, Service*.

- **The Extended Essay** is a requirement for students to engage in independent research through an in-depth study of a question relating to one of the subjects they are studying.
- **Theory of Knowledge** is a course designed to encourage each student to reflect on the nature of knowledge by critically examining different ways of knowing (perception, emotion, language and reason) and different kinds of knowledge (scientific, artistic, mathematical and historical).
- **Creativity, Activity, Service** requires that students actively learn from the experience of doing real tasks beyond the classroom. Students can combine all three components or do activities related to each one of them separately.

These core requirements will be explored in detail in this guide.

## 2.4 THE IB LEARNER PROFILE

The aim of all IB Programmes is develop international mindedness in students who, recognising their common humanity and shared guardianship of the planet, help to create a better and more peaceful world. IB learners strive to be:

<b>Inquirers</b>	They develop their natural curiosity. They acquire the skills necessary to conduct inquiry and research and show independence in learning. They actively enjoy learning, and this love of learning will be sustained throughout their lives.
<b>Knowledgeable</b>	They explore concepts, ideas and issues that have local and global significance. In so doing, they acquire in-depth knowledge and develop understanding across a broad and balanced range of disciplines.
<b>Thinkers</b>	They exercise initiative in applying thinking skills critically and creatively to recognize and approach complex problems, and make reasoned, ethical decisions.
<b>Communicators</b>	They understand and express ideas and information confidently and creatively in more than one language and in a variety of modes of communication. They work effectively and willingly in collaboration with others.
<b>Principled</b>	They act with integrity and honesty, with a strong sense of fairness, justice and respect for the dignity of the individual, groups and communities. They take responsibility for their own actions and the consequences that accompany them.
<b>Open-minded</b>	They understand and appreciate their own cultures and personal histories, and are open to the perspectives, values and traditions of other individuals and communities. They are accustomed to seeking and evaluating a range of points of view and are willing to grow from the experience.
<b>Caring</b>	They show empathy, compassion and respect towards the needs and feelings of others. They have a personal commitment to service, and act to make a positive difference to the lives of others and to the environment.
<b>Risk-takers</b>	They approach unfamiliar situations and uncertainty with courage and forethought and have the independence of spirit to explore new roles, ideas and strategies. They are brave and articulate in defending their beliefs.
<b>Balanced</b>	They understand the importance of intellectual, physical and emotional balance to achieve personal well-being for themselves and others.
<b>Reflective</b>	They give thoughtful consideration to their own learning and experience. They are able to assess and understand their strengths and limitations in order to support their learning and personal development.

### 3.0 UNDERSTANDING THE IB DIPLOMA REQUIREMENTS

The following information provides a ‘quick reference’ summary of key elements of the IB Diploma Programme requirements. The IB requires all candidates and schools to adhere to these Programme guidelines without exception.

- A student must engage in the full programme of subjects from each of the six groups. The only exception to this is the option to study the sixth subject by selecting a second subject from one of the other groups (at QASMT, students can select a second Group 3 or 4).
- A student must complete all core Programme requirements. This includes successful completion of:
  - Creativity, Activity, Service.
  - Theory of Knowledge.
  - Extended Essay.

### 3.1 HIGHER LEVEL / STANDARD LEVEL SUBJECTS

Of the six subjects studied, a minimum of three (3) must be studied at Higher Level and the remainder at Standard Level. The difference in Higher / Standard Level is the number of teaching hours required.

- Higher Level (HL) 240 hours
- Standard Level (SL) 150 hours

Different subjects differentiate between the HL / SL courses in different ways:

- Core standard course in both with additional topics in HL
- The same topics in each but covered to a different depth
- Differing assessment requirements

### 3.2 SUBJECT GRADING

- Achievement in each group subject is graded between a 7 (highest) to a 1 (lowest).
- HL / SL subjects are treated in the same way when contributing to the overall Diploma score (i.e., a 6 grading in an SL subject **is worth the same as** a 6 grading in the equivalent HL subject).
- Inner Core subjects, Theory of Knowledge and Extended Essay are graded from A to E.
- CAS is graded as satisfactory or unsatisfactory.
- A maximum score of 45 can be achieved in a Diploma.
  - 6 subjects x grading of up to 7 = 42 points
  - TOK + Extended Essay bonus points = 3 points
  - = 45 points total

### 3.3 ACHIEVING THE DIPLOMA QUALIFICATION

The Diploma Programme requires that students meet a number of requirements. These requirements are summarised in the table below. A student who does not successfully complete the Diploma may retake assessment within the IB up until 12 months after the Year 12 November examinations. The two opportunities coincide with the May IB examination session and the following November session. There is a fee incurred for all retakes.

Table 1: Conditions for Diploma Qualification Award

Criteria	IB Diploma Score (/45)
CAS requirements are met	Satisfactory
Total points	$\geq 24$
TOK and EE minimum grade	D
Subject minimum grade	2
No 2 grades in subjects	Maximum 2 subjects
No 3 grades in subjects	Maximum 3 subjects
Higher Level (HL) points	$\geq 12$
Standard Level (SL) points	$\geq 9$

### 3.4 AWARD OF INNER CORE POINTS

Up to three (3) Inner Core points can be awarded from the successful completion of the *Extended Essay* and *Theory of Knowledge* course. Points are awarded according to the grade combination of the *Extended Essay* and *Theory of Knowledge* course according to the following matrix:

		Theory of Knowledge				
		A	B	C	D	E
Extended Essay	A	3	3	2	2	Failing condition
	B	3	2	2	1	
	C	2	2	1	0	
	D	2	1	0	0	
	E	Failing condition				

Figure 2: IB Diploma Inner Core Points Matrix.

## 4.0 EXAMINATION RESULTS

Examination results are available in mid-December following the November examination session. Student results are released directly to QTAC (Queensland Tertiary Admissions Centre), UAC (Universities Admissions Centre – NSW & ACT) and VTAC (Victorian Tertiary Admissions Centre). Students wishing to have their results released to other admissions centres or universities are required to

liaise with the IB DP Coordinator in person well before their examination session, this is done through a survey that all students will complete prior to the end of Year 12.

Students successfully completing the Diploma Programme will receive their physical Diploma certificate in late March following the November examination session. Each student's Diploma will indicate the grade a candidate has been awarded for each subject, including the additional Diploma requirements of *Theory of Knowledge* and the *Extended Essay*. The results will also indicate the successful completion of *Creativity, Activity, Service* and total number of points for the qualification award.

## 5.0 THE IB DIPLOMA AND THE QCE

Students studying the IB Diploma Programme in Queensland can also gain a second qualification parallel to their Diploma studies. This qualification is the *Queensland Certificate of Education* or QCE. Below is information pertaining to the QCE and its relationship to the IB Diploma Programme.

- The Queensland Curriculum and Assessment Authority (QCAA) issues the QCE qualification whilst the International Baccalaureate Organisation (IBO) issues the IB Diploma qualification.
- The IBO sends the results of students directly to the QCAA.
- The QCE is issued by the QCAA twice a year in December (for most Queensland students) and July.
- There are set criteria for obtaining the IB Diploma and separate criteria for the QCE. In most cases, if a student achieved the Diploma, they would achieve the QCE, but there are exceptions. A student may receive the Diploma, but not the QCE. Likewise, a student may receive a QCE, but not a Diploma.
- The QCE requires students to show a literacy and numeracy standard. This criterion is satisfied by achieving a grade 4 level of achievement in an IB Mathematics or English course, or a grade 3 and having achieved a grade of 4 or higher for the Internal Assessment component.
- A student's QCE account remains open for nine (9) years but closes as soon as the requirements have been met and the QCE issued.
- Tertiary entrance does not depend on the attainment of the QCE. In most cases tertiary entrance depends on the achievement level within the Programme being studied.
- All students have a learning account with the QCAA which can be accessed through the Career Information Service website. Students use their LUI number and password. All QASMT students will be issued with their account details once available. This account shows the subjects they are studying and any courses they may have completed, e.g., AMEB Level 5. The registered learning organisation responsible the delivery of that course submits these results to the QCAA directly (e.g., South Bank Institute for Certificate III qualification).

## 6.0 THE IB DIPLOMA AND UNIVERSITY ENTRANCE

International Baccalaureate examinations are accepted around the world as a qualification for university entrance. Since 1969, IB students have entered over 4,500 universities in Europe, the Americas, Asia, Africa, and Australia, and the list of institutions accepting IB students, which includes the most prestigious institutions in 110 countries and territories throughout the world, is growing every year.

Many university admissions personnel have stated that they prefer IB students because the IB course develops a variety of skills needed for university study, and successful IB graduates have already demonstrated the ability to work at this level. In addition, IB students, having studied a range of subjects, can make a more informed choice of undergraduate programs. Many employers, too, recognise the

value of analytical skills, flexibility and adaptability, all of which are stressed in the IB Programme. Thus, the IB Programme offers not only preparation for university, but also for life after university. The IB Programme is a pre-university course which requires that each student design a course suited to his or her needs and interests.

Individual university websites should be consulted to determine the entrance processes required. In Australia, selection to university is most commonly completed through the tertiary admission centres for each state. Our Guidance Officer, Mrs Katrina Judge, offers support to all students and families with university applications as required.

- Queensland Centre: Queensland Tertiary Admissions Centre (QTAC)
- New South Wales/ACT Centre: University Admissions Centre (UAC)
- Victoria Centre: Victorian Tertiary Admissions Centre (VTAC)
- South Australia/NT Centre: South Australian Tertiary Admissions Centre (SATAC)
- Western Australia Centre: Tertiary Institutions Service Centre (TISC)

## **6.1 HOW IS MY NOTIONAL ATAR CALCULATED IN AUSTRALIA?**

Across Australia, a common national measure of Year 12 student achievement is used in the tertiary selection process. Expressed in a scale extending from 99.95 (highest) to 30 (lowest), this common national measure is called the Australian Tertiary Admissions Rank (ATAR). A student's IB Diploma score (out of 45) is converted to an IB Admissions Score (IBAS), and then to a notional ATAR score, known as a Combined Rank, for the purposes of tertiary entrance in Australia. This conversion and other information about how to convert IB scores to a notional ATAR is available at <https://www.gtac.edu.au/non-atar/>.

It is important to note that a notional ATAR is only awarded to students who achieve an IB Diploma. If an IB Diploma is not attained, alternative entry pathways to university will need to be used. Note that ATAR conversions do change each year and are usually updated by ACTAC in December after the November examination is completed.

## **6.2 WHAT ARE ADJUSTMENT FACTORS?**

Adjustment factors may boost your selection rank and can improve your chances of gaining a place in your preferred degree at university. Universities recognise various challenges during high school education by crediting additional points to a student's selection rank (ATAR), assisting them to meet course entry requirements.

Adjustment schemes are intended to recognise various backgrounds and experiences. They may also reflect a student's unique skills and talents.

Schemes vary between universities and individual courses but may be awarded for studying particular subjects, such as a second language, for rural or regional backgrounds, for disadvantage, for elite performance (athletes, performers, leaders) or other criteria. The University of Queensland, Griffith University and QUT offer adjustment factors in recognition of various IB subjects with specific details on their websites. Schemes vary among universities, so it is important to investigate each of the university admissions websites for current details of adjustment factor schemes.

- Adjustment factors don't apply to all courses, for example, most medicine courses do not offer adjustment factors for subject choice.
- Adjustment factors are capped.

- Adjustment factors are applied to selection ranks (combined rank) after conversion from an IBAS. They do not alter IB scores.

The maximum number of adjustment factors awarded will depend on the institution making the offer. At the University of Queensland, the maximum number of adjustment factors for any one student is three. This includes two adjustment factors awarded for successful study of a language other than English (including the study of the Classical Language Latin).

Adjustment factor schemes are regularly reviewed, and students are encouraged to regularly check university admissions sites for details of updated schemes.

### **6.3 CAN I GET CREDIT FOR IB SUBJECTS AT UNIVERSITY?**

Students who obtain certain grade levels for some International Baccalaureate Diploma Programme subjects will be able to access course credits or exemptions at university. Much like the adjustment factor schemes, these arrangements may differ for each institution and as such, students should closely review the admissions websites for up-to-date information on course credit arrangements.

Details of credit for International Baccalaureate study at The University of Queensland can be found at <https://study.uq.edu.au/admissions/undergraduate/check-credit-eligibility>.

Details of credit for International Baccalaureate study at QUT can be found at <https://www.qut.edu.au/study/applying/advanced-standing>.

Details of credit for International Baccalaureate study at Griffith University can be found at <https://www.griffith.edu.au/apply/credit-transfer/international-baccalaureate-diploma>.

Details for other universities can be found on their individual websites.

## **7.0 ACADEMIC INTEGRITY AND STUDENT CONDUCT**

The Queensland Academy for Science, Mathematics and Technology (QASMT) supports the IBO in its approach to academic integrity which promotes the development of a set of values around personal integrity in the areas of teaching, learning and assessment.

### **7.1 ACADEMIC MISCONDUCT**

The IB defines academic misconduct as behaviour (whether deliberate or inadvertent) that results in, or may result in, the candidate or any other candidate gaining an unfair advantage in one or more components of assessment. Behaviour that may disadvantage another candidate is also regarded as academic misconduct.

It is also an act that potentially threatens the integrity of IB examinations and assessments that can happen before, during or after the completion of the assessment or writing time of the examination, both paper-based and on-screen.

Academic misconduct is a breach of these regulations and includes, but is not restricted to:

- Plagiarism—this is defined as the representation, intentionally or unintentionally, of the ideas, words or work of another person or artificial intelligence without proper, clear and explicit acknowledgment
- Collusion—this is defined as supporting academic misconduct by another candidate, for example, allowing one's work to be copied or submitted for assessment by another.

- Duplication of work—this is defined as the presentation of the same work for different assessment components and/or DP core requirements.
- Misconduct during an IB examination (for example, taking unauthorized material into an examination, behaviour that disrupts the examination or distracts other candidates, or communicating with another candidate).
- Unethical behaviour such as the inclusion of inappropriate material in any assessment materials or the breach of ethical guidelines when conducting research.
- Any other behaviour that gains an unfair advantage for a candidate or that affects the results of another candidate (for example, falsifying a CAS record, disclosure of information to and receipt of information from candidates about the content of an examination paper within 24 hours after a written examination via any form of communication/media).

## 7.2 ARTIFICIAL INTELLIGENCE

The IB states that although it will not ban the use of AI software, students need to be aware that the IB does not regard any work produced – even only in part – by such tools to be their own. As with any quote or material from another source, it must be clear that any AI-generated text, image or graph included in a piece of work has been copied from such software. This software must be credited in the body of the text and appropriately referenced in the bibliography. If this is not done, the student is misrepresenting content, which is academic misconduct.

Teachers are best placed to know what a student is capable of and when a piece of work appears not to have been written by the student. If teachers are not convinced that the work is the student’s own, it must not be submitted (IBO *Academic Integrity*<sup>1</sup>, page 55).

## 7.3 REFERENCING

Students should take note of the following extract from the IBO’s *Academic Integrity*<sup>1</sup> publication:

“The **candidate** is ultimately responsible for ensuring that all work submitted for assessment is authentic, with the work or ideas of others fully and correctly acknowledged. Candidates are expected to comply with all internal school deadlines: this is for their own benefit and may allow time for revising work that is of doubtful authorship before the submission of the final version.”

Students must acknowledge all ideas and works of other persons; this includes:

- rendition of another person’s, or Artificial Intelligence (AI) words presented in a new style and integrated grammatically in the writing.
- all internet sources, email messages, website, blogs, chats and forums.
- electronic media, including generation from an AI platform.
- sources of all photographs, maps, illustrations, computer programs, data, graphs, audio-visual materials.
- verbatim (word-for-word) quotes.
- works of art including music, film, dance, theatre arts and visual arts.

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<sup>1</sup> *Academic Integrity*. (2020). Cardiff, Wales: International Baccalaureate Organization.

QASMT uses the APA (American Psychological Association) style of referencing. Students are encouraged to use Microsoft Word's referencing tool (which includes the APA style) to achieve consistency and accuracy in referencing. Teachers should be fully aware of the APA referencing conventions and actively use it when supplying materials to students. Support materials can be found at <https://org.slasa.asn.au/apa> and <https://web.library.uq.edu.au/node/4221/1>.

Students are ultimately responsible for ensuring their submitted work is authentic, but teachers play a vital role in assisting with early detection of plagiarism. If a teacher suspects that a student's draft submission is in breach of the principles of academic integrity, they must draw the student's attention to the risks associated with submitting the piece of assessment. **Once a final piece of assessment has been submitted, it cannot be retracted. The teacher is responsible for notifying the IB DP Coordinator of the breach.**

QASMT has subscribed to *Turnitin*, an online plagiarism detection tool to assist students in achieving academic integrity in their submissions. This tool is to assist students in their referencing of assignment work. Students at QASMT access *Turnitin* through our Daymap portal. It is important to note that the IBO randomly check student assessment for plagiarism

Students can submit their assignment to *Turnitin* several times, to check for deficiencies in their acknowledgements and to reassess their referencing before their final submission is due. All teachers need to become familiar with the program, and all student assessment should be submitted to *Turnitin*. Appropriate training and assistance is available to all students and staff through Heads of Department, and the IB DP Coordinator.

A student found guilty of academic misconduct will not receive their IB Diploma qualification as this is identified as a failing condition by the IBO. For further details, please read the QASMT Academic Integrity Policy available on the school website.

## 7.4 COLLUSION VERSUS COLLABORATION

Collaboration includes working in groups to achieve a shared goal and is common in a form of assessment in which all members of the group are expected to participate equally (e.g., Collaborative Sciences Project). Collaboration is about sharing ideas, data and knowledge to enhance understanding.

This may be through group discussions about a text, a problem or an experiment. Obtaining assistance about the structure, content etc. from a tutor, but doing the work yourself is to collaborate. Group work will often involve collaboration and may be face-to-face, in discussion boards, blogs and wikis. The protocols of acknowledging sources still apply.

Collusion is the deliberate misrepresentation of another's work as your own with the intention to mislead. Collusion would include, but is not limited to:

- using the same data in the same way and submitting all or part of an IA for two or more students.
- having a tutor write your work.
- handing on an assignment to another person and that person copying your work (whether you are aware of this intention or not).

Permissible collaboration includes:

- discussion with other students regarding issues raised by an assessment item.

- discussion with other students regarding how to address the issues raised by an assessment item.
- collaborate in the location of, and sharing, sources of information relevant to the item of assessment.

To assist students in understanding the requirements surrounding academic integrity, it is the responsibility of all teachers to advise students on what constitutes misconduct in their subject area. Additional support and information sessions will be provided regularly by the IB DP Coordinator.

## 8.0 IB DIPLOMA PROGRAMME CORE

Diploma candidates must successfully complete all three core requirements:

- Creativity, Activity, Service (CAS)
- Extended Essay (EE)
- Theory of Knowledge (TOK)

While CAS achievement is monitored, a grade is not awarded. Candidates are deemed 'Satisfactory' or 'Unsatisfactory' for the CAS component of their course.

For TOK and EE the highest grade that can be awarded is an 'A.' The award of the three (3) possible bonus points is determined according to the *IB Diploma Bonus Points Matrix*.

### 8.1 CREATIVITY, ACTIVITY, SERVICE (CAS)

Within the Diploma Programme, CAS provides the main opportunity to develop many of the attributes described in the IB learner profile. For this reason, the aims of CAS have been written in a form that highlights their connections with the IB learner profile. The three strands of CAS which are often interwoven with activities are characterised as:

- creativity – arts or other experiences that involve creative thinking
- activity – physical activity contributing to a healthy lifestyle
- service – all unpaid voluntary exchange that has a learning benefit for the student. The rights, dignity and autonomy of all those involved are respected.

#### 8.1.1 Aims

The CAS Programme aims to develop students who are:

- reflective thinkers – they understand their own strengths and limitations, identify goals and devise strategies for personal growth
- willing to accept new challenges and new roles
- aware of themselves as members of communities with responsibilities towards each other and the environment
- active participants in sustained, collaborative project
- balanced – they enjoy and find significance in a range of activities involving intellectual, physical, creative and emotional experiences.

## 8.1.2 Core Creativity, Activity, Service – IBO Assessment Requirements

	Assessment
<b>Creativity, Activity and Service</b>	<b>CAS Requirements</b> <ul style="list-style-type: none"><li>• All eight outcomes addressed</li><li>• Quality reflections on activities (written, audio or visual) are required and must be accompanied by evidence <b>and</b> a supervisor’s report.</li><li>• Minimum of 9 activities over 18 months with a balance between Creativity, Activity, and Service. While hours are not “counted” it is expected that students will spend approximately 3-4 hours per school week (equates to approximately 150 hours over 18 months)</li><li>• Students will participate in at least three interviews with CAS advisor or CAS Coordinator over 18 months.</li><li>• Minimum of one project which must cover two areas of CAS, be of significant duration and be collaborative.</li></ul>

## 8.2 EXTENDED ESSAY (EE)

The Extended Essay is an in-depth focused topic chosen from the list of approved Diploma Programme subjects (normally one of the student’s six chosen subjects for the IB Diploma). It provides students with an opportunity to engage in personal research in a topic of their own choice, under the guidance of a supervisor (a teacher in the Academy). This leads to a major piece of formally presented, structured writing, in which ideas and finds are communicated in a reasoned and coherent manner, appropriate to the subject chosen. Students begin the research process during Year 11 and submit in the second year of IB study.

### 8.2.1 Aims

The aims of the Extended Essay are to provide students with the opportunity to:

- pursue independent research on a focused topic
- develop research and communication skills
- develop the skills of creative and critical thinking
- engage in a systematic process of research appropriate to the subject
- experience the excitement of intellectual discovery.

In working on the Extended Essay, students are expected to:

- plan and pursue a research project with intellectual initiative and insight
- formulate a precise research question
- gather and interpret material from sources appropriate to the research question
- structure a reasoned argument in response to the research question based on the material gathered
- present their Extended Essay in a format appropriate to the subject, acknowledging sources in one of the established academic ways
- use the terminology and language appropriate to the subject with skill and understanding
- apply analytical and evaluative skills appropriate to the subject, with an understanding of the implications and the context of their research.

## 8.2.2 Core Extended Essay – IBO Assessment Requirements

	Assessment
Extended Essay	<b>Essay</b> The 4000-word essay is marked out of 34 and is graded A to E. The essay is marked according to the criteria set by the IBO.
	<b>Reflections on planning and progress form</b> Students will have three reflection sessions with their supervisor, one early in the process, an interim meeting and then a final viva voce. The purpose of these sessions is to clarify the direction of essay and reflect on what has been learned. After each reflection, session candidates must record the reflections and the supervisor must sign and date the assigned form. This form will be submitted together with the completed EE for assessment under Criterion E.

## 8.3 THEORY OF KNOWLEDGE (TOK)

The TOK course plays a special role in the Diploma Programme by providing an opportunity for students to reflect on the nature, scope and limitations of knowledge and the process of knowing. In this way, the main focus of TOK is not on students acquiring new knowledge but on helping students to reflect on, and put into perspective, what they already know. TOK underpins and helps to unite the subjects that students encounter in the rest of their DP studies. It engages students in explicit reflection on how knowledge is arrived at in different disciplines and areas of knowledge, on what these areas have in common and the differences between them.

### 8.3.1 Aims and Assessment Objectives

The aims of the TOK course are to:

- encourage students to reflect on the central question, “How do we know that?”, and to recognize the value of asking that question
- expose students to ambiguity, uncertainty and questions with multiple plausible answers
- equip students to effectively navigate and make sense of the world, and help prepare them to encounter novel and complex situations
- encourage students to be more aware of their own perspectives and to reflect critically on their own beliefs and assumptions
- to engage students with multiple perspectives, foster open-mindedness and develop intercultural understanding
- encourage students to make connections between academic disciplines by exploring underlying concepts and by identifying similarities and differences in the methods of inquiry used in different areas of knowledge
- prompt students to consider the importance of values, responsibilities and ethical concerns relating to the production, acquisition, application and communication of knowledge.

Having followed the TOK course, students should be able to:

- demonstrate TOK thinking through the critical examination of knowledge questions
- identify and explore links between knowledge questions and the world around us

- identify and explore links between knowledge questions and areas of knowledge
- develop relevant, clear and coherent arguments
- use examples and evidence effectively to support a discussion
- demonstrate awareness and evaluation of different points of view
- consider the implications of arguments and conclusions.

### 8.3.2 Core Theory of Knowledge - IBO Assessment Requirements

	Assessment	Weight
TOK	<b><i>Internal Assessment (externally moderated)</i></b> <ul style="list-style-type: none"> <li>• TOK exhibition (10 marks)</li> <li>• For this component, students are required to create an exhibition that explores how TOK manifests in the world around us.</li> </ul>	33%
	<b><i>External Assessment</i></b> <ul style="list-style-type: none"> <li>• TOK essay on a prescribed title (10 marks)</li> <li>• For this component, students are required to write an essay in response to one of the six prescribed titles that are issued by the IB for each examination session.</li> </ul>	67%

## 9.0 GROUP 1 – STUDIES IN LANGUAGE AND LITERATURE

### 9.1 ENGLISH A LANGUAGE AND LITERATURE (SL/HL)

In English A Language and Literature, students read, interpret and analyse a wide range of literary and non-literary texts from a range of historical, cultural and linguistic contexts. The nature of language and the ways in which it shapes, and is influenced by identity and culture, is explored and examined over the course of the two-year programme. In addition, students develop knowledge and understanding of literary theory, sociolinguistics, media institutional practices and critical discourse analysis.

Three *Areas of Exploration* formulate the programme. They are:

- Readers, Writers and Texts.
- Time and Space.
- Intertextuality: connecting texts.

Students examine the nature of language and literature; and investigate how and why texts are constructed. The significance of cultural context in which the production and reception of texts is explored. Intertextual relationships are examined in relation to various topics, thematic concerns, generic conventions, modes of literary traditions. Critical responses are developed based on an understanding of the complex relationships among texts.

The study of English A Language and Literature is also instrumental in developing an awareness and understanding of the self and how it relates to others. Through the study of texts written originally in the language studied and in translation, students gain an understanding of the ways in which different languages and literatures represent the world, and how these can reflect and create diverse identities. Students become aware that representations of the world vary across cultures, and are encouraged to

consider the reasons why, attaining a better understanding of the different ways in which people experience and represent the world.

### **9.1.1 Aims**

The aims of all subjects in studies in language and literature are to enable students to:

- engage with a range of texts, in a variety of media and forms, from different periods, styles, and cultures
- develop skills in listening, speaking, reading, writing, viewing, presenting and performing
- develop skills in interpretation, analysis and evaluation
- develop sensitivity to the formal and aesthetic qualities of texts and an appreciation of how they contribute to diverse responses and open up multiple meanings
- develop an understanding of relationships between texts and a variety of perspectives, cultural contexts, local and global issues, and an appreciation of how they contribute to diverse responses and open up multiple meanings
- develop an understanding of the relationships between studies in language and literature and other disciplines
- communicate and collaborate in a confident and creative way
- foster a lifelong interest in and enjoyment of language and literature.

### **9.1.2 Syllabus Outline**

SL students are required to study four literary works and several non-literary texts that is equivalent in teaching and learning time, whereas HL students are required to study six literary works and a number of non-literary texts that is equivalent in teaching and learning time. Paper 1 and 2 examinations for SL and HL have a similar format with some additional requirements for HL students. As part of their coursework, HL students will also submit an essay that requires students to explore a line of inquiry in relation to a studied non-literary text or texts, or a literary text or work. The outcome of this exploration is a 1200-1500 word essay in which HL students are expected to demonstrate a deeper understanding of the nature of linguistic or literary study.

The learner portfolio is also a central element of the Language A: Language and Literature course and is mandatory for all students. It is an individual collection of student work done throughout the two years of the course. The work carried out for the learner portfolio forms the basis of preparation for the assessment, although the portfolio itself will not be directly assessed or moderated by the IB. However, it is a fundamental element of the course, providing evidence of the student's work and a reflection of their preparation for the assessment components.

### 9.1.3 Group 1 Language and Literature - IBO Assessment Requirements

	Assessment	Weight
Standard Level	<p><b>Internal Assessment (externally moderated)</b></p> <p><b>Individual oral</b> (15 minutes) Supported by an extract from one non-literary text and one from a literary work, students will offer a prepared response of 10 minutes, followed by 5 minutes of questions by the teacher.</p>	30%
	<p><b>External Assessment (3 hours)</b></p> <p><b>Paper 1: Guided textual analysis</b> (1 hour 15 minutes) The paper consists of two non-literary passages, from two different text types, each accompanied by a question. Students choose one passage and write an analysis of it.</p>	35%
	<p><b>Paper 2: Comparative essay</b> (1 hour 45 minutes) The paper consists of four general questions. In response to one question students write a comparative essay based on two works studied in the course.</p>	35%
Higher Level	<p><b>Internal Assessment Individual Oral (externally moderated)</b></p> <p><b>Individual oral</b> (15 minutes) Supported by an extract from both one non-literary text and one from a literary work, students will offer a prepared response of 10 minutes, followed by 5 minutes of questions by the teacher.</p>	20%
	<p><b>External Assessment (4 hours)</b></p> <p><b>Written Essay</b> Students submit an essay on one non-literary text or a collection of non-literary texts by one same author, or a literary text or work studied during the course. The essay must be 1200-1500 words in length.</p>	20%
	<p><b>Paper 1: Guided textual analysis</b> (2 hours 15 minutes) The paper consists of two non-literary passages, from two different text types, each accompanied by a question. Students write an analysis of each of the passages.</p>	35%
	<p><b>Paper 2: Comparative essay</b> (1 hour 45 minutes) The paper consists of four general questions. In response to one question students write a comparative essay based on two works studied in the course.</p>	25%

## 9.2 LANGUAGE A LITERATURE (SL) - SCHOOL SUPPORTED SELF-TAUGHT - SSST (MOTHER TONGUE LANGUAGE)

Information about the School Supported Self-Taught - SSST (Mother Tongue Language) programme for Language A Literature SL has previously been supplied to parents and students. Participation in this course is by approval only, any queries should be directed to the IB DP Coordinator.

## 10.0 GROUP 2 – LANGUAGE ACQUISITION

Language acquisition consists of two modern language courses – Language B and Language ab initio, offered in a number of languages, and a classical languages course that is offered in Latin. Language B and Language ab initio are language acquisition courses designed to provide students with the necessary skills and intercultural understanding to enable them to communicate successfully in an environment where the language studied is spoken and in the classical languages to experience ancient texts in the most immediate way possible. This process allows the learner to go beyond the confines of the classroom, expanding their awareness of the world and fostering respect for cultural diversity.

The two modern language courses – Language B and Language ab initio – develop students' linguistic abilities through the development of receptive, productive and interactive skills.

The classical languages course focuses on the study of the language, literature and culture of the classical world.

### 10.1 MODERN LANGUAGE B AND LANGUAGE AB INITIO

#### 10.1.1 Aims

The aims of studies in Language B and Language ab initio enable students to:

- develop international mindedness through the study of languages, cultures, and ideas and issues of global significance.
- enable students to communicate in the language they have studied in a range of contexts and for a variety of purposes.
- encourage, through the study of texts and through social interaction, an awareness and appreciation of a variety of perspectives of people from diverse cultures.
- develop students' understanding of the relationship between the languages and cultures with which they are familiar.
- develop students' awareness of the importance of language in relation to other areas of knowledge.
- provide students, through language learning and the process of inquiry, with opportunities for intellectual engagement and the development of critical- and creative-thinking skills.
- provide students with a basis for further study, work and leisure through the use of an additional language.
- foster curiosity, creativity and a lifelong enjoyment of language learning.

The following assessment objectives are common to both modern Language B and Language ab initio. The level of difficulty of the assessments and the expectations of student performance on the tasks, are what distinguishes the modern language acquisition courses. The objectives are to:

- communicate clearly and effectively in a range of contexts and for a variety of purposes.
- understand and use language appropriate to a range of interpersonal and/or intercultural contexts and audiences.
- understand and use language to express and respond to a range of ideas with fluency and accuracy.
- identify, organize and present ideas on a range of topics.
- understand, analyse and reflect upon a range of written, audio, visual and audio-visual texts.

## **10.2 MODERN LANGUAGE B – CHINESE, FRENCH, GERMAN AND JAPANESE (SL/HL)**

Language B is a language acquisition course designed for students with some previous experience of the target language. In the Language B course, students further develop their ability to communicate in the target language through the study of language, themes and texts. In doing so, they also develop conceptual understandings of how language works, as appropriate to the level of the course.

At both levels of Language B (SL and HL), students learn to communicate in the target language in familiar and unfamiliar contexts. They describe situations, narrate events, make comparisons, explain problems, and state and support their personal opinions on a variety of topics relating to course content.

The study of two literary works originally written in the target language is required only at Language B HL. The distinction between Language B SL and HL can also be seen in the level of competency the student is expected to develop in the receptive, productive and interactive skills.

### **10.2.1 Syllabus Outline**

In the Language B course, students develop the ability to communicate in the target language through the study of language, themes and texts. In doing so, they also develop conceptual understandings of how language works. Five prescribed themes are common to the syllabus of Language B and Language ab initio. The themes provide relevant contexts for study at all levels of language acquisition in the DP, and opportunities for students to communicate about matters of personal, local or national, and global interest.

The five prescribed themes are:

- Identities
- Experiences
- Human ingenuity
- Social organization
- Sharing the planet

## 10.2.2 Group 2 Language B (SI/II) - IBO Assessment Requirements

	Assessment	Weight
Standard Level	<b>Internal Assessment (externally moderated)</b> Individual Oral (12–15 minutes)	25%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Productive skills - writing (1 hour 15 minutes)	25%
	<b>Paper 2</b> – Receptive skills - separate sections for listening and reading	25%
	<b>Listening comprehension</b> (45 minutes) <b>Reading comprehension</b> (1 hour)	25%
Higher Level	<b>Internal Assessment (externally moderated)</b> Individual Oral (12–15 minutes)	25%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Productive skills - writing (1 hour 30 minutes)	25%
	<b>Paper 2</b> – Receptive skills - separate sections for listening and reading	25%
	<b>Listening comprehension</b> (1 hour) <b>Reading comprehension</b> (1 hour)	25%

## 10.3 LANGUAGE AB INITIO – SPANISH (SL)

Language ab initio courses are language learning courses for beginners, designed for students who have limited or no previous experience of learning the target language. The main focus of the course is on the acquisition of language required for purposes and situations usual in everyday social interaction. Language ab initio courses are only available at Standard Level.

Language ab initio courses aim to develop a variety of linguistic skills and a basic awareness of the target culture(s) through the study of a core syllabus and language-specific syllabuses.

Prescribed topics:

Identities	Experiences	Human Ingenuity	Social organization	Sharing the planet
<ul style="list-style-type: none"> <li>Personal attributes</li> <li>Personal relationships</li> <li>Eating and drinking</li> <li>Physical wellbeing</li> </ul>	<ul style="list-style-type: none"> <li>Daily routine</li> <li>Leisure</li> <li>Holidays</li> <li>Festivals and celebrations</li> </ul>	<ul style="list-style-type: none"> <li>Transport</li> <li>Entertainment</li> <li>Media</li> <li>Technology</li> </ul>	<ul style="list-style-type: none"> <li>Neighbourhood</li> <li>Education</li> <li>The workplace</li> <li>Social issues</li> </ul>	<ul style="list-style-type: none"> <li>Climate</li> <li>Physical geography</li> <li>Environment</li> <li>Global issues</li> </ul>

### 10.3.1 Syllabus Outline

Because a structured learning environment is crucial for the success of beginning language learners, the Language ab initio syllabus prescribes four topics for each of the five prescribed themes. Thus, in total there are 20 topics that must be addressed in the Language ab initio course.

### 10.3.2 Group 2 Language ab initio - IBO Assessment Requirements

	Assessment	Weight
Standard Level	<b>Internal Assessment (externally moderated)</b> Individual Oral (7–10 minutes)	25%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Productive skills - writing (1 hour)	25%
	<b>Paper 2</b> – Receptive skills - separate sections for listening and reading	25%
	<b>Listening comprehension</b> (45 minutes)	25%
	<b>Reading comprehension</b> (1 hour)	

## 10.4 CLASSICAL LANGUAGE B – LATIN (SL/HL)

The aims of the classical languages course are to:

- enable students to develop knowledge and skills to engage with, use, and enjoy the classical language
- enable students to understand and make connections between texts written in the classical language
- provide students with an appreciation of both the classical world and the perspectives of Roman and ancient Greek people
- develop students' appreciation of the ongoing relevance and the literary merits of classical texts and the issues raised in them
- develop students' ability to engage in inquiry that involves both texts in the classical language and other products of classical cultures or their traditions
- improve students' understanding of their own language(s) and other languages as a basis for work and for further study.

At the end of the classical languages course, students will be able to:

- demonstrate, in a variety of ways, their understanding of the classical language and texts read in the classical language
- interpret and analyse texts written in the classical language through their knowledge of literary, stylistic, historical and cultural contexts
- synthesize evidence from a variety of primary, secondary, and reference sources
- construct arguments supported by relevant analysis of texts in the classical language and of other products of classical cultures or their traditions.

**In the HL course, the assessments will measure objectives 1, 2 and 3 using prose and verse texts written in the classical language.**

### 10.4.1 Syllabus Outline

The classical languages course, through which students develop skills related to the study of the classical language, its literature, and the broader study of antiquity, is divided into three areas of exploration. The areas of exploration act as lenses through which students and teachers consider the sources and texts encountered during the course. The areas of exploration are:

- Meaning, form, and language.
- Text, author, and audience.
- Time, space, and culture.

### 10.4.2 Group 2 Classical Language B - IBO Assessment Requirements

	Assessment	Weight
Standard Level	<b>Internal Assessment (externally moderated)</b> Research dossier	30%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Reading comprehension and translation (1 hour 30 minutes) <b>Paper 2</b> – Short answer questions and extended response (1 hour 30 minutes)	35% 35%
Higher Level	<b>Internal Assessment (externally moderated)</b> Research dossier	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Reading comprehension, translation and guided analysis (2 hours) <b>Paper 2</b> – Short answer questions and extended response (1 hour 30 minutes)	30% 30%
	<b>Higher Level Composition</b> Original composition in prose Latin	20%

## 11.0 GROUP 3 – INDIVIDUALS & SOCIETIES

The aim of all subjects in Group 3, Individuals and Societies is to:

- explore and critically engage with multiple perspectives and ways of thinking
- investigate and evaluate the interactions between individuals and societies
- think and act as informed and principled individuals in societies
- understand and value the variety and diversity of the human experience across time and place
- encourage the systematic and critical study of human experience and behaviour; physical, economic and social environments; and the history and development of social and cultural institutions
- develop in the student the capacity to identify, to analyse critically and to evaluate theories, concepts and arguments about the nature and activities of the individual and society
- enable the student to collect, describe and analyse data used in studies of society, to test hypotheses, and to interpret complex data and source material

- promote the appreciation of the way in which learning is relevant both to the culture in which the student lives, and the culture of other societies
- develop an awareness in the student that human attitudes and beliefs are widely diverse and that the study of society requires an appreciation of such diversity
- enable the student to recognize that the content and methodologies of the subjects in Group 3 are contestable and that their study requires the toleration of uncertainty.

## 11.1 BUSINESS MANAGEMENT (HL)

The business management course is designed to meet the current and future needs of students who want to develop their knowledge of business content, concepts and tools to assist with business decision making. Future employees, business leaders, entrepreneurs or social entrepreneurs need to be confident, creative and compassionate as change agents for business in an increasingly interconnected global marketplace.

Through the exploration of four interdisciplinary concepts—creativity, change, ethics and sustainability - this course empowers students to explore these concepts from a business perspective. Business management focuses on business functions, management processes and decision-making in contemporary contexts of strategic uncertainty. Students examine how business decisions are influenced by factors that are internal and external to an organization and how these decisions impact upon a range of internal and external stakeholders. Emphasis is placed on strategic decision-making and the operational business functions of human resource management, finance and accounts, marketing, and operations management.

The business management course encourages the application of local, national and global examples to content and concepts; the internal assessment (IA) for both SL and HL is an individual business research project that allows greater analysis and evaluation of content, concepts and context. Students can develop a deeper understanding of an organization by studying its processes through the lenses of creativity, change, ethics and sustainability.

### 11.1.1 Aims

The aims of the Business Management course at HL are to enable students to:

- develop as confident, creative and compassionate business leaders, entrepreneurs, social entrepreneurs and as change agents
- foster an informed understanding of ethical and sustainable business practices
- explore the connections between individuals, businesses and society
- engage with decision-making as a process and a skill

Having followed the Business Management course at HL students will be expected to:

- demonstrate knowledge and understanding of the business management tools and theories; the four interdisciplinary concepts (creativity, change, ethics and sustainability); real-world business problems, issues and decisions.
- apply and analyse real-world business situations and decisions by explaining the issues at stake, selecting and interpreting data, and applying appropriate tools, techniques, theories and concepts.
- synthesise and evaluate business problems, issues and decisions through critical thinking and to formulate recommendations with a strategic direction.
- demonstrate a variety of appropriate skills to produce well-structured written material using

business terminology; select and use quantitative and qualitative business tools, techniques and methods; and use selected business material, from a range of primary and secondary sources.

### 11.1.2 Syllabus Outline

The curriculum model for Diploma Programme Business Management has a core curriculum for HL and SL consisting of five topics with common content and learning outcomes. In addition to the core, HL students are expected to complete extension areas of study, in topics two to five, adding both depth and breadth to the course.

#### HL core:

Topic 1: Introduction to business management Topic 2: Human resource management

Topic 3: Finance and accounts Topic 4: Marketing

Topic 5: Operations management

### 11.1.3 Group 3 Business Management - IBO Assessment Requirements

	Assessment	Weight
Higher Level	<b>Internal Assessment (externally moderated)</b> Research Project [1800 words]	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Based on pre-released context & background [1 ½ hours]	25%
	<b>Paper 2</b> – Quantitative focus [1 ¾ hours]	30%
	<b>Paper 3</b> – Social enterprise focus [1 ¼ hours]	25%

## 11.2 ECONOMICS (HL)

Economics, a dynamic social science, is essentially about dealing with scarcity, resource allocation and the methods and processes by which choices are made in the satisfaction of human wants. As a social science, economics uses scientific methodologies that include quantitative and qualitative elements.

The IB Diploma Programme Economics course emphasizes the economic theories of microeconomics, which deal with economic variables affecting individuals, firms and markets, and the economic theories of macroeconomics, which deal with economic variables affecting countries, governments and societies. These economic theories are to be applied to real-world issues. Prominent among these issues are fluctuations in economic activity, international trade, economic development and environmental sustainability.

The ethical dimensions involved in the application of economic theories and policies permeate throughout the economics course as students are required to consider and reflect on human end-goals and values. The economics course encourages students to develop international perspectives, fosters a concern for global issues, and raises students' awareness of their own responsibilities at a local, national and international level. The course also seeks to develop values and attitudes that will enable students to achieve a degree of personal commitment in trying to resolve these issues, appreciating our shared responsibility as citizens of an increasingly interdependent world.

### 11.2.1 Aims

The aims of the Economics course at HL are to:

- develop a critical understanding of a range of economic theories, models, ideas and tools in the areas of microeconomics, macroeconomics and the global economy.
- apply economic theories, models, ideas and tools and analyse economic data to understand and engage with real-world economic issues and problems facing individuals and societies.
- develop a conceptual understanding of individuals' and societies' economic choices, interactions, challenges and consequences of economic decision-making.

### 11.2.2 Syllabus Outline

The curriculum model for Diploma Programme Economics has a core curriculum for HL consisting of four topics with common content and learning outcomes.

Topic 1: Introduction to Economics

Topic 2: Microeconomics

Topic 3: Macroeconomics

Topic 4: The Global Economy

### 11.2.3 Group 3 Economics - IBO Assessment Requirements

	Assessment	Weight
Higher Level	<b>Internal Assessment (externally moderated)</b>	
	Commentary portfolio [3 commentaries, 800 words each]	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Extended Response Paper [1 ¼ hours]	20%
	<b>Paper 2</b> – Data Response Paper [1 ¾ hours]	30%
	<b>Paper 3</b> – Policy Paper [1 ¾ hours]	30%

## 11.3 DIGITAL SOCIETY (HL)

We are (in) a digital society. Digital systems are changing our world and transforming how we think, communicate, collaborate and create. This course invites young people to better understand this changing world and to imagine where we might go next. As partners in inquiry, students and teachers explore the impacts and implications of digital systems for people and communities in diverse real-world contexts. Rooted in the interdisciplinary perspectives and skills of the social sciences and humanities, the course develops attributes of the IB learner profile while preparing students for further study in a variety of fields and professions. The passions, interests and experiences of young people are central to the course, which aims to empower them to become citizens who not only participate in digital society but lead it as well.

### 11.3.1 Aims

The Digital Society course invites students to develop as ethical, empathetic and creative people who address the world with individual and shared understanding, imagination and action.

The course aims indicate important milestones on a student's learning journey as they:

- focus inquiry using course concepts, content and contexts as well as real-world examples
- explore diverse sources relevant to digital society
- investigate impacts and implications of digital systems for people and communities
- reflect on emerging trends, future developments and further insights
- share discoveries about digital society with others.

Having followed the Digital Society course, students are expected to demonstrate the following assessment objectives. Students are expected to understand, apply, analyse, evaluate and synthesize:

- course topics, enduring understandings and areas for inquiry
- real-world examples involving digital systems
- claims and perspectives of diverse sources
- impacts and implications of digital systems for people and communities
- emerging trends and future developments
- challenges and interventions in digital society (HL only).

Students are expected to develop and refine digital society skills including:

- managing inquiry projects through planning, documentation and feedback
- researching using diverse and relevant sources
- thinking in critical and creative ways
- communicating in multiple modes and media.

### 11.3.2 Syllabus Outline

The Digital Society course includes the following topics, HL extension and inquiry project component.

Introduction		
1.1 What is a digital society?		
Concepts	Content	Contexts
2.1 Change 2.2 Expression 2.3 Identity 2.4 Power 2.5 Space 2.6 Systems 2.7 Values and ethics	3.1 Data 3.2 Algorithms 3.3 Computers 3.4 Networks and the internet 3.5 Media 3.6 Artificial Intelligence 3.7 Robots and autonomous technologies	4.1 Cultural 4.2 Economic 4.3 Environmental 4.4 Health 4.5 Human knowledge 4.6 Political 4.7 Social
HL extension: challenges and interventions		Inquiry project (internal assessment)
5.1 Global wellbeing 5.2 Governance and human rights 5.3 Sustainable development		An inquiry project into impacts and implications of digital systems for people and communities.

### 11.3.3 Group 3 Digital Society - IBO Assessment Requirements

	Assessment	Weight
Higher Level	<b>Internal Assessment (externally moderated)</b> Inquiry Project - A multimedia inquiry project into impacts and implications of digital systems for people and communities	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Structured questions [2 ¼ hours]	35%
	<b>Paper 2</b> – Source-based questions [1 ¼ hours]	20%
	<b>Paper 3</b> – Questions that address a HL challenge topic from a pre-released brief statement. [1 ¼ hours]	25%

## 11.4 PSYCHOLOGY (HL)

Psychology fascinates many of us as it enables the study of human behaviour—a subject of endless curiosity and relevance to our lives. Given that we are all human, why are our individual behaviours so different from one another? Why do we behave one way in groups and another when alone? How do our social and cultural background, our genetic inheritance and our developing cognition affect our behaviour? It is because psychology can help us explore these questions and try to understand and explain our behaviour and that of others that it is such a useful and compelling subject.

Psychology is the scientific study of human and animal cognition and behaviour with the goal of solving problems and increasing the quality of life for individuals and their communities. Psychologists attempt to describe, explain, predict and change behaviour by observing humans, forming hypotheses and theories regarding behaviour and testing them empirically. However, psychology is also a human science and looks for the meaning behind human behaviour through conversations and inquiry.

Psychology is a rich and diverse field of study with many different perspectives. Those fields have traditionally been dominated by a Western perspective, but modern psychologists recognize the importance of other voices. Not only are the voices of women and those of minority ethnic communities now more common in psychological research, but there is a shift from psychologists studying other cultures using Western understandings to an appreciation of how Indigenous psychologies contribute to a fuller understanding of human cognition and behaviour.

In the DP psychology course, students will develop knowledge and understanding of psychological concepts, content and contexts, as well as the models and theories associated with these areas. Through the course, students will develop the ability to engage in critical thinking, assess evidence and acknowledge the evolving nature of knowledge. They acquire the ability to seek fresh information and generate understanding by employing research methodologies. The goal of the DP psychology course is not to create psychologists, but to promote psychological literacy.

### 11.4.1 Aims

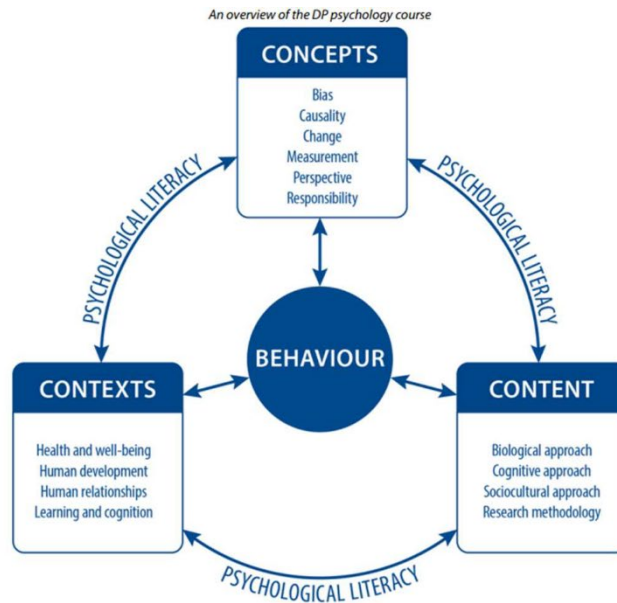
The aims of the Psychology course at HL are to:

- develop knowledge and understanding of psychological concepts, content and contexts, including models and theories

- think critically and creatively about behaviour and cognitive processes
- engage with problems facing individuals, groups and societies using psychological understanding and skills.

### 11.4.2 Syllabus Outline

The Psychology syllabus at SL and HL requires the following study:



*Overview of the SL and HL course: concepts, content and contexts*

Concepts	Content	Contexts
<ul style="list-style-type: none"> <li>• Bias</li> <li>• Causality</li> <li>• Change</li> <li>• Measurement</li> <li>• Perspective</li> <li>• Responsibility</li> </ul>	<ul style="list-style-type: none"> <li>• Biological approach</li> <li>• Cognitive approach</li> <li>• Sociocultural approach</li> <li>• Research methodology</li> </ul>	<ul style="list-style-type: none"> <li>• Health and well-being</li> <li>• Human development</li> <li>• Human relationships</li> <li>• Learning and cognition</li> </ul> <p>Note: class practicals are integrated within each context</p>

*Overview of the elements of DP psychology that are HL only*

HL only
<ul style="list-style-type: none"> <li>• The role of culture, motivation and technology in shaping human behaviour</li> <li>• Data analysis and interpretation</li> </ul>

The study of the core (approaches) provides a foundation and a broad overview of psychology, The IA enables students to demonstrate the application of their skills and knowledge, and to pursue their personal interests without the time limitations and other constraints that are associated with written examinations. Students should select one of the following research methods for their research proposal:

- Experiment (true or quasi-)
- Interviews (structured, semi-structured or focus group)
- Observations (naturalistic or controlled, overt or covert, participant or non-participant)
- Survey/questionnaire

### 11.4.3 Group 3 Psychology - IBO Assessment Requirements

	Assessment	Weight
Higher Level	<b>Internal Assessment (externally moderated)</b> Research proposal [24 marks]	20%
	<b>External Assessment</b>	
	<b>Paper 1 – Examination</b> – integration of concepts, content and contexts [1 ½ hours]	25%
	<b>Paper 2 – Examination</b> – applying concepts and content to research contexts [1 ½ hours]	25%
	<b>Paper 3 – Examination</b> – data analysis [1 ¾ hours]	30%

## 12.0 GROUP 4 – SCIENCES

### 12.1 EXPERIMENTAL SCIENCES - BIOLOGY, CHEMISTRY, PHYSICS, SPORTS, EXERCISE AND HEALTH SCIENCE

#### 12.1.1 Aims

Through studying any of these subjects, students should become aware of how scientists work and communicate with each other. While the scientific method may take on a wide variety of forms, it is the emphasis on a practical approach through experimental work that characterizes these subjects.

The aims enable students, through the overarching theme of the Nature of science, to:

- appreciate scientific study and creativity within a global context through stimulating and challenging opportunities.
- acquire a body of knowledge, methods and techniques that characterize science and technology.
- apply and use a body of knowledge, methods and techniques that characterize science and technology.
- develop an ability to analyse, evaluate and synthesize scientific information.
- develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities.
- develop experimental and investigative scientific skills including the use of current technologies.
- develop and apply 21<sup>st</sup> Century communication skills in the study of science.
- become critically aware, as global citizens, of the ethical implications of using science and technology.
- develop an appreciation of the possibilities and limitations of science and technology.
- develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge.

The assessment objectives for these subjects reflect those parts of the aims that will be formally assessed either internally or externally. It is the intention of all Diploma Programme experimental science courses that students achieve the following objectives.

1. Students demonstrate knowledge of:
  - a. terminology, facts and concepts.
  - b. skills, techniques and methodologies.
2. Students understand and apply:
  - a. terminology and concepts.
  - b. skills, techniques and methodologies.
3. Students analyse, evaluate and synthesise:
  - a. experimental procedures.
  - b. primary and secondary data.
  - c. trends, patterns and predictions.
4. Students demonstrate the application and skills necessary to carry out insightful and ethical investigations.

Candidates complete a Collaborative Sciences Project which requires them to carry out an interdisciplinary, practical based research investigation within a specified theme. This work forms part of the IB requirement and is submitted in Year 12.

## 12.2 BIOLOGY (SL/HL)

Biology is an experimental science that combines academic study with the acquisition of practical and investigational skills. Biologists attempt to understand the living world at all levels using many different approaches and techniques. At one end of the scale is the cell, its molecular construction and complex metabolic reactions. At the other end of the scale biologists investigate the interactions that make whole ecosystems function. Apart from being a subject worthy of study in its own right, Biology can be used as a prerequisite for many other courses in higher education, such as medicine, biological science and environmental science and serves as useful preparation for employment.

### 12.2.1 Syllabus Outline

#### Syllabus content:

- A. Unity and diversity
- B. Form and function
- C. Interaction and interdependence
- D. Continuity and change

#### Additional HL:

\*Additional Higher-Level content is blended throughout the core. It is highlighted in the new syllabus guide for biology first assessment 2025.

#### Experimental Program

- Practical activities
- Scientific investigation (Internal assessment – IA)
- Collaborative Sciences Project

The aim of the syllabus is to integrate concepts, topic content and the nature of science through inquiry.

Theme	Level of organization			
	1. Molecules	2. Cells	3. Organisms	4. Ecosystems
<b>A</b> <b>Unity and diversity</b>	Common ancestry has given living organisms many shared features while evolution has resulted in the rich biodiversity of life on Earth.			
	<b>A1.1</b> Water <b>A1.2</b> Nucleic acids	<b>A2.1</b> Origins of cells <i>[HL only]</i> <b>A2.2</b> Cell structure <b>A2.3</b> Viruses <i>[HL only]</i>	<b>A3.1</b> Diversity of organisms <b>A3.2</b> Classification and cladistics <i>[HL only]</i>	<b>A4.1</b> Evolution and speciation <b>A4.2</b> Conservation of biodiversity
<b>B</b> <b>Form and function</b>	Adaptations are forms that correspond to function. These adaptations persist from generation to generation because they increase the chances of survival.			
	<b>B1.1</b> Carbohydrates and lipids <b>B1.2</b> Proteins	<b>B2.1</b> Membranes and membrane transport <b>B2.2</b> Organelles and compartmentalization <b>B2.3</b> Cell specialization	<b>B3.1</b> Gas exchange <b>B3.2</b> Transport <b>B3.3</b> Muscle and motility <i>[HL only]</i>	<b>B4.1</b> Adaptation to environment <b>B4.2</b> Ecological niches
<b>C</b> <b>Interaction and interdependence</b>	Systems are based on interactions, interdependence and integration of components. Systems result in emergence of new properties at each level of biological organization.			
	<b>C1.1</b> Enzymes and metabolism <b>C1.2</b> Cell respiration <b>C1.3</b> Photosynthesis	<b>C2.1</b> Chemical signalling <i>[HL only]</i> <b>C2.2</b> Neural signalling	<b>C3.1</b> Integration of body systems <b>C3.2</b> Defence against disease	<b>C4.1</b> Populations and communities <b>C4.2</b> Transfers of energy and matter
<b>D</b> <b>Continuity and change</b>	Living things have mechanisms for maintaining equilibrium and for bringing about transformation. Environmental change is a driver of evolution by natural selection.			
	<b>D1.1</b> DNA replication <b>D1.2</b> Protein synthesis <b>D1.3</b> Mutations and gene editing	<b>D2.1</b> Cell and nuclear division <b>D2.2</b> Gene expression <i>[HL only]</i> <b>D2.3</b> Water potential	<b>D3.1</b> Reproduction <b>D3.2</b> Inheritance <b>D3.3</b> Homeostasis	<b>D4.1</b> Natural selection <b>D4.2</b> Stability and change <b>D4.3</b> Climate change

## 12.2.2 Group 4 Biology - IBO Assessment Requirements

	Assessment	Weight
Standard Level	<b>Internal Assessment (externally moderated)</b> One practical scientific investigation of your choice taking about 10 hours. The investigation should cover a topic that is commensurate with the level of the course of study.	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Multiple Choice and Short Response [1 ½ hours] <b>Paper 2</b> – Short and Extended Response [1 ½ hours]	36% 44%
Higher Level	<b>Internal Assessment (externally moderated)</b> One practical scientific investigation of your choice taking about 10 hours. The investigation should cover a topic that is commensurate with the level of the course of study.	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Multiple Choice and Short Response [2 hours] <b>Paper 2</b> – Short and Extended Response [2 ½ hours]	36% 44%

## 12.3 CHEMISTRY (SL/HL)

Chemistry is an experimental science that combines academic study with the acquisition of practical and investigational skills. It is called the central science as chemical principles underpin both the physical environment in which we live and all biological systems. Apart from being a subject worthy of study in its own right, Chemistry can be used as a prerequisite for many other courses in higher education, such as medicine, biological science and environmental science and serves as useful preparation for employment.

### 12.3.1 Syllabus Outline

#### Syllabus content:

Structure 1. Models of the particulate nature of matter  
 Structure 2. Models of bonding and structure  
 Structure 3. Classification of matter  
 Reactivity 1. What drives chemical reactions?  
 Reactivity 2. How much, how fast and how far?  
 Reactivity 3. What are the mechanisms of chemical change?

#### Additional HL:

\*Additional Higher-Level content is blended throughout the core. It is highlighted in the new syllabus guide for chemistry first assessment 2025.

#### Experimental programme:

- Practical work
- Scientific investigation (Internal assessment – IA)
- Collaborative Sciences Project

### 12.3.2 Group 4 Chemistry - IBO Assessment Requirements

	Assessment	Weight
Standard Level	<b>Internal Assessment (externally moderated)</b> One practical scientific investigation of your choice taking about 10 hours. The investigation should cover a topic that is commensurate with the level of the course of study.	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Multiple choice questions and data-based questions [1 ½ hours] <b>Paper 2</b> – Short answer and extended response [1 ½ hours]	36% 44%
Higher Level	<b>Internal Assessment (externally moderated)</b> One practical scientific investigation of your choice taking about 10 hours. The investigation should cover a topic that is commensurate with the level of the course of study.	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Multiple choice questions and data-based questions [1 ½ hours] <b>Paper 2</b> – Short answer and extended response [2 ½ hours]	36% 44%

## 12.4 PHYSICS (SL/HL)

Physics is an experimental science that combines academic study with the acquisition of practical and investigational skills. It is called the most fundamental of the experimental sciences as it seeks to explain the universe itself, from the very smallest particles – currently accepted as quarks (perhaps  $10^{-17}$  m in size), which may be truly fundamental – to the vast distances between galaxies like the Andromeda galaxy ( $10^{24}$  m). Students with an aptitude in Mathematics or simply a desire to do fundamental scientific research in fields like Astronomy, Nanotechnology, Rocketry, or Photonics (to name a few), should consider studying this subject, it can also be used as a prerequisite for many other courses in higher education, such as science and engineering.

### 12.4.1 Syllabus Outline

#### Syllabus content:

- Space, time and motion
- The particulate nature of matter
- Wave behaviour
- Fields
- Nuclear and quantum physics

#### Additional HL:

\*Additional Higher-Level content is blended throughout the core. It is highlighted in the new syllabus guide for chemistry first assessment 2025.

#### Experimental programme:

- Practical work
- Scientific investigation (Internal assessment – IA)
- Collaborative Sciences Project

## 12.4.2 Group 4 Physics - IBO Assessment Requirements

	Assessment	Weight
Standard Level	<b>Internal Assessment (externally moderated)</b> One practical scientific investigation of your choice taking about 10 hours. The investigation should cover a topic that is commensurate with the level of the course of study.	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Multiple choice questions and data-based questions [1 ½ hours] <b>Paper 2</b> – Short answer and extended response [1 ½ hours]	36% 44%
Higher Level	<b>Internal Assessment (externally moderated)</b> One practical scientific investigation of your choice taking about 10 hours. The investigation should cover a topic that is commensurate with the level of the course of study.	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Multiple choice questions and data-based questions [1 ½ hours] <b>Paper 2</b> – Short answer and extended response [2 ½ hours]	36% 44%

## 12.5 SPORTS, EXERCISE AND HEALTH SCIENCE (HL)

Sports, Exercise and Health Science (SEHS) is a human science driven by curiosity about what makes humankind flourish, both physically and mentally. Spanning multiple disciplines, it is the formal study of the impacts of physiology, biomechanics and psychology on human health and athletic performance. Its most prominent advances have occurred from the late 19th century onwards, in tandem with similar advances in other scientific and technological fields. Like other DP sciences, SEHS is also an experimental science that combines academic study with the acquisition of practical and investigative skills. Students undertake practical experimental investigations in both laboratory and field settings. This helps them to acquire the knowledge and understanding necessary to apply scientific principles to the critical analysis of humankind and its sporting endeavours.

Through an inquiry driven approach, students gain a holistic perspective on the interplay between health and performance. Beyond the classroom, SEHS offers tangible benefits, enabling students to apply their learning to enhance personal fitness, optimise training, and contribute to broader community health initiatives. SEHS is a vital discipline, equipping students with the expertise needed to promote well-being and athletic excellence in an ever-evolving world and serves as a foundation for further education in fields related to health, fitness, physiology, nutrition, biomechanics and sports medicine.

### 12.5.1 Syllabus Outline

#### Syllabus content:

- Exercise physiology and nutrition of the human body
- Biomechanics
- Sports psychology and motor learning

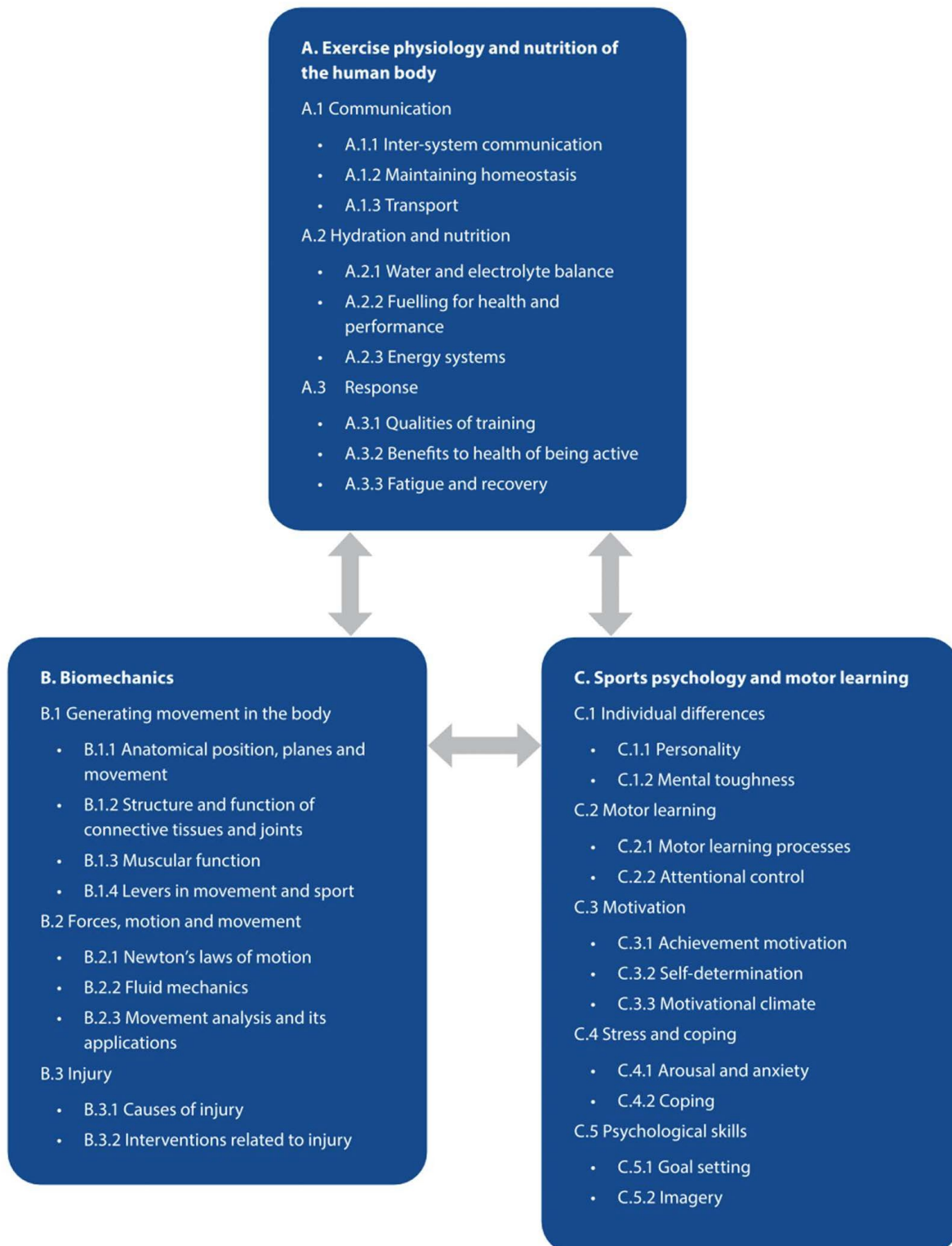
#### Additional HL:

\*Additional Higher-Level content is blended throughout the core. It is highlighted in the new syllabus guide for physics first assessment 2025.

## Experimental Program

- Practical activities
- Scientific investigation (Internal assessment – IA)
- Collaborative Sciences Project

The aim of the syllabus is to integrate concepts, topic content and the nature of science (NOS), through inquiry.



## 12.5.2 Group 4 SEHS - IBO Assessment Requirements

	Assessment	Weight
Higher Level	<b>Internal Assessment (externally moderated)</b> One practical scientific investigation of choice taking about 10 hours. The investigation should cover a topic that is commensurate with the level of the course of study.	24%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Multiple choice questions and data-based questions [1 ¾ hours] <b>Paper 2</b> – Short answer and extended response [2 ½ hours]	36% 40%

## 12.6 COMPUTER SCIENCE (HL)

Computer science requires an understanding of the fundamental concepts of computational thinking as well as knowledge of how computers and other digital devices operate.

Computer science is the study of computers and computational systems. It covers a range of topics related to the theoretical aspects of computing, including algorithms and software design, and the application of computer science to solve practical problems. Computer science is distinct from the natural sciences in that it does not rely on hypothesis and experimentation. Computer science can be considered to be cross-disciplinary, as it draws from a range of disciplines, especially mathematics.

Computer science has links with subjects outside of Group 4, notably Digital Society, but it should be noted that there are clear differences between the subjects.

### 12.6.1 Aims

Diploma Programme Computer Science students should become aware of how computer scientists work, communicate with each other and with other stakeholders in the successful development and implementation of IT solutions.

While the methodology used to solve problems in computer science may take a wide variety of forms, the Group 4 Computer Science course emphasizes the need for both a theoretical and practical approach.

The course enables students to:

- develop conceptual understanding that allows connections to be made between different areas of the subject, and to other DP subjects
- acquire and apply a body of knowledge, methods, tools and techniques that characterize computer science
- analyse and evaluate solutions developed through computational thinking in a range of contexts.
- approach unfamiliar situations with creativity and resilience
- use computational thinking to design and implement solutions to local and global problems
- develop an appreciation of the possibilities and limitations of computer science
- evaluate the impact of emerging technologies in computer science
- communicate and collaborate effectively

- develop awareness of the environmental, economic, cultural and social impact of computer science, its applications and ethical implications.

*(IB Computer Science Guide (first assessment 2027), pg. 23)*

The objectives for computer science are as follows.

**AO1** Demonstrate knowledge and understanding of:

- facts, concepts, principles and terminology in computer science.
- appropriate methods, techniques and skills to solve problems using computational thinking.

**AO2** Apply and use:

- facts, concepts, principles and terminology in computer science.
- appropriate methods, techniques and skills to solve problems using computational thinking.
- appropriate methods to present information in computer science.

**AO3** Construct, synthesize, analyse and evaluate:

- problem specifications, system requirements, success criteria, testing strategies and programs.
- appropriate techniques to solve a problem.
- relevant data, information and technological explanations for solutions.

**AO4** Demonstrate the application of computational thinking skills to solve real-world problems using computer science solutions.

*(IB Computer Science Guide (first assessment 2027), pg. 23)*

Candidates complete a Group 4 project which requires them to conduct an interdisciplinary, practical based research investigation within a specified theme.

### 12.6.2 Syllabus Outline

There is no major distinction between the content that is covered for SL and HL students in the 2027 computer science syllabus. The difference between the two levels is the depth to which each theme is explored.

#### Theme A: Concepts of Computer Science

- A1 Computer fundamentals
- A2 Networks
- A3 Databases
- A4 Machine learning

#### Theme B: Computational thinking and problem solving

- B1 Computational thinking
- B2 Programming
- B3 Object-oriented programming
- B4 Abstract data types — \*HL only
- Case study** – issued annually by the IB

#### Internal assessment

- The computational solution
- Collaborative Sciences Project

### 12.6.3 Group 4 Computer Science - IBO Assessment Requirements

	Assessment	Weight
Higher Level	<b>Internal Assessment (externally moderated)</b> IA consists of one task: the computational solution.	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Short Answer and Extended Linked to theme A [2 hours] <b>Paper 2</b> – Extended response questions linked to theme B [1 ¼ hours]	40% 40%

## 12.7 ENVIRONMENTAL SYSTEMS AND SOCIETIES - ESS (HL)

ESS is an interdisciplinary Group 3 and 4 course that is offered at Higher Level (HL). As an interdisciplinary course, ESS is designed to combine the methodology, techniques and knowledge associated with Group 4 (Sciences) with those associated with Group 3 (Individuals and Societies). Because it is an interdisciplinary course, students can study ESS and have it count as either a Group 3 or a Group 4 course. It is firmly grounded in both a scientific exploration of environmental systems in their structure and function and in the exploration of cultural, economic, ethical, political, and social interactions of societies with the environment.

### 12.7.1 Aims

The aims of the ESS course are to enable students to:

- acquire the knowledge and understandings of environmental systems at a variety of scales.
- apply the knowledge, methodologies and skills to analyse environmental systems and issues at a variety of scales.
- appreciate the dynamic interconnectedness between environmental systems and societies.
- value the combination of personal, local and global perspectives in making informed decisions and taking responsible actions on environmental issues.
- be critically aware that resources are finite, and that these could be inequitably distributed and exploited, and that management of these inequities is the key to sustainability.
- develop awareness of the diversity of environmental value systems.
- develop critical awareness that environmental problems are caused and solved by decisions made by individuals and societies that are based on different areas of knowledge.
- engage with the controversies that surround a variety of environmental issues.
- create innovative solutions to environmental issues by engaging actively in local and global contexts.

It is the intention of this course that students, in the context of environmental systems and related issues, can fulfill the following assessment objectives.

1. Students demonstrate knowledge and understanding of relevant:
  - facts and concepts.
  - methodologies and techniques.

- values and attitudes.
2. Students apply this knowledge and understanding in the analysis of:
    - explanations, concepts and theories data and models.
    - case studies in unfamiliar contexts.
    - arguments and value systems.
  3. Students evaluate, justify, and synthesize, as appropriate:
    - explanations, theories, and models.
    - arguments and proposed solutions.
    - methods of fieldwork and investigation.
    - cultural viewpoints and value systems.
  4. Students engage with investigations of environmental and societal issues at the local and global level through:
    - evaluating the political, economic, and social contexts of issues.
    - selecting and applying the appropriate research and practical skills necessary to conduct investigations.
    - suggesting collaborative and innovative solutions that demonstrate awareness and respect for the cultural differences and value systems of others.

### 12.7.2 Syllabus Outline

#### Syllabus content:

Topic 1 – Foundation (perspectives, systems, sustainability)  
 Topic 2 – Ecology  
 Topic 3 – Biodiversity and conservation  
 Topic 4 – Water  
 Topic 5 – Land  
 Topic 6 – Atmosphere and climate change  
 Topic 7 – Natural resources  
 Topic 8 – Human populations and urban systems

#### Additional HL:

\*Additional Higher-Level content is blended throughout the core.

HL lenses:

- a. Environmental law
- b. Environmental economics
- c. Environmental ethics

#### Experimental Program

- Practical activities
- Individual investigation (Internal assessment – IA)
- Collaborative Sciences Project

### 12.7.3 Group 4 Environmental Systems and Societies – IBO Assessment Requirements

	Assessment	Weight
Higher Level	<b>Internal Assessment (externally moderated)</b> Individual investigation	30%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Case Study [2 hours] <b>Paper 2</b> – Short answers and structured essays [2 ½ hours]	20% 50%

## 13.0 GROUP 5 – MATHEMATICS

Mathematics has been described as the study of structure, order and relation that has evolved from the practices of counting, measuring and describing objects. Mathematics provides a unique language to describe, explore and communicate the nature of the world we live in, as well as being a constantly building body of knowledge and truth that is distinctive in its certainty. These two aspects of Mathematics, a discipline that is studied for its intrinsic pleasure, and a means to explore and understand the world we live in, are both separate yet closely linked.

Mathematics is driven by abstract concepts and generalization. This mathematics is drawn out of ideas and develops through linking these ideas and developing new ones. These mathematical ideas may have no immediate practical application. Doing such mathematics is about digging deeper to increase mathematical knowledge and truth. The new knowledge is presented in the form of theorems that have been built from axioms and logical mathematical arguments and a theorem is only accepted as true when it has been proven. The body of knowledge that makes up mathematics is not fixed; it has grown during human history and is growing at an increasing rate.

The side of mathematics that is based on describing our world and solving practical problems is often carried out in the context of another area of study. Mathematics is used in a diverse range of disciplines as both a language and a tool to explore the universe; alongside this its applications include analysing trends, making predictions, quantifying risk, exploring relationships and interdependence.

The two courses available to Diploma Programme (DP) students express both the differences that exist in mathematics described above and the connections between them. These two courses might approach mathematics from different perspectives, but they are connected by the same mathematical body of knowledge, ways of thinking and approaches to problems. The differences in the courses may also be related to the types of tools, for instance technology, that are used to solve abstract or practical problems. The next section will describe in more detail the two available courses.

It should be noted that both IB Mathematics courses (SL and HL) are identified as meeting the prerequisite for Mathematical Methods at The University of Queensland. *The Mathematics Analysis and Approaches* HL subject also meets the prerequisite for Specialist Mathematics.

### 13.1 SUMMARY OF COURSES AVAILABLE

Individual students have different needs, aspirations, interests and abilities. For this reason, there are two different subjects in mathematics, each available at SL and HL. These courses are designed for different types of students: those who wish to study mathematics as a subject in its own right or to pursue

their interests in areas related to mathematics, and those who wish to gain understanding and competence in how mathematics relates to the real world and to other subjects. Each course is designed to meet the needs of a particular group of students. *Mathematics Analysis and Approaches* and *Mathematics Applications and Interpretation* are both offered at SL and HL. Therefore, great care should be taken to select the course and level that is most appropriate for an individual student.

In making this selection, individual students should consider:

- their own abilities in mathematics and the type of mathematics in which they can be successful
- their own interest in mathematics and those areas of the subject that may hold the most interest for them
- their other choices of subjects within the framework of the Diploma Programme
- their academic plans, in particular the subjects they wish to study in the future
- their choice of career.

### 13.1.1 Aims

The aim of all the mathematics subjects in Group 5 is to enable students to:

- develop a curiosity and enjoyment of mathematics and appreciate its elegance and power.
- develop an understanding of the concepts, principles and nature of mathematics.
- communicate mathematics clearly, concisely and confidently in a variety of contexts.
- develop logical and creative thinking, and patience and persistence in problem solving to instil confidence in using mathematics.
- employ and refine their powers of abstraction and generalization.
- take action to apply and transfer skills to alternative situations, to other areas of knowledge and to future developments in their local and global communities.
- appreciate how developments in technology and mathematics influence each other.
- appreciate the moral, social and ethical questions arising from the work of mathematicians and the applications of mathematics.
- appreciate the universality of mathematics and its multicultural, international and historical perspectives.
- appreciate the contribution of mathematics to other disciplines, and as a particular “area of knowledge” in the TOK course.
- develop the ability to reflect critically upon their own work and the work of others.
- independently and collaboratively extend their understanding of mathematics.

Problem solving is central to learning mathematics and involves the acquisition of mathematical skills and concepts in a wide range of situations, including non-routine, open-ended and real-world problems. Having followed a DP Mathematics course, students will be expected to demonstrate:

- knowledge and understanding - recall, select and use their knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts.
- problem solving - recall, select and use their knowledge of mathematical skills, results and models in both abstract and real-world contexts to solve problems.

- communication and interpretation - transform common realistic contexts into mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation; use appropriate notation and terminology.
- technology - use technology accurately, appropriately and efficiently both to explore new ideas and to solve problems.
- reasoning - construct mathematical arguments through use of precise statements, logical deduction and inference and by the manipulation of mathematical expressions.
- inquiry approaches - investigate unfamiliar situations, both abstract and from the real world, involving organizing and analyzing information, making conjectures, drawing conclusions, and testing their validity.

### 13.1.2 Syllabus Outline

Students are required to study five topics: Number and algebra; Functions; Geometry and trigonometry; Statistics and probability; and Calculus which are assessed through two external examinations at the end of the course if studying at Standard Level and three if studying at Higher Level.

The students are also expected to complete a Mathematical Exploration which is a piece of work based on an area of the mathematics of their choice. It enables students to demonstrate the application of their skills and knowledge, and to pursue their personal interests, without the time limitations and other constraints that are associated with written examinations.

## 13.2 MATHEMATICS ANALYSIS AND APPROACHES (SL/HL)

Mathematics Analysis and Approaches is for students who enjoy developing their mathematics to become fluent in the construction of mathematical arguments and develop strong skills in mathematical thinking. They will also be fascinated by exploring real and abstract applications of these ideas, with and without technology. Students who take Mathematics Analysis and Approaches will be those who enjoy the thrill of mathematical problem solving and generalization.

This course recognizes the need for analytical expertise in a world where innovation is increasingly dependent on a deep understanding of mathematics. This course includes topics that are both traditionally part of a pre-university mathematics course (for example, functions, trigonometry, calculus) as well as topics that are amenable to investigation, conjecture and proof, for instance the study of sequences and series at both SL and HL, and proof by induction at HL.

The course requires the use of technology, as fluency in relevant mathematical software and hand-held technology is important regardless of choice of course. However, **Mathematics Analysis and Approaches has a strong emphasis on the ability to construct, communicate and justify correct mathematical arguments, both with and without a calculator.**

### 13.2.1 Mathematics Analysis and Approaches - Distinction between SL and HL

Students who choose Mathematics Analysis and Approaches at SL or HL should be comfortable in the manipulation of algebraic expressions and enjoy the recognition of patterns and understand the mathematical generalization of these patterns. Students who wish to take Mathematics Analysis and Approaches at Higher Level will have strong algebraic skills and the ability to understand simple proof. They will be students who enjoy spending time with problems and get pleasure and satisfaction from solving challenging problems.

### 13.2.2 Group 5 Mathematics Analysis and Approaches - IBO Assessment Requirements

	Assessment	Weight
Standard Level	<b>Internal Assessment (externally moderated)</b> Mathematical Exploration (mathematical investigation and mathematical modelling)	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Non calculator examination [1 ½ hours] <b>Paper 2</b> – Calculator examination [1 ½ hours]	40% 40%
Higher Level	<b>Internal Assessment (externally moderated)</b> Mathematical Exploration (mathematical investigation and mathematical modelling)	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Non calculator examination [2 hours] <b>Paper 2</b> – Calculator examination [2 hours]	30% 30%
	<b>Paper 3</b> – Extended response, problem solving and modelling [1 ¼ hours]	20%

## 13.3 MATHEMATICS APPLICATIONS AND INTERPRETATION (SL/HL)

Mathematics Applications and Interpretation is for students who are interested in developing their mathematics for describing our world and solving practical problems. They will also be interested in harnessing the power of technology alongside exploring mathematical models. Students who take Mathematics Applications and Interpretation will be those who enjoy mathematics best when seen in a practical context.

This course recognizes the increasing role that mathematics and technology play in a diverse range of fields in a data-rich world. As such, it emphasizes the meaning of mathematics in context by focusing on topics that are often used as applications or in mathematical modelling. To give this understanding a firm base, this course also includes topics that are traditionally part of a pre-university mathematics course such as calculus and statistics.

The course makes extensive use of technology to allow students to explore and construct mathematical models. **Mathematics Applications and Interpretation will develop mathematical thinking, often in the context of a practical problem and using technology to justify conjectures.**

### 13.3.1 Mathematics Applications and Interpretation - Distinction between SL and HL

Students who choose Mathematics Applications and Interpretation at SL or HL should enjoy seeing mathematics used in real-world contexts and to solve real-world problems. Students who wish to take Mathematics Applications and Interpretation at Higher Level will have good algebraic skills and experience of solving real-world problems. They will be students who get pleasure and satisfaction when exploring challenging problems and who are comfortable to undertake this exploration using technology.

### 13.3.2 Group 5 Mathematics Applications and Interpretation - IBO Assessment Requirements

	Assessment	Weight
Standard Level	<b>Internal Assessment (externally moderated)</b> Mathematical Exploration (mathematical investigation and mathematical modelling)	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Calculator examination [1 ½ hours] <b>Paper 2</b> – Calculator examination [1 ½ hours]	40% 40%
Higher Level	<b>Internal Assessment (externally moderated)</b> Mathematical Exploration (mathematical investigation and mathematical modelling)	20%
	<b>External Assessment</b>	
	<b>Paper 1</b> – Calculator examination [2 hours] <b>Paper 2</b> – Calculator examination [2 hours]	30% 30%
	<b>Paper 3</b> – Extended response, problem solving and modelling [1 ¼ hours]	20%



## 14.0 SUBJECT SELECTION

Student Name: \_\_\_\_\_

InStep: \_\_\_\_\_

Use this form to prepare for your online subject selection. Make your selection by ticking the relevant  in each group.

Group 1 – choose 1 subject	Group 2* – choose 1 subject	Group 3 – choose 1 or 2 subjects	Group 4 – choose 1 or 2 subjects	Group 5 – choose 1 subject
<input type="checkbox"/> English A Language and Literature – Standard Level <input type="checkbox"/> English A Language and Literature – Higher Level	<input type="checkbox"/> Spanish ab initio – Standard Level <input type="checkbox"/> Chinese B – Standard Level <input type="checkbox"/> Chinese B – Higher Level <input type="checkbox"/> French B – Standard Level <input type="checkbox"/> French B – Higher Level <input type="checkbox"/> German B – Standard Level <input type="checkbox"/> German B – Higher Level <input type="checkbox"/> Japanese B – Standard Level <input type="checkbox"/> Japanese B – Higher Level <input type="checkbox"/> Latin B – Standard Level <input type="checkbox"/> Latin B – Higher Level <input type="checkbox"/> Language A Literature – Standard Level (Group 1 subject - School-Supported Self Study in Mother Tongue - by approval only*)	<input type="checkbox"/> Business Management – Higher Level <input type="checkbox"/> Economics – Higher Level <input type="checkbox"/> Digital Society – Higher Level <input type="checkbox"/> Psychology – Higher Level <input type="checkbox"/> Environmental Systems and Societies – Higher Level	<input type="checkbox"/> Biology – Standard Level <input type="checkbox"/> Biology – Higher Level <input type="checkbox"/> Chemistry – Standard Level <input type="checkbox"/> Chemistry – Higher Level <input type="checkbox"/> Computer Science – Higher Level <input type="checkbox"/> Physics – Standard Level <input type="checkbox"/> Physics – Higher Level <input type="checkbox"/> Sports, Exercise and Health <input type="checkbox"/> Science – Higher Level <input type="checkbox"/> Environmental Systems and Societies – Higher Level	<input type="checkbox"/> Mathematics Analysis and Approaches – Standard Level <input type="checkbox"/> Mathematics Analysis and Approaches – Higher Level <input type="checkbox"/> Mathematics Applications and Interpretation – Standard Level <input type="checkbox"/> Mathematics Applications and Interpretation – Higher Level

Because of the increased rigour of HL subjects, students should select these first. **Your HL subject selection should reflect those subjects in which you are performing best.**

I have chosen <b>one</b> subject in Groups 1, 2, 3, 4 and 5	Yes <input type="checkbox"/>	No <input type="checkbox"/>
I have chosen <b>one</b> additional subject in either Group 3 or 4	Yes <input type="checkbox"/>	No <input type="checkbox"/>
I have nominated 3 Higher Level subjects & 3 Standard Level subjects.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
I understand that my subject selections will depend on the number of students selecting subjects and the availability of teaching staff.	Yes <input type="checkbox"/>	No <input type="checkbox"/>