مدرسة ديرة الدولية
DEIRA INTERNATIONAL SCHOOL
FESTIVAL CITY

Al-Futtaim Education Foundation

DEIRA INTERNATIONAL SCHOOL

INTERNATIONAL BACCALAUREATE CURRICULUM HANDBOOK 2020 - 2021

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WELCOME

Welcome to the International Baccalaureate Programmes at DIS.

Year 12 is an exciting time when students begin the last stage of their High School education before moving on to university study. This handbook is intended to assist and inform students and their parents about the opportunities open to them at DIS through the International Baccalaureate Programme.

Students will participate in either the International Baccalaureate Diploma Programme, Courses option or the Career-Related Program in their last two years at DIS. All pathways are international in their curriculum content, recognized by universities and employers around the world and combine in-depth academic study with activities that encourage a sense of adventure and social responsibility. For many students, choosing which subjects to study in Years 12 and 13 may not always be easy. We hope this booklet will be helpful when making those decisions.

We look forward to meeting with you to help guide your course selection and hope that you will find your studies through this program to be both challenging and rewarding.

RELEVANT CONTACTS

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THE LEARNER - IB LEARNER PROFILE

The IB Learner Profile describes a broad range of human capacities and responsibilities that go beyond academic success. They imply a commitment to help all members of the school community learn to respect themselves, others and the world around them. Each of the IB's programmes is committed to the development of students according to the IB Learner profile (www.ibo.org/benefits/learner-profile).

IBDP Programme Model

IB learner profile

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

As IB learners we strive to be:

INQUIRERS
We nurture our curiosity, developing skills for inquiry and research. We know how to learn independently and with others. We learn with enthusiasm and sustain our love of learning throughout life.

KNOWLEDGEABLE
We develop and use conceptual understanding, exploring knowledge across a range of disciplines. We engage with issues and ideas that have local and global significance.

THINKERS
We use critical and creative thinking skills to analyse and take responsible action on complex problems. We exercise initiative in making reasoned, ethical decisions.

COMMUNICATORS
We express ourselves confidently and creatively in more than one language and in many ways. We collaborate effectively, listening carefully to the perspectives of other individuals and groups.

PRINCIPLED
We act with integrity and honesty, with a strong sense of fairness and justice, and with respect for the dignity and rights of people everywhere. We take responsibility for our actions and their consequences.

OPEN-MINDED
We critically appreciate our own cultures and personal histories, as well as the values and traditions of others. We seek and evaluate a range of points of view, and we are willing to grow from the experience.

CARING
We show empathy, compassion and respect. We have a commitment to service, and we act to make a positive difference in the lives of others and in the world around us.

RISK-TAKERS
We approach uncertainty with forethought and determination; we work independently and cooperatively to explore new ideas and innovative strategies. We are resourceful and resilient in the face of challenges and change.

BALANCED
We understand the importance of balancing different aspects of our lives—intellectual, physical, and emotional—to achieve well-being for ourselves and others. We recognize our interdependence with other people and with the world in which we live.

REFLECTIVE
We thoughtfully consider the world and our own ideas and experience. We work to understand our strengths and weaknesses in order to support our learning and personal development.

The IB learner profile represents 10 attributes valued by IB World Schools. We believe these attributes, and others like them, can help individuals and groups become responsible members of local, national and global communities.

International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

INTRODUCTION

The IB Diploma Programme (IBDP) is a two-year programme for students aged 16-19. Recognized internationally as a qualification for university entrance, it also allows students to fulfil the requirements of their national education system. Students share an educational experience that emphasizes critical thinking as well as intercultural understanding and respect for others in the global community.

The IBDP offers a broad and balanced curriculum in which students are encouraged to apply what they learn in the classroom to real world issues and problems. Wherever possible, subjects are taught from an international perspective.

IBDP Programme Model

At the heart of the IB Diploma Programme Model is the learner, surrounded by three requirements that IBDP students must fulfil in addition to their coursework in six subjects.

REQUIREMENTS FOR FULL DIPLOMA CANDIDATES

THE CORE

THE EXTENDED ESSAY

An extended essay of 4,000 words offers students an opportunity to conduct an in-depth study of a topic of special interest. The experience and skills gained in carrying out independent research and producing a structured substantial piece of writing provide excellent preparation for research at university level. The process begins in January of Year 12 (IB 1) and finishes in October of Year 13 (IB 2). Students choose a topic within a subject they are interested in researching and are assigned a supervisor to work with them throughout the process. Examples of “A" Extended Essays are located on the International Baccalaureate Portal Page.

https://www.ibo.org/programmes/diploma-programme/curriculum/extended-essay/example-essays

THEORY OF KNOWLEDGE (TOK)

TOK is a course about critical thinking and inquiring into the process of knowing, rather than learning a specific body of knowledge. The TOK course examines how we know what we claim to know. Students are encouraged to analyse knowledge claims and explore knowledge questions. A knowledge claim is an assertion, such as "We know that atoms contain protons and electrons". A knowledge question is an open question about knowledge, such as "How reliable is scientific knowledge based on things we can't even see?"

The assessment requirements for the course include an exhibition and a 1600-word essay. The essay is externally assessed by the IB, and must be on one of six prescribed titles issued by the IB. The exhibition is the second assessment requirement which is used for external moderation by the IB.

CREATIVITY, ACTIVITY AND SERVICE (CAS)

In conjunction with Theory of Knowledge and the Extended Essay, CAS completes the core ethos of the IB. Creativity, Activity and Service (CAS) is the opportunity to discover, value, and develop students' own interests and talents for the benefit of oneself and the larger community. CAS is at the core of the IB as it challenges students to put academic understanding as well as personal beliefs, philosophies, and theories into concrete practice.

To fulfil this requirement, the students engage in creative endeavours, sports, expeditions, local or international projects, community or social-service projects, acquiring new skills, or other activities of their choosing outside the classroom that align with CAS values. The CAS journey commences in Year 12 and continues throughout Year 13. The CAS Project is a key feature of the CAS program, challenging students to initiate a long-term, service-oriented project which is carried out by a team of their peers over the course of one month. Developing leadership, confidence, collaboration, and compassion are benefits of the CAS Project. The holistic development supported by the CAS program creates individuals who are confident in their purpose, and are driven to put their ideas, beliefs, philosophies, and knowledge into practice.

CAS is not formally assessed. However, students reflect on their CAS experience as part of the DP and provide evidence of achieving the seven learning outcomes for CAS.

GROUP 4 PROJECT

The group 4 project is an interdisciplinary activity in which all IB Diploma Programme science students must participate. The intention is that students from the different group 4 subjects analyse a common topic or problem. The exercise should be a collaborative experience where the emphasis is on the processes involved in, rather than the products of such an activity.
All full Diploma and IB Courses students at DIS participate in the Group 4 Project. Working collaboratively in a team requires self-awareness and empathy with team members. It also requires a high level of communication and motivation. The opportunity to reflect on these issues, in terms of what went well, and lessons learned, will be invaluable for future collaborations and the personal growth of each individual student.

SUBJECTS

Students must choose one course from each subject group; it is possible to select a second Experimental Science or Individual and Societies in place of a group 6 Arts course.

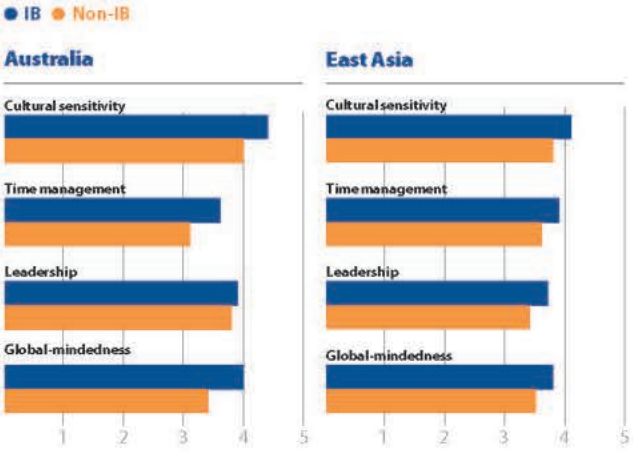
Diploma Programme

Global research findings on the Diploma Programme

According to university admissions officers, how well do A Levels and DP develop the following qualities in UK students? [1]

Perceived capacity for 21st century skills

Compared to non-DP peers, DP graduates at universities in Australia and East Asia reported higher capacities for 21st century skills. [3]



A global study of IB alumni found that the IB has the potential to

powerfully shape

the lives of students who participate in its programmes. [5]

The effect of enrollment in the full DP

A large-scale study of public schools in an urban US district indicated that enrollment in the DP **increases the probability** that students will graduate from high school and enroll in college. [2]

+20% GRADUATE FROM HIGH SCHOOL

+38% ENROLL IN COLLEGE

Outcomes at university

In the UK, DP students outperform their A Level peers in terms of enrolling in top universities and achieving first- or second-class honors. [4]

University enrollment and graduation

DP students in the US have higher rates of university enrollment and graduation at four-year institutions compared to the national average. [6]

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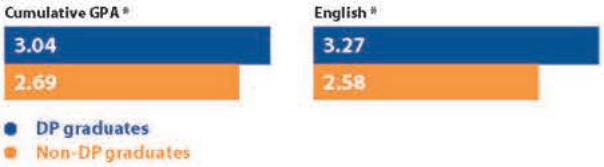
DP in Turkey

Compared to non-IB students, DP graduates in Turkey had higher subject grades, overall grade point averages (GPA) and graduation rates.[7]



*Differences were statistically significant (<0.05)

In the US, Middle Years Programme (MYP) enrollment significantly increased the likelihood of earning a college-ready score* on a college prep exam by 39%.[9]

*A 3 or higher on an AP exam or a 4 or higher on a DP exam

MYP in Asia

A study exploring the high school outcomes of former MYP and non-MYP students in Asia-Pacific found that former MYP students performed significantly better than non-MYP students in total DP points earned.[11]

MYP students
Final diploma score

32.64

Non-MYP students
Final diploma score

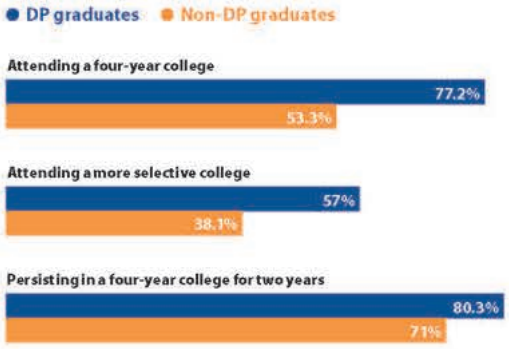
30.47

Mean final diploma scores for students according to middle years programme type

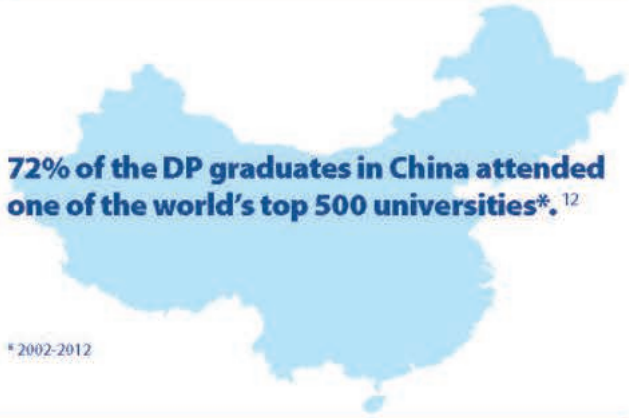
Of the 89 DP students that enrolled in ranked universities in Mexico, 73 enrolled in a top 5 programme.[8]

DP in Chicago

DP graduates in Chicago public schools were significantly more likely to enroll in college, to enroll in selective colleges, to stay enrolled and to perform better than similar non-DP graduates.[10]



Former DP students versus a matched comparison group on postsecondary outcomes



72% of the DP graduates in China attended one of the world's top 500 universities*.[12]

* 2002-2012

1 https://www.acs-schools.com/university-admissions-officers-report-2017
2 http://www.tcrecord.org/library/abstract.asp?contentid=17406
3 http://ibo.org/globalassets/publications/ib-research/dp/postsecondary-outcomes-asia-pacific-summary-en.pdf
4 http://ibo.org/contentassets/d1c0accb5b804676ae9e782b78c8bc1c/hesa-summary-eng-web.pdf
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Learn more at ibo.org

THE INTERNATIONAL BACCALAUREATE AT DIS

The first consideration of students in their last two years at DIS must be the IGCSE / GCSE results. By taking and passing one course from each section of the Diploma Programme Model, students acquire a necessary balance of courses in their last two years toward achieving the IB qualifications and high school graduation.

There are three pathways available to DIS students as they strive to achieve graduation: the IB Diploma Programme (IBDP), International Baccalaureate Career-Related Programme (IBCP) and IB Courses.

The requirement to maintain studies in all six sections of the Diploma Program Model ensures the breadth of curriculum required by some national university systems. The choice of appropriate Higher Level (HL) subjects enables students to obtain the degree of specialisation required for university entrance. Higher level subjects should be selected to complement a student previously demonstrated academic strengths.

In order to gain access to the full IB Diploma at DIS students are required to study six (6) subjects from the IB Diploma Program Model.

- three (3) subjects must be studied at Higher Level (HL)
- three (3) subjects must be studied at Standard Level (SL)
- Theory of Knowledge
- Creativity, Activity, & Service
- Extended Essay

CONDITIONS FOR THE AWARD OF THE IB DIPLOMA

Students can achieve up to 42 points in the IBDP for completing their 6 subjects at a Level 7.

In addition, a maximum of 3 Core points may be gained from a candidate's combined Extended Essay and Theory of Knowledge grades.

Maximum number of possible points to be obtained on an IB Diploma:
6 subjects x 7 points + 3 core points = 45 points

A candidate must gain a minimum of 24 points in order to be awarded the IB Diploma. However, there are some restrictions on the way in which these points are achieved.

- At least 12 points will need to be attained in the HL courses
- IB At least 9 points will need to be attained in the SL courses
- Cannot achieve a failing grade on either the Extended Essay or TOK course
- Must complete CAS requirements

Additional notes:

- A higher-level subject requires a minimum of 240 hours of classroom study. A standard level subject requires 150 hours of classroom study.
- IB results given at the end of the 2-year courses are made up of internal assessment tasks and external examinations
- Internal assessment tasks are marked by the teachers at DIS and then moderated by the IBCA at IBCA (International Baccalaureate Curriculum and Assessment Centre)
- Final examinations at the end of the two-year course are set and marked externally by IBCA. They are taken in May of the last year of the course.
- There is a fee imposed by the IB to sit for IB examinations that is not covered in tuition costs.

IB DIPLOMA PROGRAMME CANDIDACY AT DIS

The students are officially registered with the IB for their IB Diploma Courses early in Quarter 1 of Year 13. As this candidacy will be communicated to universities in the application process, it is essential that the student's declared candidacy and final IB results are a match.

To this end, the school has indicated a set of qualifications (see below) required to support the student's registration of candidacy for the IB Diploma, students meeting these qualifications are reasonably within reach of successful achievement of their IB Diploma or IB Courses. Students not meeting these qualifications are more likely to be a mismatch when the IB results are issued in July and are best advised to readjust their candidacy to provide a more attainable set of results.

Year 12 is a probationary year. If student results do not meet the qualifications required for their chosen candidacy. Students not meeting the qualifications will be guided through alterations to their registration profile or course program to better match their potential for success.

IB Diploma Candidacy Conditions:

Students who have gained access to the IBDP must meet the following conditions to have their candidacy support by DIS. These requirements are in place to help assure successful achievement of the IBDP by our sponsored candidates.

At the end of each quarter full Diploma students must:

- Have a minimum of 24 points in their group 1 -6 courses
- Have no grade 1 in any course
- Have at least 12 points in their 3 HL courses
- Have at least 9 points in their 3 SL courses
- Have no more than one grade of 2 overall

At DIS we require all full Diploma students to attain a minimum of 24 subject points to ensure success in their Diploma exams. Students not meeting these expectations will be placed on probation in in Year 12 to determine if the IB Diploma is the best fit for them and their future success. The DP Coordinator will meet with students and parents throughout the course of this probationary period.

IB DIPLOMA COURSES OFFERED AT DIS

Group	Subject	Level	HL Entry Recommendation
Group 1 First Language	English A: Language and Literature	HL/SL	B
Group 2 Second Language	French B	HL/SL	B
	French Ab Inito	SL	NA
	Spanish B	HL/SL	B
	Spanish Ab Intio	SL	NA
	Arabic A	HL/SL	B
	Arabic B (non-Arab passport holders only)	HL/SL	B
Group 3 Individuals & Societies	History	HL/SL	B
	Business and Management	HL/SL	B
	Economics	HL/SL	B
	Geography	HL/SL	B
	Information Technology in Global Society	HL/SL	B
	Psychology	HL/SL	B
	Environmental Systems & Societies	SL	NA
Group 4 Sciences	Chemistry	HL/SL	AA or A
	Physics	HL/SL	AA or A
	Design and Technology	HL/SL	B
	Computer Science	HL/SL	B
	Environmental Systems & Societies	SL	NA
	Sports exercise and Health Science	HL/SL	B
	Biology	HL/SL	AA or A
Group 5 Mathematics	Application and Interpretation	HL/SL	8-9
	Analysis and Approaches	HL	9
	Analysis and Approaches	SL	6+
Group 6 Arts & Electives	Music	HL/SL	B
	Visual Arts	HL/SL	B
	Theatre	HL/SL	B
	Film	HL/SL	NA
	Any Group 2 Subject	HL/SL	See Above
	Any Group 3 Subject	HL/SL	See Above
	Any Group 4 Subject	HL/SL	See Above

IB DIPLOMA SUBJECT BRIEFS

International Baccalaureate
Diploma Programme Subject Brief

Studies in language and literature:
English A: Language and literature – Standard level

First assessments 2013 – Last assessments 2020

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

The language A: language and literature course aims to develop skills of textual analysis and the understanding that texts, both literary and non-literary, can relate to culturally determined reading practices, and to encourage students to question the meaning generated by language and texts. An understanding of the ways in which formal elements are used to create meaning in a text is combined with an exploration of how that meaning is affected by reading practices that are culturally defined and by the circumstances of production and reception. Helping students to focus closely on the language of studied texts and to become aware of the role of wider context in shaping meaning is central to the course. The study of literature in translation from other cultures is especially important to IB DP students because it contributes to a global perspective. Texts are chosen from a variety of sources, genres and media.

The aims of language A: language and literature standard level courses are to:

- introduce students to a range of texts from different periods, styles and genres
- develop in students the ability to engage in close, detailed analysis of individual texts and make relevant connections
- develop the students' powers of expression, both in oral and written communication
- encourage students to recognize the importance of the contexts in which texts are written and received
- encourage an appreciation of the different perspectives of other cultures, and how these perspectives construct meaning
- encourage students to appreciate the formal, stylistic and aesthetic qualities of texts
- promote in students an enjoyment of, and lifelong interest in, language and literature
- develop in students an understanding of how language, culture and context determine the ways in which meaning is constructed in texts
- encourage students to think critically about the different interactions between text, audience and purpose.

II. Curriculum model overview

Component	Recommended teaching hours
Part 1: Language in cultural context • effect of audience and purpose on the structure and content of texts • impact of language changes • effect of culture and context on language and meaning	40
Part 2: Language and mass communication • forms of communication within the media • educational, political or ideological influence of the media • ways in which mass media use language and image to inform, persuade or entertain	40

Part 3: Literature—texts and contexts • historical, cultural and social contexts in which texts are written and received • relationship between context and formal elements of the text, genre and structure • attitudes and values expressed by literary texts and their impact on readers	70
Part 4: Literature—critical study • detailed exploration of literary works • elements such as theme and the ethical stance or moral values of literary texts • appropriate use of literary terms	50

III. Assessment model

Having followed the language and literature higher level course, students will be expected to demonstrate the following.

Knowledge and understanding
- knowledge and understanding of a range of texts
- understanding of the use of language, structure, technique and style
- critical understanding of the ways in which readers construct meaning and the influence of context
- understanding of how different perspectives influence the reading of a text

Application and analysis
- ability to choose a text type appropriate to the purpose required
- ability to use terminology relevant to the various text types studied
- ability to analyse the effects of language, structure, technique and style on the reader
- awareness of the ways in which the production and reception of texts contribute to their meanings
- ability to substantiate and justify ideas with relevant examples

Synthesis and evaluation
- ability to compare and contrast the formal elements, content and context of texts
- ability to discuss the ways in which language and image may be used in a range of texts
- ability to evaluate conflicting viewpoints within and about a text
- ability to produce a critical response evaluating some aspects of text, context and meaning

Selection and use of appropriate presentation and language skills
- ability to express ideas clearly and with fluency, both written and orally
- ability to use the oral and written forms of the language, in a range of styles, registers and situations
- ability to discuss and analyse texts in a focused and logical manner
- ability to write a balanced, comparative analysis

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		4	70
Paper 1	A written comparative analysis of one pair of unseen texts.	2	25
Paper 2	In response to one of six questions, an essay based on at least two texts studied.	2	25
Written Tasks	At least four written tasks based on course material, two for external assessment.		20
Internal			30
Individual oral commentary	An oral commentary on an extract from a literary text studied; two guiding questions are given.		15
Further oral activity	At least two further oral activities. The mark of one is submitted for final assessment.		15

IV. Sample questions

- Writers often use a character who is alienated from his or her culture or society in order to explore cultural or social values. Examine this idea with reference to at least two works studied.
- It has been said that history "cannot be unlived, but if faced with courage, need not be lived again." To what extent do at least two works studied "face" history in order to ensure that its wrongs "need not be lived again"?

About the IB: For over 40 years the IB has built a reputation for high-quality, challenging programmes of education that develop internationally minded young people who are well prepared for the challenges of life in the 21st century and able to contribute to creating a better, more peaceful world.

For further information on the IB Diploma Programme, visit: ***http://www.ibo.org/diploma/*** *Complete subject guides can be accessed through the IB Online Curriculum Center (OCC), the IB university and government official system, or purchased through the IB store:* ***http://store.ibo.org***

To learn more about how the IB Diploma Programme prepares students for success at university, visit: ***www.ibo.org/recognition*** *or email:* ***recognition@ibo.org***

International Baccalaureate
Diploma Programme Subject Brief

Studies in language and literature:
English A: Language and literature – Standard level

First assessments 2013 – Last assessments 2020

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To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
I. Course description and aims
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I. Course description and aims

The language A: language and literature course aims to develop skills of textual analysis and the understanding that texts, both literary and non-literary, can relate to culturally determined reading practices, and to encourage students to question the meaning generated by language and texts. An understanding of the ways in which formal elements are used to create meaning in a text is combined with an exploration of how that meaning is affected by reading practices that are culturally defined and by the circumstances of production and reception. Helping students to focus closely on the language of studied texts and to become aware of the role of wider context in shaping meaning is central to the course. The study of literature in translation from other cultures is especially important to IB DP students because it contributes to a global perspective. Texts are chosen from a variety of sources, genres and media.

The aims of language A: language and literature standard level courses are to:

- introduce students to a range of texts from different periods, styles and genres
- develop in students the ability to engage in close, detailed analysis of individual texts and make relevant connections
- develop the students' powers of expression, both in oral and written communication
- encourage students to recognize the importance of the contexts in which texts are written and received
- encourage an appreciation of the different perspectives of other cultures, and how these perspectives construct meaning
- encourage students to appreciate the formal, stylistic and aesthetic qualities of texts
- promote in students an enjoyment of, and lifelong interest in, language and literature
- develop in students an understanding of how language, culture and context determine the ways in which meaning is constructed in texts
- encourage students to think critically about the different interactions between text, audience and purpose.

II. Curriculum model overview

Component	Recommended teaching hours
Part 1: Language in cultural context • effect of audience and purpose on the structure and content of texts • impact of language changes • effect of culture and context on language and meaning	40
Part 2: Language and mass communication • forms of communication within the media • educational, political or ideological influence of the media • ways in which mass media use language and image to inform, persuade or entertain	40

Part 3: Literature—texts and contexts • historical, cultural and social contexts in which texts are written and received • relationship between context and formal elements of the text, genre and structure • attitudes and values expressed by literary texts and their impact on readers	40
Part 4: Literature—critical study • detailed exploration of literary works • elements such as theme and the ethical stance or moral values of literary texts • appropriate use of literary terms	30

III. Assessment model

Having followed the language and literature standard level course, students will be expected to demonstrate the following.

Knowledge and understanding
- knowledge and understanding of a range of texts
- understanding of the use of language, structure, technique and style
- critical understanding of the ways in which readers construct meaning and the influence of context
- understanding of how different perspectives influence the reading of a text

Application and analysis
- ability to choose an appropriate text type
- ability to use terminology relevant to the various text types studied
- ability to analyse the effects of language, structure, technique and style on the reader
- awareness of the ways in which the production and reception of texts contribute to their meanings
- ability to substantiate and justify ideas with relevant examples

Synthesis and evaluation
- ability to compare and contrast the formal elements, content and context of texts
- Discuss the ways in which language and image may be used in a range of texts
- ability to evaluate conflicting viewpoints within and about a text

Selection and use of appropriate presentation and language skills
- ability to express ideas clearly and with fluency, both written and orally
- ability to use the oral and written forms of the language, in a range of styles, registers and situations
- ability to discuss and analyse texts in a focused and logical manner

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		3	70
Paper 1	Written analysis of one of two unseen texts.	1.5	25
Paper 2	In response to one of six questions, an essay based on two literary texts studied.	1.5	25
Written Tasks	At least three written tasks based on course material, submitting one for external assessment.		20
Internal			30
Individual oral commentary	An oral commentary on an extract from a literary text studied. Two guiding questions are given.		15
Further oral activity	At least two further oral activities. The mark of one is submitted for final assessment.		15

IV. Sample questions

- Writers often use a character who is alienated from his or her culture or society in order to explore cultural or social values. Examine this idea with reference to at least two works studied.
- It has been said that history "cannot be unlived, but if faced with courage, need not be lived again." To what extent do at least two works studied "face" history in order to ensure that its wrongs "need not be lived again"?

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International Baccalaureate
Diploma Programme Subject Brief

Language ab initio

First assessment 2020

The Diploma Programme (DP) is a rigorous pre-university course of study designed for students in the 16 to 19 age range. It is a broad-based two-year course that aims to encourage students to be knowledgeable and inquiring, but also caring and compassionate. There is a strong emphasis on encouraging students to develop intercultural understanding, open-mindedness, and the attitudes necessary for them to respect and evaluate a range of points of view.

The course is presented as six academic areas enclosing a central core. Students study two modern languages (or a modern language and a classical language), a humanities or social science subject, an experimental science, mathematics and one of the creative arts. Instead of an arts subject, students can choose two subjects from another area. It is this comprehensive range of subjects that makes the Diploma Programme a demanding course of study designed to prepare students effectively for university entrance. In each of the academic areas students have flexibility in making their choices, which means they can choose subjects that particularly interest them and that they may wish to study further at university.

Normally, three subjects (and not more than four) are taken at higher level (HL), and the others are taken at standard level (SL). The IB recommends 240 teaching hours for HL subjects and 150 hours for SL. Subjects at HL are studied in greater depth and breadth than at SL.

In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

This IB DP subject brief has four key components:

I. Course description and aims II. Curriculum model overview III. Assessment model IV. Content outline

I. Course description and aims

Language acquisition consists of two modern language courses—language ab initio and language B—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.

Offered at SL only, language ab initio is a language acquisition course designed for students with no previous experience in—or very little exposure to—the target language.

Language ab initio students develop their receptive, productive and interactive skills while learning to communicate in the target language in familiar and unfamiliar contexts.

Students develop the ability to communicate through the study of language, themes and texts. There are five prescribed themes: identities, experiences, human ingenuity, social organization and sharing the planet. While the themes are common to both language ab initio and language B, the language ab initio syllabus additionally prescribes four topics for each of the five themes, for a total of 20 topics that must be addressed over the two years of the course.

The following language acquisition aims are common to both language ab initio and language B.

- 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.

II. Curriculum model overview

The curriculum is organized around five prescribed themes and 20 prescribed topics with which the students engage though written, audio, visual and audio-visual texts.

- 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.

II. Curriculum model overview

The curriculum is organized around five prescribed themes with which the students engage though written, audio, visual and audio-visual texts.

Students develop into successful, effective communicators by considering the conceptual understandings of context, audience, purpose, meaning and variation.

Communication is evidenced through receptive, productive and interactive skills.

III. Assessment model

The language acquisition assessment objectives are common to both language ab initio and language B.

- 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.

Assessment at a glance

Language B SL and HL assessment outline		Weighting
External 75%	**Paper 1** (productive skills) One writing task from a choice of three Writing—30 marks	25%
	Paper 2 (receptive skills) Separate sections for listening and reading Listening—25 marks Reading—40 marks	 25% 25%
Internal 25%	**Individual oral assessment** 30 marks	25%

The assessment outlines for language B SL and HL are identical; it is the nature of the assessment that differs and this is what distinguishes SL assessments from those of HL.

For language B HL paper 1, the tasks set will require more complex language and structures and demand higher-order thinking skills. Additionally for HL, a higher word range has been provided in order to accommodate the more complex responses required.

For the individual oral internal assessment, the stimulus at language B SL is a visual image that is clearly relevant to one (or more) of the themes of the course. The stimulus at language B HL is an excerpt from one of the two literary works studied.

IV. Content outline

Theme	Guiding principle	Optional recommended topics		Possible questions
Identities	Explore the nature of the self and what it is to be human.	• Lifestyles • Health and well-being • Beliefs and values	• Subcultures • Language and identity	• What constitutes an identity? • How do language and culture contribute to form our identity?
Experiences	Explore and tell the stories of the events, experiences and journeys that shape our lives.	• Leisure activities • Holidays and travel • Life stories	• Rites of passage • Customs and traditions • Migration	• How does our past shape our present and our future? • How and why do different cultures mark important moments in life?
Human ingenuity	Explore the ways in which human creativity and innovation affect our world.	• Entertainment • Artistic expressions • Communication and media	• Technology • Scientific innovation	• What can we learn about a culture through its artistic expression? • How do the media change the way we relate to each other?
Social organization	Explore the ways in which groups of people organize themselves, or are organized, through common systems or interests.	• Social relationships • Community • Social engagement	• Education • The working world • Law and order	• What is the individual's role in the community? • What role do rules and regulations play in the formation of a society?
Sharing the planet	Explore the challenges and opportunities faced by individuals and communities in the modern world.	• The environment • Human rights • Peace and conflict • Equality	• Globalization • Ethics • Urban and rural environment	• What environmental and social issues present challenges to the world, and how can these challenges be overcome? • What challenges and benefits does globalization bring?

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International Baccalaureate Diploma Programme Subject Brief

Language ab initio

First assessment 2020

The Diploma Programme (DP) is a rigorous pre-university course of study designed for students in the 16 to 19 age range. It is a broad-based two-year course that aims to encourage students to be knowledgeable and inquiring, but also caring and compassionate. There is a strong emphasis on encouraging students to develop intercultural understanding, open-mindedness, and the attitudes necessary for them to respect and evaluate a range of points of view.

The course is presented as six academic areas enclosing a central core. Students study two modern languages (or a modern language and a classical language), a humanities or social science subject, an experimental science, mathematics and one of the creative arts. Instead of an arts subject, students can choose two subjects from another area. It is this comprehensive range of subjects that makes the Diploma Programme a demanding course of study designed to prepare students effectively for university entrance. In each of the academic areas students have flexibility in making their choices, which means they can choose subjects that particularly interest them and that they may wish to study further at university.

Normally, three subjects (and not more than four) are taken at higher level (HL), and the others are taken at standard level (SL). The IB recommends 240 teaching hours for HL subjects and 150 hours for SL. Subjects at HL are studied in greater depth and breadth than at SL.

In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

This IB DP subject brief has four key components:

I. Course description and aims II. Curriculum model overview III. Assessment model IV. Content outline

I. Course description and aims

Language acquisition consists of two modern language courses—language ab initio and language B—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.

Offered at SL only, language ab initio is a language acquisition course designed for students with no previous experience in—or very little exposure to—the target language.

Language ab initio students develop their receptive, productive and interactive skills while learning to communicate in the target language in familiar and unfamiliar contexts.

Students develop the ability to communicate through the study of language, themes and texts. There are five prescribed themes: identities, experiences, human ingenuity, social organization and sharing the planet. While the themes are common to both language ab initio and language B, the language ab initio syllabus additionally prescribes four topics for each of the five themes, for a total of 20 topics that must be addressed over the two years of the course.

The following language acquisition aims are common to both language ab initio and language B.

- 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.

II. Curriculum model overview

The curriculum is organized around five prescribed themes and 20 prescribed topics with which the students engage though written, audio, visual and audio-visual texts.

Students develop into successful, effective communicators by considering the conceptual understandings of context, audience, purpose, meaning and variation.

Communication is evidenced through receptive, productive and interactive skills.

III. Assessment model

The language acquisition assessment objectives are common to both language ab initio and language B.

- 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.

Assessment at a glance

Language ab initio SL assessment outline		Weighting
External 75%	**Paper 1** (productive skills) Two written tasks—each from a choice of three Writing—30 marks	25%
	Paper 2 (receptive skills) Separate sections for listening and reading Listening—25 marks Reading—40 marks	 25% 25%
Internal 25%	**Individual oral assessment** 30 marks	25%

For the individual oral internal assessment, the stimulus at language ab initio SL is a visual image that is clearly relevant to one (or more) of the themes of the course.

IV. Content outline

Theme	Guiding principle	Prescribed topics	Possible questions
Identities	Explore the nature of the self and how we express who we are.	• Personal attributes • Personal relationships • Eating and drinking • Physical well-being	• How do I present myself to others? • How do I express my identity? • How do I achieve a balanced and healthy lifestyle?
Experiences	Explore and tell the stories of the events, experiences and journeys that shape our lives.	• Daily routine • Leisure • Holidays • Festivals and celebrations	• How does travel broaden our horizons? • How would my life be different if I lived in another culture? • What are the challenges of being a teenager? • How are customs and traditions similar or different across cultures?
Human ingenuity	Explore the ways in which human creativity and innovation affect our world.	• Transport • Entertainment • Media • Technology	• How do science and technology affect my life? • How do I use media in my daily life? • What can I learn about a culture through entertainment?
Social organization	Explore the ways in which groups of people organize themselves, or are organized, through common systems or interests.	• Neighbourhood • Education • The workplace • Social issues	• What purpose do rules and regulations have in society? • What is my role in society? • What options do I have in the world of work?
Sharing the planet	Explore the challenges and opportunities faced by individuals and communities in the modern world.	• Climate • Physical geography • The environment • Global issues	• What can I do to help the environment? • How do my surroundings affect the way I live? • What can I do to make the world a better place?

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International Baccalaureate Diploma Programme Subject Brief

Individuals and societies: Geography

First assessments 2019

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints. Approaches to teaching and learning (ATL) are deliberate strategies, skills and attitudes that permeate the teaching and learning environment. In the DP students develop skills from five ATL categories: thinking, research, social, self-management and communication.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate the following key course components:

I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

Geography is a dynamic subject firmly grounded in the real world, and focuses on the interactions between individuals, societies and physical processes in both time and space. It seeks to identify trends and patterns in these interactions. It also investigates the way in which people adapt and respond to change, and evaluates actual and possible management strategies associated with such change. Geography describes and helps to explain the similarities and differences between different places, on a variety of scales and from different perspectives.

Geography as a subject is distinctive in its spatial dimension and occupies a middle ground between social or human sciences and natural sciences. The course integrates physical, environmental and human geography, and students acquire elements of both socio-economic and scientific methodologies. Geography takes advantage of its position to examine relevant concepts and ideas from a wide variety of disciplines, helping students develop life skills and have an appreciation of, and a respect for, alternative approaches, viewpoints and ideas.

Students at both SL and HL are presented with a common core and optional geographic themes. HL students also study the HL core extension. Although the skills and activity of studying geography are common to all students, HL students are required to acquire a further body of knowledge, to demonstrate critical evaluation and to further synthesize the concepts in the HL extension.

The aims of the geography course at SL and HL are to enable students to:

- develop an understanding of the dynamic interrelationships between people, places, spaces and the environment at different scales
- develop a critical awareness and consider complexity thinking in the context of the nexus of geographic issues, including:
  - acquiring an in-depth understanding of how geographic issues, or wicked problems, have been shaped by powerful human and physical processes
  - synthesizing diverse geographic knowledge in order to form viewpoints about how these issues could be resolved.
- understand and evaluate the need for planning and sustainable
- development through the management of resources at varying scales.

II. Curriculum model overview

Syllabus component	Teaching hours	
	SL	HL
Geographic themes—seven options SL—two options; HL— three options · Freshwater · Oceans and coastal margins · Extreme environments · Geophysical hazards · Leisure, tourism and sport · Food and health · Urban environments	60	90
SL and HL core **Geographic perspectives—global change** · Population distribution—changing population · Global climate—vulnerability and resilience · Global resource consumption and security	70	70

HL only **Geographic perspectives—global interactions** • Power, places and networks • Human development and diversity • Global risks and resilience		60
Internal assessment **SL and HL Fieldwork** Fieldwork, leading to one written report based on a fieldwork question, information collection and analysis with evaluation	20	20
Total teaching hours	150	240

III. Assessment model

There are four assessment objectives (AOs) for the SL and HL geography course. Having followed the course at SL or HL, students will be expected to do the following:

1. **Demonstrate knowledge and understanding of specified content**
   - between areas of film focus and film elements employed by
   - the core theme—global change
   - two optional themes at SL and three optional themes at HL
   - at HL, the HL extension—global interactions
   - in internal assessment, a specific geographic research topic.
2. **Demonstrate application and analysis of knowledge and understanding**
   - apply and analyse geographic concepts and theories
   - identify and interpret geographic patterns and processes in unfamiliar information, data and cartographic material
   - demonstrate the extent to which theories and concepts are recognized and understood in particular contexts.
3. **Demonstrate synthesis and evaluation**
   - examine and evaluate geographic concepts, theories and perceptions
   - use geographic concepts and examples to formulate and present an argument
   - evaluate materials using methodology appropriate for geographic fieldwork
   - at HL only, demonstrate synthesis and evaluation of the HL extension—global interactions.
4. **Select, use and apply a variety of appropriate skills and techniques**
   - select, use and apply:
     - prescribed geographic skills in appropriate contexts
     - techniques and skills appropriate to a geographic research question.
   - produce well-structured written material, using appropriate terminology.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)		Weighting of final grade (%)	
		SL	HL	SL	HL
External		2.75	4.5	75	80
Paper 1	Each option has a structured question and one extended answer question from a choice of two.	1.5	2.25	35	35
Paper 2	Three structured questions, based on each SL/HL core unit. Infographic or visual stimulus, with structured questions. One extended answer question from a choice of two.	1.25	1.25	40	25
Paper 3	Choice of three extended answer questions, with two parts, based on each HL core extension unit.		1		20
Internal		20	20	25	20
Fieldwork	One written report based on a fieldwork question from any suitable syllabus topic, information collection and analysis with evaluation.	20	20	25	20

IV. Sample questions

- Examine the role of plate margin type in determining the severity of volcanic hazards.
- Evaluate the success of attempts to predict tectonic hazard event and their possible impacts.
- Evaluate the role of agribusiness and new technologies in increasing world food supply.
- Examine the relationship between food security and health.
- Using examples, analyse how technological developments can threaten the security of states.
- To what extent does a global culture exist?

International Baccalaureate Diploma Programme Subject Brief

Individuals and societies: History—higher level

First assessments 2017—last assessments 2025

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints. Approaches to teaching and learning (ATL) are deliberate strategies, skills and attitudes that permeate the teaching and learning environment. In the DP, students develop skills from five ATL categories: thinking, research, social, self-management and communication.

To ensure both breadth and depth of knowledge and understanding, students must choose six courses from six distinct groups: 1) studies in language and literature; 2) language acquisition; 3) individuals and societies; 4) sciences; 5) mathematics; 6) the arts. Students may choose to replace the arts course with a second course from one of the other five groups. At least three, and not more than four, subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

These DP subject briefs illustrate four key course components.

I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

The DP history course is a world history course based on a comparative and multi-perspective approach to history. It involves the study of a variety of types of history, including political, economic, social and cultural, and provides a balance of structure and flexibility.

The course emphasizes the importance of encouraging students to think historically and to develop historical skills as well as gaining factual knowledge. It puts a premium on developing the skills of critical thinking, and on developing an understanding of multiple interpretations of history. In this way, the course involves a challenging and demanding critical exploration of the past. Teachers explicitly teach thinking and research skills such as comprehension, text analysis, transfer, and use of primary sources.

There are six key concepts that have particular prominence throughout the DP history course: change, continuity, causation, consequence, significance and perspectives.

The aims of the DP history course are to enable students to:

- develop an understanding of, and continuing interest in, the past
- encourage students to engage with multiple perspectives and to appreciate the complex nature of historical concepts, issues, events and developments
- promote international-mindedness through the study of history from more than one region of the world
- develop an understanding of history as a discipline and to develop historical consciousness including a sense of chronology and context, and an understanding of different historical perspectives
- develop key historical skills, including engaging effectively with sources
- increase students' understanding of themselves and of contemporary society by encouraging reflection on the past.

II. Curriculum model overview

Component	Recommended teaching hours
Prescribed subjects ***One of the following, using two case studies, each taken from a different region of the world:*** 1. Military leaders 2. Conquest and its impact 3. The move to global war 4. Rights and protest 5. Conflict and intervention	40

World history topics ***Two of the following, using topic examples from more than one region of the world:*** 1. Society and economy (750–1400) 2. Causes and effects of medieval wars (750–1500) 3. Dynasties and rulers (750–1500) 4. Societies in transition (1400–1700) 5. Early Modern states (1450–1789) 6. Causes and effects of Early Modern wars (1500–1750) 7. Origins, development and impact of industrialization (1750–2005) 8. Independence movements (1800–2000) 9. Evolution and development of democratic states (1848–2000) 10. Authoritarian states (20th century) 11. Causes and effects of 20th-century wars 12. The Cold War: Superpower tensions and rivalries (20th century)	**90**
HL options: Depth studies ***One of the following:*** 1. History of Africa and the Middle East 2. History of the Americas 3. History of Asia and Oceania 4. History of Europe	**90**
Internal assessment Historical investigation	**20**

III. Assessment model

There are four assessment objectives for the DP history course. Having followed the course at higher level (HL), students will be expected to meet the following objectives.

Assessment objective 1: Knowledge and understanding

- Demonstrate detailed, relevant and accurate historical knowledge.
- Demonstrate understanding of historical concepts and context.
- Demonstrate understanding of historical sources.

Assessment objective 2: Application and analysis

- Formulate clear and coherent arguments.
- Use relevant historical knowledge to effectively support analysis.
- Analyse and interpret a variety of sources.

Assessment objective 3: Synthesis and evaluation

- Integrate evidence and analysis to produce a coherent response.
- Evaluate different perspectives on historical issues and events, and integrate this evaluation effectively into a response.
- Evaluate sources as historical evidence, recognizing their value and limitations.
- Synthesize information from a selection of relevant sources.

Assessment objective 4: Use and application of appropriate skills

- Structure and develop focused essays that respond effectively to the demands of a question.
- Reflect on the methods used by, and challenges facing, the historian.
- Formulate an appropriate, focused question to guide a historical inquiry.
- Demonstrate evidence of research skills, organization, reference and selection of appropriate sources.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		5	80
Paper 1	Source-based paper based on the five prescribed subjects	1	20
Paper 2	Essay paper based on the 12 world history topics	1.5	25
Paper 3	Essay paper based on one of the four regional options	2.5	35
Internal			
Historical investigation	A historical investigation into a topic of the student's choice.	20	20

IV. Sample questions

Paper 1

When presented with five sources related to the enforcements of the provisions of the treaties, disarmament and London Naval Conference (1930), students will:

- explain the significance of the Conference
- compare and contrast the views of the Conference presented in different sources
- assess the value and limitations of sources
- use the sources and their own knowledge to discuss the extent to which they agree with the view that the London Naval Conference was unsuccessful.

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International Baccalaureate Diploma Programme Subject Brief

Individuals and societies: History—standard level

First assessments 2017—last assessments 2025

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To ensure both breadth and depth of knowledge and understanding, students must choose six courses from six distinct groups: 1) studies in language and literature; 2) language acquisition; 3) individuals and societies; 4) sciences; 5) mathematics; 6) the arts. Students may choose to replace the arts course with a second course from one of the other five groups. At least three, and not more than four, subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

These DP subject briefs illustrate four key course components.

I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

The DP history course is a world history course based on a comparative and multi-perspective approach to history. It involves the study of a variety of types of history, including political, economic, social and cultural, and provides a balance of structure and flexibility.

The course emphasizes the importance of encouraging students to think historically and to develop historical skills as well as gaining factual knowledge. It puts a premium on developing the skills of critical thinking, and on developing an understanding of multiple interpretations of history. In this way, the course involves a challenging and demanding critical exploration of the past. Teachers explicitly teach thinking and research skills such as comprehension, text analysis, transfer, and use of primary sources.

There are six key concepts that have particular prominence throughout the DP history course: change, continuity, causation, consequence, significance and perspectives.

The aims of the DP history course are to enable students to:

- develop an understanding of, and continuing interest in, the past
- encourage students to engage with multiple perspectives and to appreciate the complex nature of historical concepts, issues, events and developments
- promote international-mindedness through the study of history from more than one region of the world
- develop an understanding of history as a discipline and to develop historical consciousness including a sense of chronology and context, and an understanding of different historical perspectives
- develop key historical skills, including engaging effectively with sources
- increase students' understanding of themselves and of contemporary society by encouraging reflection on the past.

II. Curriculum model overview

Component	Recommended teaching hours
Prescribed subjects ***One of the following, using two case studies, each taken from a different region of the world:*** 1. Military leaders 2. Conquest and its impact 3. The move to global war 4. Rights and protest 5. Conflict and intervention	40

World history topics ***Two of the following, using topic examples from more than one region of the world:*** 1. Society and economy (750–1400) 2. Causes and effects of medieval wars (750–1500) 3. Dynasties and rulers (750–1500) 4. Societies in transition (1400–1700) 5. Early Modern states (1450–1789) 6. Causes and effects of Early Modern wars (1500–1750) 7. Origins, development and impact of industrialization (1750–2005) 8. Independence movements (1800–2000) 9. Evolution and development of democratic states (1848–2000) 10. Authoritarian states (20th century) 11. Causes and effects of 20th-century wars 12. The Cold War: Superpower tensions and rivalries (20th century)	**90**
Internal assessment Historical investigation	**20**

III. Assessment model

There are four assessment objectives for the DP history course. Having followed the course at standard level (SL), students will be expected to meet the following objectives.

Assessment objective 1: Knowledge and understanding

- Demonstrate detailed, relevant and accurate historical knowledge.
- Demonstrate understanding of historical concepts and context.
- Demonstrate understanding of historical sources.

Assessment objective 2: Application and analysis

- Formulate clear and coherent arguments.
- Use relevant historical knowledge to effectively support analysis.
- Analyse and interpret a variety of sources.

Assessment objective 3: Synthesis and evaluation

- Integrate evidence and analysis to produce a coherent response.
- Evaluate different perspectives on historical issues and events, and integrate this evaluation effectively into a response.
- Evaluate sources as historical evidence, recognizing their value and limitations.
- Synthesize information from a selection of relevant sources.

Assessment objective 4: Use and application of appropriate skills

- Structure and develop focused essays that respond effectively to the demands of a question.
- Reflect on the methods used by, and challenges facing, the historian.
- Formulate an appropriate, focused question to guide a historical inquiry.
- Demonstrate evidence of research skills, organization, reference and selection of appropriate sources.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		2.5	75
Paper 1	Source-based paper based on the five prescribed subjects	1	30
Paper 2	Essay paper based on the 12 world history topics	1.5	45
Internal			
Historical investigation	A historical investigation into a topic of the student's choice	20	25

IV. Sample questions

Paper 2 (HL and SL)

- Examine the impact of industrialization on standards of living and working conditions in one country.
- Compare and contrast the impact on women of the policies of two authoritarian states, each chosen from a different region.
- Compare and contrast the role of technology in determining the outcome of two 20th-century wars.
- Examine the impact of the US policy of containment on superpower relations between 1947 and 1964.

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International Baccalaureate Diploma Programme Subject Brief

Individuals and societies: Economics— higher level

First assessments 2013—last assessments 2019

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints. Approaches to teaching and learning (ATL) are deliberate strategies, skills and attitudes that permeate the teaching and learning environment. In the DP, students develop skills from five ATL categories: thinking, research, social, self-management and communication.

To ensure both breadth and depth of knowledge and understanding, students must choose six courses from six distinct groups: 1) studies in language and literature; 2) language acquisition; 3) individuals and societies; 4) sciences; 5) mathematics; 6) the arts. Students may choose to replace the arts course with a second course from one of the other five groups. At least three, and not more than four, subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

These DP subject briefs illustrate four key course components.

I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

Economics is a dynamic social science. The study of economics 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 DP 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 not studied in a vacuum—rather, they 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 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. Teachers explicitly teach thinking and research skills such as comprehension, text analysis, transfer, and use of primary sources.

The aims of the DP economics course are to enable students to:

- develop an understanding of microeconomic and macroeconomic theories and concepts and their real-world application
- develop an appreciation of the impact on individuals and societies of economic interactions between nations
- develop an awareness of development issues facing nations as they undergo the process of change

II. Curriculum model overview

Component	Recommended teaching hours
Section 1: Microeconomics 1.1 Competitive markets: demand and supply 1.2 Elasticity 1.3 Government intervention 1.4 Market failure 1.5 Theory of the firm and market structures	95
Section 2: Macroeconomics 2.1 The level of overall economic activity 2.2 Aggregate demand and aggregate supply 2.3 Macroeconomic objectives 2.4 Fiscal policy 2.5 Monetary policy 2.6 Supply-side policies	50
Section 3: International economics 3.1 International trade 3.2 Exchange rates 3.3 The balance of payments 3.4 Economic integration 3.5 Terms of trade	45

Section 4: Development economics 4.1. Economic development 4.2. Measuring development 4.3. The role of domestic factors 4.4. The role of international trade 4.5. The role of foreign direct investment (FDI) 4.6. The roles of foreign aid and multilateral development assistance 4.7. The role of international debt 4.8. The balance between markets and intervention	**30**
Internal assessment Portfolio of three commentaries	**20**

III. Assessment model

There are four assessment objectives for the DP economics course. Having followed the course at higher level (HL), students will be expected to meet the following objectives.

Assessment objective 1: Knowledge and understanding

- Demonstrate knowledge and understanding of the common SL/HL syllabus.
- Demonstrate knowledge and understanding of current economic issues and data.
- Demonstrate knowledge and understanding of the HL extension topics.

Assessment objective 2: Application and analysis

- Apply economic concepts and theories to real-world situations.
- Identify and interpret economic data.
- Demonstrate the extent to which economic information is used effectively in particular contexts.
- Demonstrate application and analysis of the extension topics.

Assessment objective 3: Synthesis and evaluation

- Examine economic concepts and theories.
- Use economic concepts and examples to construct and present an argument.
- Discuss and evaluate economic information and theories.
- Demonstrate economic synthesis and evaluation of the extension topics.

Assessment objective 4: Selection, use and application of appropriate skills and techniques

- Produce well-structured written material, using appropriate economic terminology, within specified time limits.
- Use correctly labelled diagrams to help explain economic concepts and theories.
- Select, interpret and analyse appropriate extracts from the news media.
- Interpret appropriate data sets.
- Use quantitative techniques to identify, explain and analyse economic relationships

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		4	80
Paper 1	Extended response paper on microeconomics and macroeconomics	1.5	30
Paper 2	Data response paper on international and development economics	1.5	30
Paper 3	HL extension paper on all syllabus content	1	20
Internal			
Portfolio	Three commentaries based on different sections of the syllabus and on published extracts from the news media.	20	20

IV. Sample questions

Paper 1

- Explain why firms in monopolistic competition can make economic profit in the short run only.
- Compare and contrast the market structures of monopoly and monopolistic competition.

Paper 2

- State two reasons why a multinational corporation (MNC) may wish to invest in an economically less developed country (LDC).

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International Baccalaureate Diploma Programme Subject Brief

Individuals and societies: Economics—standard level

First assessments 2013—last assessments 2023

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To ensure both breadth and depth of knowledge and understanding, students must choose six courses from six distinct groups: 1) studies in language and literature; 2) language acquisition; 3) individuals and societies; 4) sciences; 5) mathematics; 6) the arts. Students may choose to replace the arts course with a second course from one of the other five groups. At least three, and not more than four, subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

These DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

Economics is a dynamic social science. The study of economics 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 DP 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 not studied in a vacuum—rather, they 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 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. Teachers explicitly teach thinking and research skills such as comprehension, text analysis, transfer, and use of primary sources.

The aims of the DP **economics** course are to enable students to:

- develop an understanding of microeconomic and macroeconomic theories and concepts and their real-world application
- develop an appreciation of the impact on individuals and societies of economic interactions between nations
- develop an awareness of development issues facing nations as they undergo the process of change.

II. Curriculum model overview

Component	Recommended teaching hours
Section 1: Microeconomics 1.1 Competitive markets: demand and supply 1.2 Elasticity 1.3 Government intervention 1.4 Market failure	35
Section 2: Macroeconomics 2.1. The level of overall economic activity 2.2. Aggregate demand and aggregate supply 2.3. Macroeconomic objectives 2.4. Fiscal policy 2.5. Monetary policy 2.6. Supply-side policies	40
Section 3: International economics 3.1. International trade 3.2. Exchange rates 3.3. The balance of payments 3.4. Economic integration	25

Section 4: Development economics 4.1. Economic development 4.2. Measuring development 4.3. The role of domestic factors 4.4. The role of international trade 4.5. The role of foreign direct investment (FDI) 4.6. The roles of foreign aid and multilateral development assistance 4.7. The role of international debt 4.8. The balance between markets and intervention	30
Internal assessment Portfolio of three commentaries	20

III. Assessment model

There are four assessment objectives for the DP economics course. Having followed the course at standard level (SL), students will be expected to meet the following objectives.

Assessment objective 1: Knowledge and understanding

- Demonstrate knowledge and understanding of the common SL/HL syllabus.
- Demonstrate knowledge and understanding of current economic issues and data.

Assessment objective 2: Application and analysis

- Apply economic concepts and theories to real-world situations.
- Identify and interpret economic data.
- Demonstrate the extent to which economic information is used effectively in particular contexts.

Assessment objective 3: Synthesis and evaluation

- Examine economic concepts and theories.
- Use economic concepts and examples to construct and present an argument.
- Discuss and evaluate economic information and theories.

Assessment objective 4: Selection, use and application of appropriate skills and techniques

- Produce well-structured written material, using appropriate economic terminology, within specified time limits.
- Use correctly labelled diagrams to help explain economic concepts and theories.
- Select, interpret and analyse appropriate extracts from the news media.
- Interpret appropriate data sets.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		3	80
Paper 1	Extended response paper on microeconomics and macroeconomics	1.5	40
Paper 2	Data response paper on international and development economics	1.5	40
Internal			
Portfolio	Three commentaries based on different sections of the syllabus and on published extracts from the news media.	20	20

IV. Sample questions

- Distinguish between structural unemployment and cyclical (demand-deficient) unemployment. Discuss policies that a government might use to reduce the levels of structural unemployment and cyclical (demand-deficient) unemployment. (Paper 1)
- Using an appropriate diagram, analyse the effect of "foreign buying of shares in South African companies" on the value of the rand. (Paper 2)

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International Baccalaureate
Diploma Programme Subject Brief

Individuals and societies:
Information technology in a global society – Higher level

First assessments 2012 – Last assessments 2019

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

The IB DP information technology in a global society (ITGS) course is the study and evaluation of the impacts of information technology (IT) on individuals and society. It explores the advantages and disadvantages of the access and use of digitized information at the local and global level. ITGS provides a framework for the student to make informed judgments and decisions about the use of IT within social contexts.

The aims of the ITGS higher level courses are to:

- enable students to evaluate social and ethical considerations arising from the widespread use of IT by individuals, families, communities, organizations and societies at the local and global level
- develop students' understanding of the capabilities of current and emerging IT systems and to evaluate their impact on a range of stakeholders
- enable students to apply their knowledge of existing IT systems to various scenarios and to make informed judgments about the effects
- encourage students to use their knowledge of IT systems and practical IT skills to justify IT solutions for a specified client or end-user.

II. Curriculum model overview

Component	Recommended teaching hours
Strand 1: Social and ethical significance	40
SL/HL core • Reliability and integrity • Security, privacy and anonymity • Intellectual property and authenticity • The digital divide and access equality • Surveillance • Globalization and cultural diversity • Policies, standards and protocols • People and machines • Digital citizenship	
HL extension Social and ethical considerations linked to the two HL extension topics and annually issued case study.	20
Strand 2: Application to specified scenarios	40
SL/HL core • Business and employment • Education and training • Environment • Health • Home and leisure • Politics and government	
HL extension Scenarios based on real-life situations used to address specified IT developments in the two HL extension topics and annually issued case study.	35

Strand 3: IT systems **SL/HL core** • Hardware and oftware • Networks and internet • Personal and public communications • Multimedia/digital media • Databases, spreadsheets, modelling and simulations • Introduction to project management **HL extension** • IT systems in organizations • Robotics, artificial intelligence and expert systems • Information systems specific to the annually issued case study	40 35
The project (practical application of IT skills) The application of skills and knowledge to develop an original IT product for a specified client.	30

III. Assessment model

Having followed the ITGS higher level course, students will be expected to demonstrate the following.

Demonstrate knowledge and understanding of specified content
- IT applications and developments in specified scenarios
- The social and ethical significance of specified IT applications and developments
- Technical knowledge of ITGS terminology, concepts and tools
- Technical knowledge of IT systems
- Topics related to the annually issued case study

Application and analysis
- Explain the impacts of IT applications and developments in specified scenarios
- Analyse the social and ethical significance of specified IT applications and developments
- Transfer IT knowledge and make connections between specific scenarios
- Apply technical knowledge of IT systems acquired through independent research to provide supporting evidence for possible decisions related to the annually issued case study

Synthesis and evaluation
- Evaluate local and global impacts of specified IT developments through individually researched studies
- Evaluate a solution involving IT to a specified problem using knowledge of IT systems
- Discuss the social and ethical implications of specified IT policies and developments
- Evaluate, formulate and justify possible strategic courses of action related to the annually issued case study

Use of ITGS skills
- Demonstrate evidence of project management in the development of a well-organized product to resolve a specific issue
- Use IT tools and the product development life cycle (PDLC) to create an original product in consultation with a client
- Demonstrate evidence of the use of appropriate techniques to develop an original IT product

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		4.75	80
Paper 1	Four structured responses	2.25	35
Paper 2	Written response to previously unseen article	1.25	20
Paper 3	Four questions based on pre-seen case study	1.25	25
Internal		30	20
Written report	Development of an original IT product for a specified client		

IV. Sample questions

Questions based on stimulus material

- Identify two reasons why organizations continue to use legacy systems.
- Many organizations are developing intranets in an attempt to address the problems in their IT developments. To what extent are intranets likely to overcome these problems?
- Explain the purposes of the following in the home network:
  - SSID
  - Router
  - Switch

International Baccalaureate
Diploma Programme Subject Brief

Individuals and societies:
Information technology in a global society – Standard level

First assessments 2012 – Last assessments 2019

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To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

The IB DP information technology in a global society (ITGS) course is the study and evaluation of the impacts of information technology (IT) on individuals and society. It explores the advantages and disadvantages of the access and use of digitized information at the local and global level. ITGS provides a framework for the student to make informed judgments and decisions about the use of IT within social contexts.

The aims of the ITGS standard level courses are to:

- enable the student to evaluate social and ethical considerations arising from the widespread use of IT by individuals, families, communities, organizations and societies at the local and global level
- develop the student's understanding of the capabilities of current and emerging IT systems and to evaluate their impact on a range of stakeholders
- enable students to apply their knowledge of existing IT systems to various scenarios and to make informed judgments about the effects of IT developments on them
- encourage students to use their knowledge of IT systems and practical IT skills to justify IT solutions for a specified client or end-user.

II. Curriculum model overview

Component	Recommended teaching hours
Strand 1: Social and ethical significance • Reliability and integrity • Security • Privacy and anonymity • Intellectual property • Authenticity • The digital divide and equality of access • Surveillance • Globalization and cultural diversity • Policies • Standards and protocols • People and machines • Digital citizenship	40
Strand 2: Application to specified scenarios • Business and employment • Education and training • Environment • Health • Home and leisure • Politics and government	40

Strand 3: IT systems • Hardware • Software • Networks • Internet • Personal and public communications • Multimedia/digital media • Databases • Spreadsheets, modelling and simulations • Introduction to project management	40
The project (practical application of IT skills) The application of skills and knowledge to develop an original IT product for a specified client.	30

III. Assessment model

Having followed the ITGS standard level course, students will be expected to demonstrate the following:

Knowledge and understanding of specified content
- Demonstrate an awareness of IT applications and developments in specified scenarios
- Demonstrate an awareness of the social and ethical significance of specified IT applications and developments
- Demonstrate technical knowledge of ITGS terminology, concepts and tools
- Demonstrate technical knowledge of IT systems

Application and analysis
- Explain the impacts of IT applications and developments in specified scenarios
- Analyse the social and ethical significance of specified IT applications and developments
- Transfer IT knowledge and make connections between specific scenarios

Synthesis and evaluation
- Evaluate local and global impacts of specified IT developments through individually researched studies
- Evaluate a solution involving IT to a specified problem using knowledge of IT systems
- Discuss the social and ethical implications of specified IT policies and developments

Use of ITGS skills
- Demonstrate evidence of project management in the development of a well-organized product to resolve a specific issue
- Use IT tools and the product development life cycle (PDLC) to create an original product in consultation with a client
- Demonstrate evidence of the use of appropriate techniques to develop an original IT product.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		3	70
Paper 1	Three structured responses	1.75	40
Paper 2	Written response to previously unseen article	1.25	30
Internal		30	30
Written report	Development of an original IT product for a specified client		

IV. Sample questions

Questions based on stimulus material

- Describe the relationship between the server and a client in a network.
- A company is based at various geographical locations. The senior managing team is considering the use of web-based P2P networking in order to make business-related files available to its staff. To what extent would this be an effective way to share its business data?
- Describe the relationship of one primary stakeholder to the IT system.
- Evaluate the impact of the social/ethical issues on the relevant stakeholders.

International Baccalaureate
Diploma Programme Subject Brief

Individuals and societies: Psychology

First assessment 2019

The Diploma Programme (DP) is a rigorous pre-university course of study designed for students in the 16 to 19 age range. It is a broad-based two-year course that aims to encourage students to be knowledgeable and inquiring, but also caring and compassionate. There is a strong emphasis on encouraging students to develop intercultural understanding, open-mindedness, and the attitudes necessary for them to respect and evaluate a range of points of view.

The course is presented as six academic areas enclosing a central core. Students study two modern languages (or a modern language and a classical language), a humanities or social science subject, an experimental science, mathematics and one of the creative arts. Instead of an arts subject, students can choose two subjects from another area. It is this comprehensive range of subjects that makes the Diploma Programme a demanding course of study designed to prepare students effectively for university entrance. In each of the academic areas students have flexibility in making their choices, which means they can choose subjects that particularly interest them and that they may wish to study further at university.

Normally, three subjects (and not more than four) are taken at higher level (HL), and the others are taken at standard level (SL). The IB recommends 240 teaching hours for HL subjects and 150 hours for SL. Subjects at HL are studied in greater depth and breadth than at SL.

In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

This IB DP subject brief has four key components:

I. Course description and aims II. Curriculum model overview III. Assessment model IV. Sample questions

I. Course description and aims

At the core of the DP psychology course is an introduction to three different approaches to understanding behaviour: the biological, cognitive and sociocultural approaches. Students study and critically evaluate the knowledge, concepts, theories and research that have developed the understanding in these fields.

The interaction of these approaches to studying psychology forms the basis of a holistic and integrated approach to understanding mental processes and behaviour as a complex, dynamic phenomenon, allowing students to appreciate the diversity as well as the commonality between their own behaviour and that of others.

The contribution and the interaction of the three approaches is understood through the four options in the course, focusing on areas of applied psychology: abnormal psychology, developmental psychology, health psychology, and the psychology of relationships. The options provide an opportunity to take what is learned from the study of the approaches to psychology and apply it to specific lines of inquiry.

Psychologists employ a range of research methods, both qualitative and quantitative, to test their observations and hypotheses. DP psychology promotes an understanding of the various approaches to research and how they are used to critically reflect on the evidence as well as assist in the design, implementation, analysis and evaluation of the students' own investigations. Surrounding the approaches and the options are the overarching themes of research and ethics. A consideration of both is paramount to the nature of the subject.

The aims of the psychology course at SL and at HL are to:

- develop an understanding of the biological, cognitive and socio-cultural factors affecting mental processes and behaviour
- apply an understanding of the biological, cognitive and sociocultural factors affecting mental processes and behaviour to at least one applied area of study
- understand diverse methods of inquiry
- understand the importance of ethical practice in psychological research in general and observe ethical practice in their own inquiries
- ensure that ethical practices are upheld in all psychological inquiry and discussion
- develop an awareness of how psychological research can be applied to address real-world problems and promote positive change
- 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.

II. Curriculum model overview

Syllabus component	Teaching hours SL	HL
Core • Biological approach to understanding behaviour • Cognitive approach to understanding behaviour • Sociocultural approach to understanding behaviour • Approaches to researching behaviour	90 20	120 60
Options • Abnormal psychology • Developmental psychology • Health psychology • Psychology of human relationships	20	40
Internal assessment Experimental study	20	20
Total teaching hours	150	240

III. Assessment model

By the end of the psychology course at SL or at HL, students will be expected to demonstrate the following.

1. Knowledge and comprehension of specified content
   - Demonstrate knowledge and comprehension of:
     - key terms and concepts in psychology
     - a range of psychological theories and studies
     - the biological, cognitive and sociocultural approaches to mental processes and behaviour
     - research methods used in psychology.
2. Application and analysis
   - Demonstrate an ability to use examples of psychological research and psychological concepts to formulate an argument in response to a specific question.
   - Demonstrate application and analysis of:
     - a range of psychological theories and research studies
     - the knowledge relevant to areas of applied psychology.
   - At HL only, analyse qualitative and quantitative research in psychology.
3. Synthesis and evaluation
   - Evaluate the contribution of:
     - psychological theories to understanding human psychology
     - research to understanding human psychology
     - the theories and research in areas of applied psychology.
   - At HL only, evaluate research scenarios from a methodological and ethical perspective.
4. Selection and use of skills appropriate to psychology
   - Demonstrate the acquisition of skills required for experimental design, data collection and presentation, data analysis and the evaluation of a simple experiment while demonstrating ethical practice.
   - Work in a group to design a method for a simple experimental investigation, organize the investigation and record the required data for a simple experiment.
   - Write a report of a simple experiment.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours) SL	HL	Weighting of final grade (%) SL	HL
External		3	5	75	80
Paper 1	Three short answer questions on the core. One essay from a choice of three on the biological, cognitive and sociocultural approaches. **HL only:** essays will reference additional HL topic.	2	2	50	40
Paper 2	**SL:** one question from a choice of three on one option. **HL:** two questions; one each from a choice of three on two options.	1	2	25	20
Paper 3	Three short answer questions on approaches to research.		1		20
Internal		20	20	25	20
Experimental study	A report on an experimental study undertaken by the student.	20	20	25	20

IV. Sample questions

- Outline one study investigating schema.
- Discuss ethical considerations linked to genetic research into human behaviour.
- **(HL only)** Discuss how the use of technology affects one cognitive process.

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International Baccalaureate
Diploma Programme Subject Brief

Interdisciplinary course:
Environmental systems and societies—standard level

First assessments 2017—last assessments 2023

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To ensure both breadth and depth of knowledge and understanding, students must choose six courses from six distinct groups: 1) studies in language and literature; 2) language acquisition; 3) individuals and societies; 4) sciences; 5) mathematics; 6) the arts. Students may choose to replace the arts course with a second course from one of the other five groups. At least three, and not more than four, subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

These DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

Environmental systems and societies (ESS) is an interdisciplinary course offered only at standard level (SL). This course can fulfill either the individuals and societies or the sciences requirement. Alternatively, this course enables students to satisfy the requirements of both subjects groups simultaneously while studying one course.

ESS 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. As a result of studying this course, students will become equipped with the ability to recognize and evaluate the impact of our complex system of societies on the natural world.

The interdisciplinary nature of the DP course requires a broad skill set from students, including the ability to perform research and investigations, participation in philosophical discussion and problem-solving. The course requires a systems approach to environmental understanding and promotes holistic thinking about environmental issues. Teachers explicitly teach thinking and research skills such as comprehension, text analysis, knowledge transfer and use of primary sources. They encourage students to develop solutions at the personal, community and global levels.

The aims of the DP **environmental systems and societies** course are to enable students to:

- acquire the knowledge and understandings of environmental systems and issues 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, 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.

II. Curriculum model overview

Component	Recommended teaching hours
Core content	**120**
1. Foundations of environmental systems and societies	16
2. Ecosystems and ecology	25
3. Biodiversity and conservation	13
4. Water and aquatic food production systems and societies	15
5. Soil systems and terrestrial food production systems and societies	12
6. Atmospheric systems and societies	10
7. Climate change and energy production	13
8. Human systems and resource use	16
Practical scheme of work	**30**
Practical activities	20
Individual investigation	10

The group 4 project

ESS students have the option to participate in the group 4 project. For those who participate, 10 hours of practical activities will be replaced with 10 hours of work on the group 4 project.

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge. The emphasis is on interdisciplinary cooperation and the scientific processes.

III. Assessment model

There are four assessment objectives for the DP environmental systems and societies course. Having followed the course at SL, students will be expected to do the following.

Assessment objective 1

Demonstrate knowledge and understanding of relevant:

- facts and concepts
- methodologies and techniques
- values and attitudes.

Assessment objective 2

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.

Assessment objective 3

Evaluate, justify and synthesize, as appropriate:

- explanations, theories and models
- arguments and proposed solutions
- methods of fieldwork and investigation
- cultural viewpoints and value systems.

Assessment objective 4

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 carry out investigations
- suggesting collaborative and innovative solutions that demonstrate awareness and respect for the cultural differences and value systems of others.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		3	75
Paper 1	Case study	1	25
Paper 2	Short answers and structured essays	2	50
Internal			
Individual investigation	Written report of a research question designed and implemented by the student.	10	25

IV. Sample questions

Paper 1

- With reference to source material, outline two possible reasons why the snow leopard has received special attention from conservationists. [8]
- With reference to figures 6, 7 and 9 [in the resource booklet] explain how desertification and water resource shortage have led to the formation of smog in Ulan Bator. [3]

Paper 2

- Outline how the reasons for food wastage may differ between human societies. [4]
- Explain how the choice of food production systems may influence the ecological footprint of a named human society. [7]
- Discuss how different environmental value systems influence responses to the human population growth rate. [9]

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International Baccalaureate
Diploma Programme Subject Brief

Sciences:
Biology—Higher level

First assessments 2016 – Last assessments 2022

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To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
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IV. Sample questions

I. Course description and aims

Biology is the study of life. The vast diversity of species makes biology both an endless source of fascination and a considerable challenge. Biologists attempt to understand the living world at all levels from the micro to the macro using many different approaches and techniques. Biology is still a young science and great progress is expected in the 21st century. This progress is important at a time of growing pressure on the human population and the environment.

By studying biology in the DP 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 the sciences. Teachers provide students with opportunities to design investigations, collect data, develop manipulative skills, analyse results, collaborate with peers and evaluate and communicate their findings.

Through the overarching theme of the nature of science, the aims of the DP biology course are to enable students to:

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

II. Curriculum model overview

Component	Recommended teaching hours
Core	**95**
1. Cell biology	15
2. Molecular biology	21
3. Genetics	15
4. Ecology	12
5. Evolution and biodiversity	12
6. Human physiology	20
Additional higher level	**60**
7. Nucleic acids	9
8. Metabolism, cell respiration and photosynthesis	14
9. Plant biology	13
10. Genetics and evolution	8
11. Animal physiology	16

Option (Choice of one out of four)	**25**
A. Neurobiology and behaviour	25
B. Biotechnology and bioinformatics	25
C. Ecology and conservation	25
D. Human physiology	25
Practical scheme of work	**60**
Prescribed and other practical activities	40
Individual investigation	10
Group 4 project	10

The group 4 project

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas. The emphasis is on interdisciplinary cooperation and the scientific processes

III. Assessment model

It is the intention of this course that students are able to fulfill the following assessment objectives:

1. Demonstrate knowledge and understanding of:
   - facts, concepts, and terminology
   - methodologies and techniques
   - communicating scientific information.
2. Apply:
   - facts, concepts, and terminology
   - methodologies and techniques
   - methods of communicating scientific information.
3. Formulate, analyse and evaluate:
   - hypotheses, research questions and predictions
   - methodologies and techniques
   - primary and secondary data
   - scientific explanations.
4. Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		4.5	80
Paper 1	40 multiple-choice questions	1	20
Paper 2	Data-based, short answer and extended response questions	2.25	36
Paper 3	Data-based, short answer and extended response questions	1.25	24
Internal		10	20
Individual investigation	Investigation and write-up of 6 to 12 pages	10	20

IV. Sample questions

- Membrane proteins of mice cells were marked with green and membrane proteins of human cells were marked with red. The cells were fused together. What would be seen after two hours? (Paper 1)

- The species is the basis for naming and classifying organism.
  - Explain how new species can emerge by
    - directional selection
    - disruptive selection
    - polyploidy.
  - Outline the advantages to scientists of the binomial system for naming species.
  - Describe the use of dichotomous keys for the identification of specimens. (Paper 2)

- Brain death is a clinical diagnosis based on the absence of neurological function, with a known irreversible cause of coma.
  - Explain a named method to assess brain damage.
  - Distinguish between a reflex arc and other responses by the nervous system.
  - Describe the events that occur in the nervous system when something very hot is touched. (Paper 3)

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International Baccalaureate
Diploma Programme Subject Brief

Sciences:
Biology—Standard level

First assessments 2016 – Last assessments 2022

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These IB DP subject briefs illustrate four key course components.
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IV. Sample questions

I. Course description and aims

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By studying biology in the DP 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 the sciences. Teachers provide students with opportunities to design investigations, collect data, develop manipulative skills, analyse results, collaborate with peers and evaluate and communicate their findings

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II. Curriculum model overview

Component	Recommended teaching hours
Core	**95**
1. Cell biology	15
2. Molecular biology	21
3. Genetics	15
4. Ecology	12
5. Evolution and biodiversity	12
6. Human physiology	20
Option (choice of 1 out of 4)	**15**
1. Neurobiology and behaviour	15
2. Biotechnology and bioinformatics	15
3. Ecology and conservation	15
4. Human physiology	15

Practical scheme of work	**40**
Prescribed and other practical activities	20
Individual investigation	10
Group 4 project	10

The group 4 project

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge. The emphasis is on interdisciplinary cooperation and the scientific processes.

III. Assessment model

It is the intention of this course that students are able to fulfill the following assessment objectives:

1. Demonstrate knowledge and understanding of:
   - facts, concepts, and terminology
   - methodologies and techniques
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2. Apply:
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   - primary and secondary data
   - scientific explanations.
4. Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		3	80
Paper 1	30 multiple-choice questions	0.75	20
Paper 2	Data-based, short answer and extended response questions	1.25	40
Paper 3	Data-based, short answer and extended response questions	1	20
Internal		10	20
Individual investigation	Investigation and write-up of 6 to 12 pages	10	20

IV. Sample questions

- Cyclins were discovered by Timothy R. Hunt in 1982 while studying sea urchins. What is a function of cyclins? (Paper 1)

- Antibiotics can be used to treat bacterial infections in human tissues because of differences in cell structure between prokaryotes and eukaryotes.
  - Distinguish between the structure of prokaryotes and eukaryotes.
  - Evaluate the drug tests that Florey and Chain carried out on penicillin.
  - Explain the reasons for the ineffectiveness of antibiotics in the treatment of viral diseases. (Paper 2)

- The company BASF produces a genetically modified potato called Amflora. Outline the purpose of modifying the potato. (Paper 3)

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International Baccalaureate
Diploma Programme Subject Brief

Sciences:
Chemistry—Higher level

First assessments 2016 – Last assessments 2022

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To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

Chemistry is an experimental science that combines academic study with the acquisition of practical and investigational skills. Chemical principles underpin both the physical environment in which we live and all biological systems. Chemistry is often a prerequisite for many other courses in higher education, such as medicine, biological science and environmental science.

Both theory and practical work should be undertaken by all students as they complement one another naturally, both in school and in the wider scientific community. The DP chemistry course allows students to develop a wide range of practical skills and to increase facility in the use of mathematics. It also allows students to develop interpersonal and information technology skills, which are essential to life in the 21st century.

By studying chemistry 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 the subject.

Teachers provide students with opportunities to develop manipulative skills, design investigations, collect data, analyse results and evaluate and communicate their findings.

Through the overarching theme of the nature of science, the aims of the DP chemistry course are to enable students to:

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

II. Curriculum model overview

Component	Recommended teaching hours
Core	**95**
1. Stoichiometric relationships	13.5
2. Atomic structure	6
3. Periodicity	6
4. Chemical bonding and structure	13.5
5. Energetics/thermochemistry	9
6. Chemical kinetics	7
7. Equilibrium	4.5
8. Acids and bases	6.5
9. Redox processes	8
10. Organic chemistry	11
11. Measurement and data processing	10

Additional higher level (AHL)	**60**
12.Atomic structure	2
13.The periodic table—the transition metals	4
14.Chemical bonding and structure	7
15.Energetics/thermochemistry	7
16.Chemical kinetics	6
17.Equilibrium	4
18.Acids and bases	10
19.Redox processes	6
20.Organic chemistry	12
21.Measurement and analysis	2
Option (Choice of one out of four)	**25**
A. Materials	25
B. Biochemistry	25
C. Energy	25
D. Medicinal chemistry	25
Practical scheme of work	**60**
Prescribed and other practical activities	40
Individual investigation (internally assessed)	10
Group 4 project	10

The group 4 project

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge. The emphasis is on interdisciplinary cooperation and the scientific processes.

III. Assessment model

Studying this course, students should be able to fulfill the following assessment objectives:

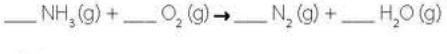
1. Demonstrate knowledge and understanding of:
   - facts, concepts, and terminology
   - methodologies and techniques
   - communicating scientific information.
2. Apply:
   - facts, concepts, and terminology
   - methodologies and techniques
   - methods of communicating scientific information.
3. Formulate, analyse and evaluate:
   - hypotheses, research questions and predictions
   - methodologies and techniques
   - primary and secondary data
   - scientific explanations.
4. Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		4.5	80
Paper 1	40 multiple-choice questions (Core and AHL)	1	20
Paper 2	Short answer and extended response questions (Core and AHL)	2.25	36
Paper 3	Data- and practical –based questions, plus short answer and extended response questions on the option	1.25	24
Internal		10	20
Individual investigation	Investigation and write-up of 6 to 12 pages	10	20

IV. Sample questions

- What is the sum of the coefficients when the equation for the combustion of ammonia is balanced using the smallest possible whole numbers?



A. 6
B. 12
C. 14
D. 15 (Paper 1)

- The two isomers of $[Pt(NH_3)_2Cl_2]$ are crystalline. One of the isomers is widely used in the treatment of cancer.
  i. Draw both isomers of the complex,
  ii. Explain the polarity of each isomer using a diagram of each isomer to support your answer,
  iii. State a suitable method (other than looking at dipole moments) to distinguish between the two isomers
  iv. Compare and contrast the bonding types formed by nitrogen in $[Pt(NH_3)_2Cl_2]$ (Paper 2)

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International Baccalaureate Diploma Programme Subject Brief

Sciences:

Chemistry—Standard level

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III. Assessment model
IV. Sample questions

I. Course description and aims

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Both theory and practical work should be undertaken by all students as they complement one another naturally, both in school and in the wider scientific community. The DP chemistry course allows students to develop a wide range of practical skills and to increase facility in the use of mathematics. It also allows students to develop interpersonal and information technology skills, which are essential to life in the 21st century.

By studying chemistry 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 the subject. Teachers provide students with opportunities to develop manipulative skills, design investigations, collect data, analyse results and evaluate and communicate their findings.

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3. apply and use a body of knowledge, methods and techniques that characterize science and technology
4. develop an ability to analyse, evaluate and synthesize scientific information
5. develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities
6. develop experimental and investigative scientific skills including the use of current technologies
7. develop and apply 21st century communication skills in the study of science
8. become critically aware, as global citizens, of the ethical implications of using science and technology
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II. Curriculum model overview

Component	Recommended teaching hours
Core	95
1. Stoichiometric relationships	13.5
2. Atomic structure	6
3. Periodicity	6
4. Chemical bonding and structure	13.5
5. Energetics/thermochemistry	9
6. Chemical kinetics	7
7. Equilibrium	4.5
8. Acids and bases	6.5
9. Redox processes	8
10. Organic chemistry	11
11. Measurement and data processing	10

Option (choice of one out of four)	**15**
A. Materials	15
B. Biochemistry	15
C. Energy	15
D. Medicinal chemistry	15
Practical scheme of work	**40**
Prescribed and other practical activities	20
Individual investigation (internally assessed)	10
Group 4 project	10

The group 4 project

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge. The emphasis is on interdisciplinary cooperation and the scientific processes.

III. Assessment model

It is the intention of this course that students are able to fulfill the following assessment objectives:

1. Demonstrate knowledge and understanding of:
   - facts, concepts, and terminology
   - methodologies and techniques
   - communicating scientific information.
2. Apply:
   - facts, concepts, and terminology
   - methodologies and techniques
   - methods of communicating scientific information.
3. Formulate, analyse and evaluate:
   - hypotheses, research questions and predictions
   - methodologies and techniques
   - primary and secondary data
   - scientific explanations.
4. Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		3	80
Paper 1	30 multiple-choice questions (Core)	0.75	20
Paper 2	Short answer and extended response questions (Core)	1.25	40
Paper 3	Data- and practical-based questions, plus short answer and extended response questions on the option	1	20
Internal		10	20
Individual investigation	Investigation and write-up of 6 to 12 pages	10	20

IV. Sample questions

- What is the total number of atoms in 0.50 mol of 1,4-diaminobenzene, $H_2NC_6H_4NH_2$?
  A. 16.0×10^{23}
  B. 48.0×10^{23}
  C. 96.0×10^{23}
  D. 192.0×10^{23}

  (Avogadro's constant (L or N_A) $= 6.0 \times 10^{23}$ mol^{-1}.) (Paper 1)
- Many automobile manufacturers are developing vehicles that use hydrogen as a fuel.
  1. Suggest why such vehicles are considered to cause less harm to the environment than those with internal combustion engines.
  2. Hydrogen can be produced from the reaction of coke with steam: $C(s)+2H_2O(g) \rightarrow 2H_2(g)+CO_2(g)$

  Using information from section 12 of the data booklet, calculate the change in enthalpy, ΔH, in kJ mol^{-1}, for this reaction. (Paper 2)

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International Baccalaureate Diploma Programme Subject Brief

Sciences:

Physics—Higher level

First assessments 2016 – Last assessments 2022

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints. Approaches to teaching and learning (ATL) within the DP are deliberate strategies, skills and attitudes that permeate the teaching and learning environment. In the DP students develop skills from five ATL categories: thinking, research, social, self-management and communication.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

Physics is the most fundamental of the experimental sciences, as it seeks to explain the universe itself, from the very smallest particles to the vast distances between galaxies. Despite the exciting and extraordinary development of ideas throughout the history of physics, observations remain essential to the very core of the subject. Models are developed to try to understand observations, and these themselves can become theories that attempt to explain the observations.

Besides helping us better understand the natural world, physics gives us the ability to alter our environments. This raises the issue of the impact of physics on society, the moral and ethical dilemmas, and the social, economic and environmental implications of the work of physicists.

By studying physics 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 the subject. Teachers provide students with opportunities to develop manipulative skills, design investigations, collect data, analyse results and evaluate and communicate their findings.

Through the overarching theme of the nature of science, the aims of the DP physics course are to enable students to:

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

II. Curriculum model overview

Component	Recommended teaching hours
Core	**95**
1. Measurements and uncertainties	5
2. Mechanics	22
3. Thermal physics	11
4. Waves	15
5. Electricity and magnetism	15
6. Circular motion and gravitation	5
7. Atomic, nuclear and particle physics	14
8. Energy production	8

Additional higher level	**60**
9. Wave phenomena	17
10.Fields	11
11.Electromagnetic induction	16
12.Quantum and nuclear physics	16
Option (Choice of one out of four)	**25**
A. Relativity	25
B. Engineering physics	25
C. Imaging	25
D. Astrophysics	25
Practical scheme of work	**60**
Prescribed and other practical activities	40
Individual investigation (internally assessed)	10
Group 4 project	10

The group 4 project

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge. The emphasis is on interdisciplinary cooperation and the scientific processes.

III. Assessment model

It is the intention of this course that students are able to fulfill the following assessment objectives:

1. Demonstrate knowledge and understanding of:
   - facts, concepts, and terminology
   - methodologies and techniques
   - communicating scientific information.
2. Apply:
   - facts, concepts, and terminology
   - methodologies and techniques
   - methods of communicating scientific information.
3. Formulate, analyse and evaluate:
   - hypotheses, research questions and predictions
   - methodologies and techniques
   - primary and secondary data
   - scientific explanations.
4. Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		4.5	80
Paper 1	40 multiple-choice questions	1	20
Paper 2	Short answer and extended response questions (Core and AHL)	2.25	36
Paper 3	Data- and practical-based questions plus, short answer and extended response questions on the option	1.25	24
Internal		10	20
Individual investigation	Investigation and write-up of 6 to 12 pages	10	20

IV. Sample questions

- Why is wave-particle duality used in describing the properties of light?
  A. Light is both a wave and a particle
  B. Both wave and particle models can explain all the properties of light
  C. Different properties of light can be more clearly explained by using one of the wave or particle models
  D. Scientists feel more confident when using more than one model to explain a phenomenon (Paper 1)

- The tower is 120m high with an internal diameter of 3.5m. When most of the air has been removed, the pressure in the tower is 0.96 Pa.
  Determine the number of molecules of air in the tower when the temperature of the air is 300 K. (Paper 2)

- The streamlines above the airfoil are closer to each other than the streamlines below the airfoil. Suggest why this implies that the speed of the air above the airfoil is greater than the speed of air below the airfoil. (Paper 3)

International Baccalaureate Diploma Programme Subject Brief

Sciences:

Physics—Standard level

First assessments 2016 – Last assessments 2022

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To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

Physics is the most fundamental of the experimental sciences as it seeks to explain the universe itself, from the very smallest particles to the vast distances between galaxies. Despite the exciting and extraordinary development of ideas throughout the history of physics, observations remain essential to the very core of the subject. Models are developed to try to understand observations, and these themselves can become theories that attempt to explain the observations.

Besides helping us better understand the natural world, physics gives us the ability to alter our environments. This raises the issue of the impact of physics on society, the moral and ethical dilemmas, and the social, economic and environmental implications of the work of physicists.

By studying physics 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 the subject. Teachers provide students with opportunities to develop manipulative skills, design investigations, collect data, analyse results and evaluate and communicate their findings.

Through the overarching theme of the nature of science, the aims of the DP physics course are to enable students to:

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

II. Curriculum model overview

Component	Recommended teaching hours
Core	**95**
1. Measurements and uncertainties	5
2. Mechanics	22
3. Thermal physics	11
4. Waves	15
5. Electricity and magnetism	15
6. Circular motion and gravitation	5
7. Atomic, nuclear and particle physics	14
8. Energy production	8

Option (Choice of one out of four)	**15**
A. Relativity	15
B. Engineering physics	15
C. Imaging	15
D. Astrophysics	15
Practical scheme of work	**40**
Prescribed and other practical activities	20
Individual investigation (internally assessed)	10
Group 4 project	10

The group 4 project

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge. The emphasis is on interdisciplinary cooperation and the scientific processes.

III. Assessment model

It is the intention of this course that students are able to fulfill the following assessment objectives:

1. Demonstrate knowledge and understanding of:
   - facts, concepts, and terminology
   - methodologies and techniques
   - communicating scientific information.
2. Apply:
   - facts, concepts, and terminology
   - methodologies and techniques
   - methods of communicating scientific information.
3. Formulate, analyse and evaluate:
   - hypotheses, research questions and predictions
   - methodologies and techniques
   - primary and secondary data
   - scientific explanations.
4. Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		3	80
Paper 1	30 multiple-choice questions	0.75	20
Paper 2	Short answer and extended response questions (Core)	1.25	40
Paper 3	Data- and practical-based questions plus, short answer and extended response questions on the option	1	20
Internal		10	20
Individual investigation	Investigation and write-up of 6 to 12 pages	10	20

IV. Sample questions

- An object falls freely from rest through a vertical distance of 44.0m in a time of 3.0s. What value should be quoted for the acceleration of free-fall? (Paper 1)
  A. 9.778m s^{-2}
  B. 9.780m s^{-2}
  C. 9.78m s^{-2}
  D. 9.8m s^{-2}

- There is a suggestion that the temperature of the Earth may increase if the use of fossil fuels is not reduced over the coming years. Explain, with reference to the enhanced greenhouse effect, why this temperature increase may occur. (Paper 2)

- In an experiment to measure the specific heat capacity of a metal, a piece of metal is placed inside a container of boiling water at 100°C. The metal is then transferred into a calorimeter containing water at a temperature of 10°C. The final equilibrium temperature of the water was measured. One source of error in this experiment is that the small mass of boiling water will be transferred to the calorimeter along with the metal.
  (a) Suggest the effect of the error on the measured value of the specific heat capacity of the metal
  (b) State one other source of error for this experiment (Paper 3)

International Baccalaureate
Diploma Programme Subject Brief

Sciences: Sports, exercise and health science

First assessments: SL – 2014; HL - 2018

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints. Approaches to teaching and learning (ATL) are deliberate strategies, skills and attitudes that permeate the teaching and learning environment. In the DP students develop skills from five ATL categories: thinking, research, social, self-management and communication.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four the following key course components

I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

Sports, exercise and health science (SEHS) is an experimental science course combining academic study with practical and investigative skills. SEHS explores the science underpinning physical performance and provides the opportunity to apply these principles. The course incorporates the disciplines of anatomy and physiology, biomechanics, psychology and nutrition. Students cover a range of core and option topics, and carry out practical (experimental) investigations in both laboratory and field settings. The course offers a deeper understanding of the issues related to sports, exercise and health in the 21st century and addresses the international dimension and ethics related to both the individual and global context.

Apart from being worthy of study in its own right, SEHS is good preparation for courses in higher or further education related to sports fitness and health, and serves as useful preparation for employment in sports and leisure industries.

Both the SL and HL have a common core syllabus, internal assessment scheme, and overlapping elements in the options studied. While the skills and activities are common to all students, HL requires additional material and topics within the options.

Through studying any of the group 4 subjects, students should become aware of how scientists work and communicate, and the variety of forms of the "scientific method" with an emphasis on a practical approach through experimental work. In this context, the aims of SEHS is for students 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 21st 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.

II. Curriculum model overview

Syllabus component	Recommended teaching hours	
	SL	HL
Core		**80**
· Anatomy		7
· Exercise physiology		17
· Energy systems		13
· Movement analysis		15
· Skill in sports		15
· Measurement and evaluation of human performance.		13

Additional higher level (AHL) · Further anatomy · The endocrine system · Fatigue · Friction and drag · Skill acquisition and analysis · Genetics and athletic performance · Exercise and immunity.		**50** 7 7 6 8 9 7 6
Options (Two of four) · Optimizing physiological performance · Psychology of sports · Physical activity and health · Nutrition for sports, exercise and health.	**30**	**50**
Practical work · Investigations · Group 4 project · Individual investigation (internal assessment)	**40** 20 10 10	**60** 40 10 10
Total teaching hours	**150**	**240**

The group 4 project

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge. The emphasis is on interdisciplinary cooperation and the scientific processes.

III. Assessment model

It is the intention of this course that students are able to fulfill the following assessment objectives:

1. **Demonstrate knowledge and understanding of:**
   - facts, concepts, and terminology
   - methodologies and techniques
   - communicating scientific information.
2. **Apply:**
   - facts, concepts, and terminology
   - methodologies and techniques
   - methods of communicating scientific information.
3. **Formulate, analyse and evaluate:**
   - hypotheses, research questions and predictions
   - methodologies and techniques
   - primary and secondary data
   - scientific explanations.
4. **Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations.**

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)		Weighting of final grade (%)	
		SL	HL	SL	HL
External		3	4.5	80	80
Paper 1	**SL:** 30 multiple choice questions on the core. **HL:** 40 multiple choice questions on the core and the AHL.	0.75	1	20	20
Paper 2	One data-based and several short answer questions **SL:** one extended response question. **HL:** two of four extended response questions.	1.25	2.25	35	35
Paper 3	Several short answer questions in each of the two options. **HL:** additional extended response questions.	1	1.25	25	25
Internal		10	10	20	20
Individual investigation		10	10	20	20

IV. Sample questions

- At rest, the arterio-venous oxygen difference is approximately 5 mL of oxygen per 100 mL of blood. What happens to this figure when someone participates in moderately intense exercise?
- Outline the general characteristics that are common to muscle tissue.
- **(HL only)** outline the term talent.
- **(HL only)** explain factors that may affect progression through the stages of talent evolution for an athlete according to Bloom (1985) and Cole (1999).
- **(HL only)** outline talent transfer from gymnastics to high board diving.

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International Baccalaureate Diploma Programme Subject Brief

Mathematics: analysis and approaches

First assessments for SL and HL—2021

The Diploma Programme (DP) is a rigorous pre-university course of study designed for students in the 16 to 19 age range. It is a broad-based two-year course that aims to encourage students to be knowledgeable and inquiring, but also caring and compassionate. There is a strong emphasis on encouraging students to develop intercultural understanding, open-mindedness, and the attitudes necessary for them to respect and evaluate a range of points of view.

The course is presented as six academic areas enclosing a central core. Students study two modern languages (or a modern language and a classical language), a humanities or social science subject, an experimental science, mathematics and one of the creative arts. Instead of an arts subject, students can choose two subjects from another area. It is this comprehensive range of subjects that makes the Diploma Programme a demanding course of study designed to prepare students effectively for university entrance. In each of the academic areas students have flexibility in making their choices, which means they can choose subjects that particularly interest them and that they may wish to study further at university.

Normally, three subjects (and not more than four) are taken at higher level (HL), and the others are taken at standard level (SL). The IB recommends 240 teaching hours for HL subjects and 150 hours for SL. Subjects at HL are studied in greater depth and breadth than at SL. In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

This IB DP subject brief has three key components:

I. Course description and aims II. Curriculum model overview III. Assessment model

I. Course description and aims

Individual students have different needs, aspirations, interests and abilities. For this reason there are two different DP subjects in mathematics, Mathematics: analysis and approaches and Mathematics: applications and interpretation. Each course is designed to meet the needs of a particular group of students. Both courses are offered at SL and HL.

The IB DP Mathematics: analysis and approaches course recognizes the need for analytical expertise in a world where innovation is increasingly dependent on a deep understanding of mathematics. The focus is on developing important mathematical concepts in a comprehensible, coherent and rigorous way, achieved by a carefully balanced approach. Students are encouraged to apply their mathematical knowledge to solve abstract problems as well as those set in a variety of meaningful contexts. Mathematics: analysis and approaches has a strong emphasis on the ability to construct, communicate and justify correct mathematical arguments. Students should expect to develop insight into mathematical form and structure, and should be intellectually equipped to appreciate the links between concepts in different topic areas. Students are also encouraged to develop the skills needed to continue their mathematical growth in other learning environments. The internally assessed exploration allows students to develop independence in mathematical learning. Throughout the course students are encouraged to take a considered approach to various mathematical activities and to explore different mathematical ideas.

The aims of all DP mathematics courses are 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.

II. Curriculum model overview

Mathematics: analysis and approaches and Mathematics: applications and interpretation share 60 hours of common SL content.

Syllabus component	Recommended teaching hours	
	SL	HL
• Number and algebra • Functions • Geometry and trigonometry • Statistics and probability • Calculus	19 21 25 27 28	39 32 51 33 55
Development of investigational, problem-solving and modelling skills and the exploration of an area of mathematics	30	30
Total teaching hours	150	240

III. Assessment model

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.

The assessment objectives are common to Mathematics: analysis and approaches and to Mathematics: applications and interpretation.

- **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.

The exploration is an integral part of the course and its assessment, and is compulsory for both SL and HL students. 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.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)		Weighting of final grade (%)	
		SL	HL	SL	HL
External					
Paper 1	No technology allowed. **Section A:** compulsory short-response questions based on the syllabus. **Section B:** compulsory extended-response questions based on the syllabus.	1.5	2	40	30
Paper 2	Technology allowed. **Section A:** compulsory short-response questions based on the syllabus. **Section B:** compulsory extended-response questions based on the syllabus.	1.5	2	40	30
Paper 3	Technology allowed. Two compulsory extended-response problem-solving questions.		1		20
Internal					
Exploration		15	15	20	20

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International Baccalaureate
Diploma Programme Subject Brief

Mathematics: applications and interpretation

First assessments for SL and HL—2021

The Diploma Programme (DP) is a rigorous pre-university course of study designed for students in the 16 to 19 age range. It is a broad-based two-year course that aims to encourage students to be knowledgeable and inquiring, but also caring and compassionate. There is a strong emphasis on encouraging students to develop intercultural understanding, open-mindedness, and the attitudes necessary for them to respect and evaluate a range of points of view.

The course is presented as six academic areas enclosing a central core. Students study two modern languages (or a modern language and a classical language), a humanities or social science subject, an experimental science, mathematics and one of the creative arts. Instead of an arts subject, students can choose two subjects from another area. It is this comprehensive range of subjects that makes the Diploma Programme a demanding course of study designed to prepare students effectively for university entrance. In each of the academic areas students have flexibility in making their choices, which means they can choose subjects that particularly interest them and that they may wish to study further at university.

Normally, three subjects (and not more than four) are taken at higher level (HL), and the others are taken at standard level (SL). The IB recommends 240 teaching hours for HL subjects and 150 hours for SL. Subjects at HL are studied in greater depth and breadth than at SL. In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

This IB DP subject brief has three key components:

I. Course description and aims II. Curriculum model overview III. Assessment model

I. Course description and aims

Individual students have different needs, aspirations, interests and abilities. For this reason there are two different DP subjects in mathematics, Mathematics: analysis and approaches and Mathematics: applications and interpretation. Each course is designed to meet the needs of a particular group of students. Both courses are offered at SL and HL.

The IB DP Mathematics: applications and interpretation 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 includes topics that are traditionally part of a pre-university mathematics course such as calculus and statistics. Students are encouraged to solve real-world problems, construct and communicate this mathematically and interpret the conclusions or generalizations.

Students should expect to develop strong technology skills, and will be intellectually equipped to appreciate the links between the theoretical and the practical concepts in mathematics. All external assessments involve the use of technology. Students are also encouraged to develop the skills needed to continue their mathematical growth in other learning environments.

The internally assessed exploration allows students to develop independence in mathematical learning. Throughout the course students are encouraged to take a considered approach to various mathematical activities and to explore different mathematical ideas.

The aims of all DP mathematics courses are 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.

II. Curriculum model overview

Mathematics: applications and interpretation and Mathematics: analysis and approaches share 60 hours of common content.

Syllabus component	Recommended teaching hours	
	SL	HL
• Number and algebra • Functions • Geometry and trigonometry • Statistics and probability • Calculus	16 31 18 36 19	29 42 46 52 41
Development of investigational, problem-solving and modelling skills and the exploration of an area of mathematics	30	30
Total teaching hours	150	240

III. Assessment model

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.

The assessment objectives are common to Mathematics: applications and interpretation and to Mathematics: analysis and approaches.

- **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.

The exploration is an integral part of the course and its assessment, and is compulsory for both SL and HL students. 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.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)		Weighting of final grade (%)	
		SL	HL	SL	HL
External					
Paper 1	Technology allowed. Compulsory short-response questions based on the syllabus.	1.5	2	40	30
Paper 2	Technology allowed. Compulsory extended-response questions based on the syllabus.	1.5	2	40	30
Paper 3	Technology allowed. Two compulsory extended-response problem-solving questions.		1		20
Internal					
Exploration		15	15	20	20

About the IB: For over 50 years, the IB has built a reputation for high-quality, challenging programmes of education that develop internationally minded young people who are well prepared for the challenges of life in the 21st century and are able to contribute to creating a better, more peaceful world.

For further information on the IB Diploma Programme, visit: **www.ibo.org/en/dp**.

Complete subject guides can be accessed through the programme resource centre or purchased through the IB store: **store.ibo.org**.

For more on how the DP prepares students for success at university, visit: **www.ibo.org/en/university-admission**.

International Baccalaureate
Diploma Programme Subject Brief

The arts:
Visual arts—Higher level

First assessments 2016 – Last assessments 2022

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints. Approaches to teaching and learning (ATL) within the DP are deliberate strategies, skills and attitudes that permeate the teaching and learning environment. In the DP, students develop skills from five ATL categories: thinking, research, social, self-management and communication.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate three key course components.
I. Course description and aims II. Curriculum model overview III. Assessment model

I. Course description and aims

The IB Diploma Programme visual arts course encourages students to challenge their own creative and cultural expectations and boundaries. It is a thought-provoking course in which students develop analytical skills in problem-solving and divergent thinking, while working towards technical proficiency and confidence as art-makers. In addition to exploring and comparing visual arts from different perspectives and in different contexts, students are expected to engage in, experiment with and critically reflect upon a wide range of contemporary practices and media. The course is designed for students who want to go on to further study of visual arts in higher education as well as for those who are seeking lifelong enrichment through visual arts.

The role of visual arts teachers should be to actively and carefully organize learning experiences for the students, directing their study to enable them to reach their potential and satisfy the demands of the course. Students should be empowered to become autonomous, informed and skilled visual artists.

The aims of the arts subjects are to enable students to:

1. enjoy lifelong engagement with the arts
2. become informed, reflective and critical practitioners in the arts
3. understand the dynamic and changing nature of the arts
4. explore and value the diversity of the arts across time, place and cultures
5. express ideas with confidence and competence
6. develop perceptual and analytical skills.

In addition, the aims of the visual arts course at SL and HL are to enable students to:

7. make artwork that is influenced by personal and cultural contexts
8. become informed and critical observers and makers of visual culture and media
9. develop skills, techniques and processes in order to communicate concepts and ideas.

II. Curriculum model overview

Component	Recommended teaching hours
Visual arts in context • Examine and compare the work of artists from different cultural contexts. • Consider the contexts influencing their own work and the work of others. • Make art through a process of investigation, thinking critically and experimenting with techniques. • Apply identified techniques to their own developing work. • Develop an informed response to work and exhibitions they have seen and experienced. • Begin to formulate personal intentions for creating and displaying their own artworks.	**80**

Visual arts methods • Look at different techniques for making art. • Investigate and compare how and why different techniques have evolved and the processes involved. • Experiment with diverse media and explore techniques for making art. • Develop concepts through processes informed by skills, techniques and media. • Evaluate how their ongoing work communicates meaning and purpose. • Consider the nature of "exhibition", and think about the process of selection and the potential impact of their work on different audiences.	**80**
Communicating visual arts • Explore ways of communicating through visual and written means. • Make artistic choices about how to most effectively communicate knowledge and understanding. • Produce a body of artwork through a process of reflection and evaluation, showing a synthesis of skill, media and concept. • Select and present resolved works for exhibition. • Explain the ways in which the works are connected. • Discuss how artistic judgments impact the overall presentation.	**80**

Throughout the course students are required to maintain a visual arts journal. Although sections of the journal will be selected, adapted and presented for assessment, the journal itself is not directly assessed or moderated. It is, however, regarded as a fundamental activity of the course.

III. Assessment model

Having followed the visual arts course, students are expected to:

1. Demonstrate knowledge and understanding of specified content
   - Identify various contexts in which the visual arts can be created and presented
   - Describe artwork from differing contexts, and identify the ideas, conventions and techniques employed by the art-makers
   - Recognize the skills, techniques, media, forms and processes associated with the visual arts
   - Present work, using appropriate visual arts language, as appropriate to intentions
2. Demonstrate application and analysis of knowledge and understanding
   - Express concepts, ideas and meaning through visual communication
   - Analyse artworks from a variety of different contexts
   - Apply knowledge and understanding of skills, techniques, media, forms and processes related to art-making
3. Demonstrate synthesis and evaluation
   - Critically analyse and discuss artworks created by themselves and others and articulate an informed personal response
   - Formulate personal intentions for the planning, development and making of artworks that consider how meaning can be conveyed to an audience
   - Demonstrate the use of critical reflection to highlight success and failure in order to progress work
   - Evaluate how and why art-making evolves and justify the choices made in their own visual practice
4. Select, use and apply a variety of appropriate skills and techniques
   - Experiment with different media, materials and techniques in art-making
   - Make appropriate choices in the selection of images, media, materials and techniques in art-making
   - Demonstrate technical proficiency in the use and application of skills, techniques, media, images, forms and processes
   - Produce a body of resolved and unresolved artworks as appropriate to intentions

Assessment at a glance

Type of assessment	Format of assessment	Weighting of final grade (%)
External		60
Comparative study	• 10–15 screens which examine and compare at least 3 artworks, at least 2 of which need to be by different artists • 3–5 screens which analyse the extent to which the student's work and practices have been influenced by the art and artists examined • A list of sources used	20
Process portfolio	• 13–25 screens which evidence sustained experimentation, exploration, manipulation and refinement of a variety of art-making activities	40
Internal		40
Exhibition	• A curatorial rationale that does not exceed 700 words • 8–11 artworks • Exhibition text (stating the title, medium, size and intention) for each artwork	40

International Baccalaureate
Diploma Programme Subject Brief

The arts:
Visual arts—Standard level

First assessments 2016 – Last assessments 2022

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints. Approaches to teaching and learning (ATL) within the DP are deliberate strategies, skills and attitudes that permeate the teaching and learning environment. In the DP students develop skills from five ATL categories: thinking, research, social, self-management and communication.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate three key course components.
I. Course description and aims II. Curriculum model overview III. Assessment model

I. Course description and aims

The IB Diploma Programme visual arts course encourages students to challenge their own creative and cultural expectations and boundaries. It is a thought-provoking course in which students develop analytical skills in problem-solving and divergent thinking, while working towards technical proficiency and confidence as art-makers. In addition to exploring and comparing visual arts from different perspectives and in different contexts, students are expected to engage in, experiment with and critically reflect upon a wide range of contemporary practices and media. The course is designed for students who want to go on to study visual arts in higher education as well as for those who are seeking lifelong enrichment through visual arts.

The role of visual arts teachers should be to actively and carefully organize learning experiences for the students, directing their study to enable them to reach their potential and satisfy the demands of the course. Students should be empowered to become autonomous, informed and skilled visual artists.

The aims of the arts subjects are to enable students to:

1. enjoy lifelong engagement with the arts
2. become informed, reflective and critical practitioners in the arts
3. understand the dynamic and changing nature of the arts
4. explore and value the diversity of the arts across time, place and cultures
5. express ideas with confidence and competence
6. develop perceptual and analytical skills.

In addition, the aims of the visual arts course at SL and HL are to enable students to:

7. make artwork that is influenced by personal and cultural contexts
8. become informed and critical observers and makers of visual culture and media
9. develop skills, techniques and processes in order to communicate concepts and ideas.

II. Curriculum model overview

Component	Recommended teaching hours
Visual arts in context • Examine and compare the work of artists from different cultural contexts. • Consider the contexts influencing their own work and the work of others. • Make art through a process of investigation, thinking critically and experimenting with techniques. • Apply identified techniques to their own developing work. • Develop an informed response to work and exhibitions they have seen and experienced. • Begin to formulate personal intentions for creating and displaying their own artworks.	**50**

Visual arts methods • Look at different techniques for making art. • Investigate and compare how and why different techniques have evolved and the processes involved. • Experiment with diverse media and explore techniques for making art. • Develop concepts through processes informed by skills, techniques and media. • Evaluate how their ongoing work communicates meaning and purpose. • Consider the nature of "exhibition" and think about the process of selection and the potential impact of their work on different audiences.	**50**
Communicating visual arts • Explore ways of communicating through visual and written means. • Make artistic choices about how to most effectively communicate knowledge and understanding. • Produce a body of artwork through a process of reflection and evaluation, showing a synthesis of skill, media and concept. • Select and present resolved works for exhibition. • Explain the ways in which the works are connected. • Discuss how artistic judgments impact the overall presentation.	**50**

Throughout the course students are required to maintain a visual arts journal. Although sections of the journal will be selected, adapted and presented for assessment, the journal itself is not directly assessed or moderated. It is, however, regarded as a fundamental activity of the course.

III. Assessment model

Having followed the visual arts course, students are expected to:

1. Demonstrate knowledge and understanding of specified content
   - Identify various contexts in which the visual arts can be created and presented
   - Describe artwork from differing contexts, and identify the ideas, conventions and techniques employed by the art-makers
   - Recognize the skills, techniques, media, forms and processes associated with the visual arts
   - Present work, using appropriate visual arts language, as appropriate to intentions
2. Demonstrate application and analysis of knowledge and understanding
   - Express concepts, ideas and meaning through visual communication
   - Analyse artworks from a variety of different contexts
   - Apply knowledge and understanding of skills, techniques, media, forms and processes related to art-making
3. Demonstrate synthesis and evaluation
   - Critically analyse and discuss artworks created by themselves and others and articulate an informed personal response
   - Formulate personal intentions for the planning, development and making of artworks that consider how meaning can be conveyed to an audience
   - Demonstrate the use of critical reflection to highlight success and failure in order to progress work
   - Evaluate how and why art-making evolves and justify the choices made in their own visual practice
4. Select, use and apply a variety of appropriate skills and techniques
   - Experiment with different media, materials and techniques in art-making
   - Make appropriate choices in the selection of images, media, materials and techniques in art-making
   - Demonstrate technical proficiency in the use and application of skills, techniques, media, images, forms and processes
   - Produce a body of resolved and unresolved artworks as appropriate to intentions

Assessment at a glance

Type of assessment	Format of assessment	Weighting of final grade (%)
External		60
Comparative study	• 10–15 screens which examine and compare at least 3 artworks, at least 2 of which should be by different artists • A list of sources used	20
Process portfolio	• 9–18 screens which evidence the student's sustained experimentation, exploration, manipulation and refinement of a variety of art-making activities	40
Internal		40
Exhibition	• A curatorial rationale that does not exceed 400 words • 4–7 artworks • Exhibition text (stating the title, medium, size and intention) for each artwork	40

IB music higher level subject brief

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The IB Diploma Programme, for students aged 16 to 19, is an academically challenging and balanced programme of education that prepares students for success at university and life beyond. Students take courses in six different subject groups, maintaining both breadth and depth of study. Music higher level is in group 6, the arts. In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

About the IB: For over 40 years the IB has built a reputation for high-quality, challenging programmes of education that develop internationally minded young people who are well prepared for the challenges of life in the 21st century and able to contribute to creating a better, more peaceful world.

The IB subject briefs illustrate key course components in the IB Diploma Programme.

Overview of the music higher level course and curriculum model

I. Course description and aims

The IB Diploma Programme higher level music course seeks to develop students' knowledge and potential as musicians, both personally and collaboratively. IB Diploma Programme music students are required to study musical perception and actively listen to a wide range of music from different parts of the world, musical cultures and time periods. They also develop aural perception and understanding of music by learning about musical elements, including form and structure, notations, musical terminology, and context. Through the course of study, students become aware of how musicians work and communicate. In addition, the course enables students to:

- enjoy lifelong engagement with the arts
- become informed, reflective and critical practitioners in the arts
- understand the dynamic and changing nature of the arts
- explore and value the diversity of the arts across time, place and cultures
- express ideas with confidence and competence
- develop perceptual and analytical skills
- develop their knowledge and potential as musicians, both personally and collaboratively.

II. Curriculum model overview

Music higher level

Components	
Musical perception	90 hours
Creating	75 hours
Solo performing	75 hours
Total teaching hours	**240 hours**

III. Assessment model

Assessment for music higher level

The IB assesses student work as direct evidence of achievement against the stated goals of the Diploma Programme courses, which are to provide students with:

- a broad and balanced, yet academically demanding, programme of study
- the development of critical-thinking and reflective skills
- the development of research skills
- the development of independent learning skills
- the development of intercultural understanding
- a globally recognized university entrance qualification.

The assessments aim to test all students' knowledge and understanding of key concepts through various activities that demonstrate:

- knowledge, understanding and perception of music in relation to time, place and cultures
- appropriate musical terminology to describe and reflect their critical understanding of music
- comparative analysis of music in relation to time, place and cultures
- creative skills through exploration, control and development of musical elements
- performance skills through solo music making
- critical-thinking skills through reflective thought.

Students' success in the music higher level course is measured by combining their grades in external and internal assessment.

Throughout the teaching of the course students should be encouraged to develop critical thinking and participate in inquiry-based learning, while working both individually and collaboratively.

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Assessment for music higher level (continued)

The listening paper is based on musical perception—analysis, examination, comparing and contrasting of pieces of music. Section A relates to two prescribed works and section B to music from different times and places, encompassing jazz/pop, western art music and world music.

In the musical links investigation, through the study of pieces from two distinct musical cultures, students are encouraged to explore, analyse and examine the musical connections existing between two (or more) pieces of music. Through investigative study and analysis of the similarities and differences between the selected pieces of music, students learn to demonstrate significant musical links.

In creating, students create three pieces of 3 to 6 minutes in length choosing from a wide range of styles and media, including traditional instruments, voices and/or music technology, and reflect on their understanding of the intention, process and outcome of the pieces.

In the performing component, students must submit a programme of contrasting pieces in any style of music that is 20 minutes in length.

Assessment criteria are used to assess students' achievement in music. These criteria are related to the assessment objectives established for the music course and to the group 6 grade descriptors.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External			**50**
Listening paper	Five musical perception questions	2.5	30
Musical links investigation	A written media script of 2,000 words or less, investigating the significant musical links between two or more pieces from distinct musical cultures		20
Internal			**50**
Creating and performing	**Creating:** three pieces of coursework with recordings and written work		25
	Solo performing: A recording selected from pieces presented during one or more public performances		25

IV. Sample questions

The following questions appeared in previous IB Diploma Programme music higher level examinations.*

Listening paper section A
Sample: *Symphony No 41 in C Major, K. 551 "Jupiter"* by W A Mozart and *El Salón México* by A Copland
Through the link of thematic development, compare Copland's *El Salón México* to any one movement (with exception of the fourth movement) of Mozart's *"Jupiter" Symphony*.

Listening paper section B
Sample: *First movement* from *Symphony No 1, Op 25 "Classical"* by S Prokofiev (score provided)
With clear reference to the score provided, analyse, examine and discuss in detail what you hear in this extract.

Sample: Unidentified Piece (no score provided)
Analyse, examine and discuss in detail what you hear in this extract.

* the syllabus for examinations current until 2019

Learn more about how the IB Diploma Programme prepares students for success at university by going online to www.ibo.org/universities or email us at recognition@ibo.org.

IB music standard level subject brief

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The IB Diploma Programme, for students aged 16 to 19, is an academically challenging and balanced programme of education that prepares students for success at university and life beyond. Students take courses in six different subject groups, maintaining both breadth and depth of study. Music standard level is in group 6, the arts. In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

About the IB: For over 40 years the IB has built a reputation for high-quality, challenging programmes of education that develop internationally minded young people who are well prepared for the challenges of life in the 21st century and able to contribute to creating a better, more peaceful world.

The IB subject briefs illustrate four key course components in the IB Diploma Programme.

I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

Overview of the music standard level course and curriculum model

I. Course description and aims

The IB Diploma Programme standard level music course seeks to develop students' knowledge and potential as musicians, both personally and collaboratively. IB Diploma Programme music students are required to study musical perception and actively listen to a wide range of music from different parts of the world, musical cultures and time periods. They also develop aural perception and understanding of music by learning about musical elements, including form and structure, notations, musical terminology and context. Through the course of study, students become aware of how musicians work and communicate. In addition, the course enables students to:

- enjoy lifelong engagement with the arts
- become informed, reflective and critical practitioners in the arts
- understand the dynamic and changing nature of the arts
- explore and value the diversity of the arts across time, place and cultures
- express ideas with confidence and competence
- develop perceptual and analytical skills
- develop their knowledge and potential as musicians, both personally and collaboratively.

II. Curriculum model overview

Music standard level

Components		
Core	Musical perception	75 hours
Options	Students choose one of the three options • Creating • Solo performing • Group performing	75 hours
Total teaching hours		150 hours

III. Assessment model

Assessment for music standard level

The IB assesses student work as direct evidence of achievement against the stated goals of the Diploma Programme courses, which are to provide students with:

- a broad and balanced, yet academically demanding, programme of study
- the development of critical-thinking and reflective skills
- the development of research skills
- the development of independent learning skills
- the development of intercultural understanding
- a globally recognized university entrance qualification.

The assessments aim to test all students' knowledge and understanding of key concepts through various activities that demonstrate:

- knowledge, understanding and perception of music in relation to time, place and cultures
- appropriate musical terminology to describe and reflect their critical understanding of music
- comparative analysis of music in relation to time, place and cultures.
- creative skills through exploration, control and development of musical elements
- performance skills through solo or group music making
- critical-thinking skills through reflective thought.

Students' success in the music standard level course is measured by combining their grades on external and internal assessment.

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Assessment for music standard level (continued)

Throughout the teaching of the course students should be encouraged to develop critical thinking and participate in inquiry-based learning, while working both individually and collaboratively.

The listening paper is based on musical perception, reflected through analysis and examination of pieces of music. Section A relates to two prescribed works, of which students study one. Section B relates to music from different times and places, encompassing jazz/pop, western art music and world music.

In the musical links investigation, through the study of pieces from two distinct musical cultures, students are encouraged to explore, analyse and examine the musical connections existing between two (or more) pieces of music. Through investigative study and analysis of the similarities and differences between the selected pieces of music, students learn to demonstrate significant musical links.

For the creating option, students create two 3- to 6-minute pieces, choosing from a wide range of styles and media, including traditional instruments, voices and/or music technology, and reflect on their understanding of the intention, process and outcome of the pieces

For the solo performing option, students must submit a programme of contrasting pieces in any style of music that is 15 minutes in length.

For the group performing option, a submission is made for students in the group of pieces selected from two or more public performances that is 20–30 minutes in length.

Assessment criteria are used to assess students' achievement in music. These criteria are related to the assessment objectives established for the music course and to the group 6 grade descriptors.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External			**50**
Listening Paper	Four musical perception questions	2	30
Musical links investigation	A written media script of 2,000 words or less, investigating the significant musical links between two or more pieces from distinct musical cultures		20
Internal			**50**
Creating or performing	Students choose one of the three options. **Creating:** Two pieces of coursework with recordings and written work **Solo performing:** A recording selected from pieces presented during one or more public performances **Group performing:** A recording selected from pieces presented during two or more public performances		

IV. Sample questions

The following questions appeared in previous IB Diploma Programme music standard level examinations.*

Listening paper section A

Sample: *El Salón México* by A Copland

Demonstrate the rhythmic sophistication found in Copland's *El Salón México* by discussing **at least four** elements/features in the passage between rehearsal numbers 11–27 (bar/measure 103–267).

Listening paper section B

Sample: *First movement* from *Symphony No 1, Op 25 "Classical"* by S Prokofiev (score provided)

With clear reference to the score provided, analyse, examine and discuss in detail what you hear in this extract.

Sample: Unidentified Piece (no score provided)

Analyse, examine and discuss in detail what you hear in this extract.

* the syllabus for examinations current until 2019

International Baccalaureate Diploma Programme Subject Brief

The arts:

Theatre—Higher level

First assessments 2016 – Last assessments 2022

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints. Approaches to teaching and learning (ATL) within the DP are deliberate strategies, skills and attitudes that permeate the teaching and learning environment. Students develop skills from five ATL categories: thinking, research, social, self-management and communication.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate three key course components.
I. Course description and aims II. Curriculum model overview III. Assessment model

I. Course description and aims

Theatre is a practical subject that encourages discovery through experimentation, risk-taking and the presentation of ideas. The IB DP theatre course is multifaceted and gives students the opportunity to actively engage in theatre as creators, designers, directors and performers. It emphasizes working both individually and collaboratively as part of an ensemble. The teacher's role is to create opportunities that allow students to explore, learn, discover and collaborate to become autonomous, informed and skilled theatre-makers.

Students learn to apply research and theory to inform and to contextualize their work. Through researching, creating, preparing, presenting and critically reflecting on theatre, they gain a richer understanding of themselves, their community and the world. Students experience the course from contrasting artistic and cultural perspectives. They learn about theatre from around the world, the importance of making theatre with integrity, and the impact that theatre can have on the world. It enables them to discover and engage with different forms of theatre across time, place and culture, promoting international-mindedness and an appreciation of the diversity of theatre.

The aims of all DP arts subjects are to enable students to:

1. enjoy lifelong engagement with the arts
2. become informed, reflective and critical practitioners in the arts
3. understand the dynamic and changing nature of the arts
4. explore and value the diversity of the arts across time, place and cultures
5. express ideas with confidence and competence
6. develop perceptual and analytical skills

In addition, the aims of the HL theatre course are to enable students to:

7. explore theatre in a variety of contexts and understand how these contexts inform practice (theatre in context)
8. understand and engage in the processes of transforming ideas into action (theatre processes)
9. develop and apply theatre production, presentation and performance skills, working both independently and collaboratively (presenting theatre)
10. understand and appreciate the relationship between theory and practice (theatre in context, theatre processes, presenting theatre).

II. Curriculum model overview

Component	Recommended teaching hours
Theatre in context • Research and examine the various contexts of: o at least one theatre theorist o at least one published play text and reflect on live theatre o at least one world theatre tradition. • Reflect on personal approaches, interests and skills in theatre. Research and examine at least one starting point and the approaches employed by an appropriate professional theatre company, and consider how this might influence personal approaches.	**80**

Theatre processes • Explore at least one theorist and collaboratively engage in creating theatre based on their theory. • Take part in the practical exploration of at least two contrasting published play texts and engage with the process of transforming a play text into action. • Practically examine the performance conventions of at least one world theatre tradition and apply this to the staging of a moment of theatre. • Respond to at least one starting point and engage with the process of transforming it collaboratively into an original piece of theatre.	**80**
Presenting theatre • Create, present and evaluate at least one theatre piece based on an aspect of a theatre theorist's work. • Direct and present at least one scene or section from one published play text. • Present a moment of theatre which demonstrates the performance convention(s) of at least one world theatre tradition. • Participate in at least one production of a collaboratively created piece of original theatre, created from a starting point, which is presented to others.	**80**

From the beginning of the course, and at regular intervals, students are required to maintain a theatre journal. Although elements of the journal may be selected, adapted and presented for assessment, the journal itself is not directly assessed or moderated. It is, however, regarded as a fundamental activity of the course.

III. Assessment model

Having followed the theatre course students are expected to:

1. Demonstrate knowledge and understanding of specified content
   - Describe the relationship between theatre and its contexts
   - Identify appropriate and valuable information from research for different specialist theatre roles
   - Present ideas, discoveries and learning, gained through research and practical exploration to others
2. Demonstrate application and analysis of knowledge and understanding
   - Explain the relationship and significance of the integration of production, performance and research elements
   - Explore and demonstrate different ways through which ideas can be presented and transformed into action
   - Explain what has informed, influenced and had impact on their work
3. Demonstrate synthesis and evaluation
   - Evaluate their work and the work of others
   - Discuss and justify choices
   - Examine the impact their work has had on others
4. Select, use and apply a variety of appropriate skills and techniques
   - Demonstrate appropriate skills and techniques in the creation and presentation of theatre in different specialist theatre roles
   - Demonstrate organization of material including use and attribution of sources
   - Demonstrate the ability to select, edit and present work appropriately

Assessment at a glance

Type of assessment	Format of assessment	Weighting of final grade (%)
External		75
Solo theatre piece	Create and present a solo theatre piece (4–8 minutes) based on an aspect(s) of theatre theory.	35
Director's notebook	Develop ideas regarding how a play text could be staged for an audience.	20
Research presentation	Deliver an individual presentation (15 minutes maximum) that outlines and physically demonstrates research into a convention of a theatre tradition.	20
Internal		25
Collaborative project	Collaboratively create and present an original piece of theatre (lasting 13–15 minutes) for and to a specified target audience.	25

The theatre course is structured for the assessment tasks to be ongoing with skills being developed throughout the course and the material for assessment developed throughout the latter part of the course.

International Baccalaureate
Diploma Programme Subject Brief

The arts:
Theatre—Standard level

First assessments 2016 – Last assessments 2022

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints. Approaches to teaching and learning (ATL) within the DP are deliberate strategies, skills and attitudes that permeate the teaching and learning environment. In the DP students develop skills from five ATL categories: thinking, research, social, self-management and communication.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate three key course components.
I. Course description and aims II. Curriculum model overview III. Assessment model

I. Course description and aims

Theatre is a practical subject that encourages discovery through experimentation, risk-taking and the presentation of ideas. The IB DP theatre course is multifaceted and gives students the opportunity to actively engage in theatre as creators, designers, directors and performers. It emphasizes working both individually and collaboratively as part of an ensemble. The teacher's role is to create opportunities that allow students to explore, learn, discover and collaborate to become autonomous, informed and skilled theatre-makers.

Students learn to apply research and theory to inform and to contextualize their work. Through researching, creating, preparing, presenting and critically reflecting on theatre, they gain a richer understanding of themselves, their community and the world. Students experience the course from contrasting artistic and cultural perspectives. They learn about theatre from around the world, the importance of making theatre with integrity, and the impact that theatre can have on the world. It enables them to discover and engage with different forms of theatre across time, place and culture, promoting international-mindedness and an appreciation of the diversity of theatre.

The aims of all DP arts subjects are to enable students to:

1. enjoy lifelong engagement with the arts
2. become informed, reflective and critical practitioners in the arts
3. understand the dynamic and changing nature of the arts
4. explore and value the diversity of the arts across time, place and cultures
5. express ideas with confidence and competence
6. develop perceptual and analytical skills.

In addition, the aims of the SL theatre course are to enable students to:

7. explore theatre in a variety of contexts and understand how these contexts inform practice (theatre in context)
8. understand and engage in the processes of transforming ideas into action (theatre processes)
9. develop and apply theatre production, presentation and performance skills, working both independently and collaboratively (presenting theatre)

II. Curriculum model overview

Component	Recommended teaching hours
Theatre in context · Research and examine the various contexts of at least one published play text and reflect on live theatre. · Research and examine the various contexts of at least one world theatre tradition. · Reflect on personal approaches, interests and skills in theatre. Research and examine at least one starting point and the approaches employed by one appropriate professional theatre company, and consider how this might influence personal approaches.	**50**

Theatre processes • Take part in the practical exploration of at least two contrasting published play texts and engage with the process of transforming a play text into action. • Practically examine the performance conventions of at least one world theatre tradition and apply this to the staging of a moment of theatre. • Respond to at least one starting point and engage with the process of transforming it collaboratively into an original piece of theatre.	**50**
Presenting theatre • Direct at least one scene or section from one published play text which is presented to others. • Present a moment of theatre to others which demonstrates the performance convention(s) of at least one world theatre tradition. • Participate in at least one production of a collaboratively created piece of original theatre, created from a starting point, which is presented to others.	**50**

From the beginning of the course, and at regular intervals, students are required to maintain a theatre journal. Although elements of the journal may be selected, adapted and presented for assessment, the journal itself is not directly assessed or moderated. It is, however, regarded as a fundamental activity of the course.

III. Assessment model

Having followed the theatre course students are expected to:

1. Demonstrate knowledge and understanding of specified content
   - Describe the relationship between theatre and its contexts
   - Identify appropriate and valuable information from research for different specialist theatre roles
   - Present ideas, discoveries and learning, gained through research and practical exploration to others
2. Demonstrate application and analysis of knowledge and understanding
   - Explain the relationship and significance of the integration of production, performance and research elements
   - Explore and demonstrate different ways through which ideas can be presented and transformed into action
   - Explain what has informed, influenced and had impact on their work
3. Demonstrate synthesis and evaluation
   - Evaluate their work and the work of others
   - Discuss and justify choices
   - Examine the impact their work has had on others
4. Select, use and apply a variety of appropriate skills and techniques
   - Demonstrate appropriate skills and techniques in the creation and presentation of theatre in different specialist theatre roles
   - Demonstrate organization of material including use and attribution of sources
   - Demonstrate the ability to select, edit and present work appropriately

Assessment at a glance

Type of assessment	Format of assessment	Weighting of final grade (%)
External		65
Director's notebook	Develop ideas regarding how a play text could be staged for an audience.	35
Research presentation	Deliver an individual presentation (15 minutes maximum) that outlines and physically demonstrates research into a convention of a theatre tradition.	30
Internal		35
Collaborative project	Collaboratively create and present an original piece of theatre (lasting 13–15 minutes) for and to a specified target audience.	35

The theatre course is structured for the assessment tasks to be ongoing with skills being developed throughout the course and the material for assessment developed throughout the latter part of the course.

International Baccalaureate
Diploma Programme Subject Brief

Individuals and societies:
Business management—Higher level

First assessments 2016 – Last assessments 2022

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To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

The business management course is designed to develop students' knowledge and understanding of business management theories, as well as their ability to apply a range of tools and techniques. Students learn to analyse, discuss and evaluate business activities at local, national and international levels. The course covers a range of organizations from all sectors, as well as the sociocultural and economic contexts in which those organizations operate.

The course covers the key characteristics of business organization and environment, and the business functions of human resource management, finance and accounts, marketing and operations management. Links between the topics are central to the course. Through the exploration of six underpinning concepts (change, culture, ethics, globalization, innovation and strategy), the course allows students to develop a holistic understanding of today's complex and dynamic business environment. The conceptual learning is firmly anchored in business management theories, tools and techniques and placed in the context of real world examples and case studies.

The course encourages the appreciation of ethical concerns at both a local and global level. It aims to develop relevant and transferable skills, including the ability to: think critically; make ethically sound and well-informed decisions; appreciate the pace, nature and significance of change; think strategically; and undertake long-term planning, analysis and evaluation. The course also develops subject-specific skills, such as financial analysis.

The aims of the business management course at HL and SL are to:

1. encourage a holistic view of the world of business
2. empower students to think critically and strategically about individual and organizational behaviour
3. promote the importance of exploring business issues from different cultural perspectives
4. enable the student to appreciate the nature and significance of change in a local, regional and global context
5. promote awareness of the importance of environmental, social and ethical factors in the actions of individuals and organizations
6. develop an understanding of the importance of innovation in a business environment.

II. Curriculum model overview

Component	Recommended teaching hours
Unit 1: Business organization and environment	**50**
1.1 Introduction to business management	
1.2 Types of organizations	
1.3 Organizational objectives	
1.4 Stakeholders	
1.5 External environment	
1.6 Growth and evolution	
1.7 Organizational planning tools	

Unit 2: Human resource management 2.1 Functions and evolution of human resource management 2.2 Organizational structure 2.3 Leadership and management 2.4 Motivation 2.5 Organizational (corporate) culture 2.6 Industrial/employee relations	**30**
Unit 3: Finance and accounts 3.1 Sources of finance 3.2 Costs and revenues 3.3 Break-even analysis 3.4 Final accounts 3.5 Profitability and liquidity ratio analysis 3.6 Efficiency ratio analysis 3.7 Cash flow 3.8 Investment appraisal 3.9 Budgets	**50**
Unit 4: Marketing 4.1 The role of marketing 4.2 Marketing planning (including introduction to the four Ps) 4.3 Sales forecasting 4.4 Market research 4.5 The four Ps (product, price, promotion, place) 4.6 The extended marketing mix of seven Ps 4.7 International marketing 4.8 E-commerce	**50**
Unit 5: Operations management 5.1 The role of operations management 5.2 Production methods 5.3 Lean production and quality management 5.4 Location 5.5 Production planning 5.6 Research and development 5.7 Crisis management and contingency planning	**30**
Internal assessment	**30**

III. Assessment model

By the end of the business management HL course, students are expected to reach the following assessment objectives.

1. Demonstrate knowledge and understanding of:
   - the business management tools, techniques and theories specified in the syllabus content
   - the six concepts that underpin the subject
   - real-world business problems, issues and decisions
   - the HL extension topics.
2. Demonstrate application and analysis of:
   - knowledge and skills to a variety of real-world and fictional business situations
   - business decisions by explaining the issue(s) at stake, selecting and interpreting data, and applying appropriate tools, techniques, theories and concepts
   - the HL extension topics.
3. Demonstrate synthesis and evaluation of:
   - business strategies and practices, showing evidence of critical thinking
   - business decisions, formulating recommendations
   - the HL extension topics.
4. 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
   - select and use business material, from a range of primary and secondary sources.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		4.5	75
Paper 1	Structured and extended response questions	2.25	35
Paper 2	Structured and extended response questions	2.25	40
Internal		30	25
Research project	Students research and report on an issue facing an organization or a decision to be made by an organization (or several organizations). Maximum 2,000 words.	30	25

IV. Sample questions

- Analyse the appropriateness of a cost-plus pricing strategy for B-Pharma's drugs.
- Evaluate the effectiveness of the democratic leadership style of the partners at Hands.
- With reference to one or two organization(s) that you have studied, discuss how marketing strategies may differ in two cultures that you are familiar with.

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International Baccalaureate
Diploma Programme Subject Brief

Individuals and societies:
Business management— Standard level

First assessments 2016 – Last assessments 2022

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4. enable the student to appreciate the nature and significance of change in a local, regional and global context
5. promote awareness of the importance of environmental, social and ethical factors in the actions of individuals and organizations
6. develop an understanding of the importance of innovation in a business environment.

II. Curriculum model overview

Component	Recommended teaching hours
Unit 1: Business organization and environment 1.1 Introduction to business management 1.2 Types of organizations 1.3 Organizational objectives 1.4 Stakeholders 1.5 External environment 1.6 Growth and evolution	40
Unit 2: Human resource management 2.1 Functions and evolution of human resource management 2.2 Organizational structure 2.3 Leadership and management 2.4 Motivation	15

Unit 2: Human resource management 2.1 Functions and evolution of human resource management 2.2 Organizational structure 2.3 Leadership and management 2.4 Motivation 2.5 Organizational (corporate) culture 2.6 Industrial/employee relations	**30**
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Unit 5: Operations management 5.1 The role of operations management 5.2 Production methods 5.3 Lean production and quality management 5.4 Location 5.5 Production planning 5.6 Research and development 5.7 Crisis management and contingency planning	**30**
Internal assessment	**30**

III. Assessment model

By the end of the business management HL course, students are expected to reach the following assessment objectives.

1. Demonstrate knowledge and understanding of:
   - the business management tools, techniques and theories specified in the syllabus content
   - the six concepts that underpin the subject
   - real-world business problems, issues and decisions
   - the HL extension topics.
2. Demonstrate application and analysis of:
   - knowledge and skills to a variety of real-world and fictional business situations
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Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
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IV. Sample questions

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International Baccalaureate
Diploma Programme Subject Brief

Sciences:
Design technology—Higher level

First assessments 2016 — Last assessments 2022

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To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

The Diploma Programme design technology course aims to develop internationally minded people whose enhanced understanding of design and the technological world can facilitate our shared guardianship of the planet and create a better world.

Inquiry and problem-solving are at the heart of the subject. DP design technology requires the use of the design cycle as a tool, which provides the methodology used to structure the inquiry and analysis of problems, the development of feasible solutions, and the testing and evaluation of the solution. A solution can be defined as a model, prototype, product or system that students have developed independently.

DP design technology achieves a high level of design literacy by enabling students to develop critical-thinking and design skills, which they can apply in a practical context. While designing may take various forms, it will involve the selective application of knowledge within an ethical framework.

Through the overarching theme of the nature of design, the aim of the DP design technology course is to enable students to develop:

1. a sense of curiosity as they acquire the skills necessary for independent and lifelong learning and action through inquiry into the technological world around them
2. an ability to explore concepts, ideas and issues with personal, local and global significance to acquire in-depth knowledge and understanding of design and technology
3. initiative in applying thinking skills critically and creatively to identify and resolve complex social and technological problems through reasoned ethical decision-making
4. an ability to understand and express ideas confidently and creatively using a variety of communication techniques through collaboration with others
5. a propensity to act with integrity and honesty, and take responsibility for their own actions in designing technological solutions to problems
6. an understanding and appreciation of cultures in terms of global technological development, seeking and evaluating a range of perspectives
7. a willingness to approach unfamiliar situations in an informed manner and explore new roles, ideas and strategies to confidently articulate and defend proposals
8. an understanding of the contribution of design and technology to the promotion of intellectual, physical and emotional balance and the achievement of personal and social well-being
9. empathy, compassion and respect for the needs and feelings of others in order to make a positive difference to the lives of others and to the environment
10. skills that enable them to reflect on the impacts of design and technology on society and the environment in order to develop their own learning and enhance solutions to technological problems.

II. Curriculum model overview

Component	Recommended teaching hours
Core	**90**
1. Human factors and ergonomics	12
2. Resource management and sustainable production	22
3. Modelling	12
4. Raw material to final product	23
5. Innovation and design	13
6. Classic design	8
Additional higher level (AHL)	**54**
7. User-centred design (UCD)	12
8. Sustainability	14
9. Innovation and markets	13
10. Commercial production	15
Practical work	**96**
Design project	60
Group 4 project	10
Teacher-directed activities	26

The group 4 project

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas. The emphasis is on interdisciplinary cooperation and the scientific processes.

III. Assessment model

The assessment objectives for design technology reflect those parts of the aims that will be formally assessed either internally or externally. Wherever appropriate, the assessment draws upon environmental and technological contexts and identify the social, moral and economic effects of technology. It is the intention of the design technology course that students are able to fulfill the following assessment objectives:

1. Demonstrate knowledge and understanding of:
   - facts, concepts, principles and terminology
   - design methodology and technology
   - methods of communicating and presenting technological information.
2. Apply and use:
   - facts, concepts, principles and terminology
   - design methodology and technology
   - methods of communicating and presenting technological information.
3. Construct, analyse and evaluate:
   - design briefs, problems, specifications and plans
   - methods, techniques and products
   - data, information and technological explanations.
4. Demonstrate the appropriate research, experimentation, modelling and personal skills necessary to carry out innovative, insightful, ethical and effective designing.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		4	60
Paper 1	Multiple-choice questions on core and HL extension material	1	20
Paper 2	Data based, short-answer, and extended-response questions on core material	1.5	20
Paper 3	Structured questions on HL extension material	1.5	20
Internal		60	40
Design project	Individual design project	60	40

IV. Sample questions

- At which stage of the product life cycle would user attitudes and behaviours be likely to have greater impact than those of the designer or the manufacturer? (Paper 1)
  A. Production
  B. Distribution, including packaging
  C. Utilization
  D. Disposal

- Explain how relative advantage, triability and observability impact on the rate of consumer adoption of flexible screen based smartphones. (Paper 2)

- Explain how the concept of Kaizen helps to improve the efficiency of the production process. (Paper 3)

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Sciences:
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DP design technology achieves a high level of design literacy by enabling students to develop critical-thinking and design skills, which they can apply in a practical context. While designing may take various forms, it will involve the selective application of knowledge within an ethical framework.

Through the overarching theme of the nature of design, the aim of the DP design technology course is to enable students to develop:

1. a sense of curiosity as they acquire the skills necessary for independent and lifelong learning and action through inquiry into the technological world around them
2. an ability to explore concepts, ideas and issues with personal, local and global significance to acquire in-depth knowledge and understanding of design and technology
3. initiative in applying thinking skills critically and creatively to identify and resolve complex social and technological problems through reasoned ethical decision-making
4. an ability to understand and express ideas confidently and creatively using a variety of communication techniques through collaboration with others
5. a propensity to act with integrity and honesty, and take responsibility for their own actions in designing technological solutions to problems
6. an understanding and appreciation of cultures in terms of global technological development, seeking and evaluating a range of perspectives
7. a willingness to approach unfamiliar situations in an informed manner and explore new roles, ideas and strategies to confidently articulate and defend proposals
8. an understanding of the contribution of design and technology to the promotion of intellectual, physical and emotional balance and the achievement of personal and social well-being
9. empathy, compassion and respect for the needs and feelings of others in order to make a positive difference to the lives of others and to the environment
10. skills that enable them to reflect on the impacts of design and technology on society and the environment in order to develop their own learning and enhance solutions to technological problems.

II. Curriculum model overview

Component	Recommended teaching hours
Core	**90**
1. Human factors and ergonomics	12
2. Resource management and sustainable production	22
3. Modelling	12
4. Raw material to final product	23
5. Innovation and design	13
6. Classic design	8
Practical work	**60**
Design project	40
Group 4 project	10
Teacher-directed activities	10

The group 4 project

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas. The emphasis is on interdisciplinary cooperation and the scientific processes.

III. Assessment model

The assessment objectives for design technology reflect those parts of the aims that will be formally assessed either internally or externally. Wherever appropriate, the assessment draws upon environmental and technological contexts and identify the social, moral and economic effects of technology. It is the intention of the design technology course that students are able to fulfill the following assessment objectives:

1. Demonstrate knowledge and understanding of:
   - facts, concepts, principles and terminology
   - design methodology and technology
   - methods of communicating and presenting technological information.
2. Apply and use:
   - facts, concepts, principles and terminology
   - design methodology and technology
   - methods of communicating and presenting technological information.
3. Construct, analyse and evaluate:
   - design briefs, problems, specifications and plans
   - methods, techniques and products
   - data, information and technological explanations.
4. Demonstrate the appropriate research, experimentation, modelling and personal skills necessary to carry out innovative, insightful, ethical and effective designing.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		2.25	60
Paper 1	Multiple-choice questions on core material	0.75	30
Paper 2	Data-based, short-answer, and extended-response questions on core material	1.5	30
Internal		40	40
Design project	Individual design project	40	40

IV. Sample questions

- Which phrase best reflects the philosophy of the circular economy? (Paper 1)
  A. Cradle to cradle
  B. Cradle to grave
  C. Made to be made again
  D. Take, make, dispose

- Explain how the use of "design for the environment" software assists designers in choosing materials. (Paper 2)

- Discuss why the use of thermoplastic renders a product green but not sustainable. (Paper 2)

International Baccalaureate Diploma Programme Subject Brief

Sciences:

Computer science – Higher level

First assessments 2014 – Last assessments 2020

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.
I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

The IB DP computer science HL course requires an understanding of the fundamental concepts of computational thinking as well as knowledge of how computers and other digital devices operate. The course, underpinned by conceptual thinking, draws on a wide spectrum of knowledge, and enables and empowers innovation, exploration and the acquisition of further knowledge. Students study how computer science interacts with and influences cultures, society and how individuals and societies behave, and the ethical issues involved. During the course the student will develop computational solutions. This will involve the ability to:

- identify a problem or unanswered question
- design, prototype and test a proposed solution
- liaise with clients to evaluate the success of the proposed solution and make recommendations for future developments.

The aims of the computer science HL courses are to:

- provide opportunities for study and creativity within a global context that will stimulate and challenge students developing the skills necessary for independent and lifelong learning
- provide a body of knowledge, methods and techniques that characterize computer science
- enable students to apply and use a body of knowledge, methods and techniques that characterize computer science
- demonstrate initiative in applying thinking skills critically to identify and resolve complex problems
- engender an awareness of the need for, and the value of, effective collaboration and communication in resolving complex problems
- develop logical and critical thinking as well as experimental, investigative and problem-solving skills
- develop and apply the students' information and communication technology skills in the study of computer science to communicate information confidently and effectively
- raise awareness of the moral, ethical, social, economic and environmental implications of using science and technology
- develop an appreciation of the possibilities and limitations associated with continued developments in IT systems and computer science
- encourage an understanding of the relationships between scientific disciplines and the overarching nature of the scientific method.

II. Curriculum model overview

Component	Recommended teaching hours
Core syllabus content	
SL/HL core • Topic 1: System fundamentals • Topic 2: Computer organization • Topic 3: Networks • Topic 4: Computational thinking, problem-solving and programming	80
HL extension • Topic 5: Abstract data structures • Topic 6: Resource management • Topic 7: Control	45
Case study Additional subject content introduced by the annually issued case study	30

II. Curriculum model overview

Component	Recommended teaching hours
Core	**90**
1. Human factors and ergonomics	12
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The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It allows for concepts and perceptions from across disciplines to be shared while appreciating the environmental, social and ethical implications of science and technology. It can be practically or theoretically based and aims to develop an understanding of the relationships between scientific disciplines and their influence on other areas. The emphasis is on interdisciplinary cooperation and the scientific processes.

III. Assessment model

The assessment objectives for design technology reflect those parts of the aims that will be formally assessed either internally or externally. Wherever appropriate, the assessment draws upon environmental and technological contexts and identify the social, moral and economic effects of technology. It is the intention of the design technology course that students are able to fulfill the following assessment objectives:

1. Demonstrate knowledge and understanding of:
   - facts, concepts, principles and terminology
   - design methodology and technology
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Design project	Individual design project	40	40

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  A. Cradle to cradle
  B. Cradle to grave
  C. Made to be made again
  D. Take, make, dispose

- Explain how the use of "design for the environment" software assists designers in choosing materials. (Paper 2)

- Discuss why the use of thermoplastic renders a product green but not sustainable. (Paper 2)

International Baccalaureate Diploma Programme Subject Brief

Sciences:

Computer science – Standard level

First assessments 2014 – Last assessments 2020

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints.

To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.

I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

The IB DP Computer science SL course requires an understanding of the fundamental concepts of computational thinking as well as knowledge of how computers and other digital devices operate. The course, underpinned by conceptual thinking, draws on a wide spectrum of knowledge, and enables and empowers innovation, exploration and the acquisition of further knowledge. Students study how computer science interacts with and influences cultures, society and how individuals and societies behave, and the ethical issues involved. During the course the student will develop computational solutions. This will involve the ability to:

- identify a problem or unanswered question
- design, prototype and test a proposed solution
- liaise with clients to evaluate the success of the proposed solution and make recommendations for future developments.

The aims of the computer science standard level courses are to:

- provide opportunities for study and creativity within a global context that will stimulate and challenge students developing the skills necessary for independent and lifelong learning
- provide a body of knowledge, methods and techniques that characterize computer science
- enable students to apply and use a body of knowledge, methods and techniques that characterize computer science
- demonstrate initiative in applying thinking skills critically to identify and resolve complex problems
- engender an awareness of the need for, and the value of, effective collaboration and communication in resolving complex problems
- develop logical and critical thinking as well as experimental, investigative and problem-solving skills
- develop and apply the students' information and communication technology skills in the study of computer science to communicate information confidently and effectively
- raise awareness of the moral, ethical, social, economic and environmental implications of using science and technology
- develop an appreciation of the possibilities and limitations associated with continued developments in IT systems and computer science
- encourage an understanding of the relationships between scientific disciplines and the overarching nature of the scientific method.

Option **SL/HL core** **HL extension** Students study one of the following options: • Option A: Databases • Option B: Modelling and simulation • Option C: Web science • Option D: Object-oriented programming (OOP)	 30 15
Internal assessment **Solution** Practical application of skills through the development of a product and associated documentation	30
Group 4 project	10

III. Assessment model

Having followed the computer science higher level course, students will be expected to:

Know and understand:
- relevant facts and concepts
- appropriate methods and techniques
- computer science terminology
- methods of presenting information.

Apply and use:
- relevant facts and concepts
- relevant design methods and techniques
- terminology to communicate effectively
- appropriate communication methods to present information.

Construct, analyse, evaluate and formulate:
- success criteria, solution specifications including task outlines, designs and test plans
- appropriate techniques within a specified solution.

Demonstrate the personal skills of cooperation and perseverance as well as appropriate technical skills for effective problem-solving in developing a specified product.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External			80
Paper 1	• Section A consists of several compulsory short answer questions. • Section B consists of five compulsory structured questions.	2 hours, 10 min.	40
Paper 2	An examination paper of between three and seven compulsory question; linked to the option studied.	1 hour, 20 min.	20
Paper 3	An examination paper consisting of four compulsory questions based on a pre-seen case study.	1 hour	20
Internal			20
Written commentary	A report of The development of a computational solution. Students must produce: • a cover page that follows the prescribed format • a product • supporting documentation (word limit 2,000 words).	30 hours	25
Group 4 project	To be assessed using the criterion Personal skills.	10 hours	

IV. Sample questions

- Draw the representation of the binary search tree if the following data were inserted in this order:
  - FALCON, CANARY, PIGEON, TURKEY, OSPREY.
- Discuss the methods used by criminals to hide or disguise certain files. For each method, identify the countermeasures that can be taken by a computer forensic scientist.

About the IB: For over 40 years the IB has built a reputation for high-quality, challenging programmes of education that develop internationally minded young people who are well prepared for the challenges of life in the 21st century and able to contribute to creating a better, more peaceful world.

For further information on the IB Diploma Programme, visit: ***http://www.ibo.org/diploma/*** *Complete subject guides can be accessed through the IB Online Curriculum Center (OCC), the IB university and government official system, or purchased through the IB store:* ***http://store.ibo.org***

To learn more about how the IB Diploma Programme prepares students for success at university, visit: ***www.ibo.org/recognition*** *or email:* ***recognition@ibo.org***

IB CAREER-RELATED PROGRAMME (IBCP)

THE IBCP OVERVIEW

The IBCP framework allows students to specialize in, and focus on, a career-related pathway. The programme's three-part framework comprises the study of three Diploma Programme courses alongside career-related studies and the distinctive IBCP core which is designed to create a bridge that connects each student's chosen Diploma Programme courses and career-related studies. For IBCP students, both the Diploma Programme courses, and career related study provide the theoretical underpinning and academic rigour of the programme; and the IBCP core helps them to develop skills and competencies required for lifelong learning.

IBCP PROGRAMME MODEL

THE CORE OF THE IBCP consists of the Reflective Project (RP), Language Development (LD), Service Learning and Personal and Professional Skills (PPS).

THE REFLECTIVE PROJECT

The Reflective Project is a structured piece of work that can take a variety of forms including an academic paper, a video documentary, a short film or a website to name but a few options.

A student will be able to identify, analyse, explore, critically discuss and evaluate the ethical dilemma of an issue arising from their career-related study and linked to some contemporary event or situation.

FORMAT	MAXIMUM LENGTH
Essay	3000 words
Short Film	7 minutes in length accompanied by a 1500-2000 word written report written report
Interview	7 minutes in length accompanied by a 1500-2000 word written report
Spoken Presentation	7 minutes in length accompanied by a 1500-2000 word written report
Play	7 minutes in length which supports elements of the reflective project accompanied by a 1500-2000 word written report
Display	Up to 15 single images accompanied by a 1500-2000 word written report written report.
The written report should aim to cover the assessment criteria not addressed by the format used. It should also contain references to sources used.	

LANGUAGE DEVELOPMENT

Language Development provides the students with the necessary skills and intercultural understanding to enable them to communicate using the chosen language in a variety of contexts. A Language Porfolio is required to demonstrate students' engagement with the language.

TOPICS						
The Individual	Daily routine	Personal details	Appearance	Health	Value and attitude	Choice
Work	Jobs	Technology	Government	Personal Finance	Economy	Law
Friendship	Peers	Friends	Family	Relationships	Activities	Social Context
Travel	Transport	Directions	Currency	Cultures	Leisure	Food and Drink
The written report should aim to cover the assessment criteria not addressed by the format used. It should also contain references to sources used.						

LANGUAGE DEVELOPMENT

Language Development provides the students with the necessary skills and intercultural understanding to enable them to communicate using the chosen language in a variety of contexts. A Language Porfolio is required to demonstrate students' engagement with the language.

SERVICE LEARNING

Through Service Learning, students will develop working relationships with the community. They will explore the Principles of Service Learning:

- Knowledge development
- Social development
- Civic development
- Personal development

PERSONAL PROFESSIONAL SKILLS

Personal Professional Skills is a professional ethical thinking course which explores the ethical context of the career-related study and its implications in the real-world. The course aims to develop transferable skills with an emphasis on the nature of thinking critically and ethically and being able to communicate effectively.

The Key Skills covered range from personal development, intercultural understanding, thinking and communication.

The course also explores global contexts through the following broad themes:

- Technologies
- Environments
- Workplaces
- Communities

IBCP COURSES OFFERED AT DIS

BTEC Level 3 Diploma	Travel And Tourism	
	Business	
Group 2 - Second Language	French B	HL/SL
	French Ab Initio	SL
	Spanish B	HL/SL
	Spanish Ab Initio	SL
	Arabic A	HL/SL
	Arabic B (non-Arab passport holders only)	HL/SL
	Arabic AB Initio	SL
Group 5 - Mathematics	Analysis and Approaches	HL/SL
	Application and Interpretation	HL/SL
Group 6 - Arts and Electives	Music	HL/SL
	Visual Arts	HL/SL
	Theatre	HL/SL
	Film	HL/SL
	Any Group 2 Subject	HL/SL
	Any Group 3 Subject	HL/SL
	Any Group 4 Subject	HL/SL

PEARSON BTEC LEVEL 3 DIPLOMA IN TRAVEL & TOURISM

The Pearson BTEC Level 3 Diploma in Travel and Tourism is a 120-credit and approximately 720 guided learning hour (GLH) qualification that consists of four mandatory units plus optional units that provide for a combined total of 120 credits (where at least 90 credits must be at Level 3 or above).

The units for the BTEC qualifications in this specification are available on the Pearson website (qualifications.pearson.com).

Pearson BTEC Level 3 Diploma in Travel and Tourism			
Unit	**Mandatory units**	**Credit**	**Level**
1	Investigating the Travel and Tourism Sector	10	3
2	The Business of Travel and Tourism	10	3
3	The UK as a Destination	10	3
4	Customer Service in Travel and Tourism	10	3
	Optional units		
5	Marketing Travel and Tourism Products and Services	10	3
6	Preparing for Employment in Travel and Tourismm	10	3
7	European Destinations	10	3
8	Long-haul Travel Destinations	10	3
9	Retail Travel Operations	10	3
10	Business Travel Operations	10	3
11	Investigating the Cruise Industry	5	3
12	Responsible Tourism	10	3
13	Tour Operations	10	3
14	Specialist Tourism	10	3
15	Working as a Holiday Representative	10	3
16	Passenger Transport for Travel and Tourism	10	3
17	Events, Conferences and Exhibitions	5	3
18	Tourism in Rural Areas	10	3
19	UK Visitor Attractions	5	3
20	Hospitality Operations in Travel and Tourism	5	3
21	Entertainment for Holidaymakers	10	3
22	Work Experience in the Travel and Tourism Sector	10	3
23	Residential Study Visit in Travel and Tourism	5	3
24	Airfares and Ticketing I	10	2
25	Working as a Children's Representative in Travel and Tourism	10	3
26	Researching Current Issues in Travel and Tourism	10	4
27	Organising a Travel and Tourism Study Visit	5	2
28	Principles of Supervising Customer Service Performance in Hospitality, Leisure, Travel and Tourism	2	3
29	Airfares and Ticketing 2	10	3

PEARSON BTEC LEVEL 3 DIPLOMA IN TRAVEL & TOURISM

The Pearson BTEC Level 3 Diploma Business is a 120 credit and 720 guided learning hours qualification, it consists of four mandatory units plus optional units that provide for a combined total of 120 credits.

The units for the BTEC qualifications in this specification are available on the Pearson website (www.edexcel.com).

Pearson BTEC Level 3 Diploma in Business			
Unit	**Mandatory units**	**Credit**	**Level**
1	The Business Environment	10	3
2	Business Resources	10	3
3	Introduction to Marketing	10	3
4	Business Communication	10	3
	Optional units - choose any eight units from those below		
	Accounting Pathway Optional units		
5	Business Accounting	10	3
6	Financial Accounting	10	3
7	Management Accounting	10	3
8	Accounting Systems	10	3
	Marketing Pathway Optional units		
9	Creative Product Promotion	10	3
10	Market Research in Business	10	3
11	Relationship Marketing	10	3
12	Internet Marketing in Business	10	3
	Human Resources Pathway Optional units		
13	Recruitment and Selection in Business	10	3
14	Aspects of Employment Law	10	3
15	Development Planning for a Career in Business	10	3
16	Human Resource Management in Business	10	3
	Management Pathway Optional Unit		
17	Training in the Business Workplace	5	3
18	Managing a Business Event	10	3
19	Developing Teams in Business	5	3
20	Managing Physical Resources in a Business Environment	5	3
	Law Pathway Optional units		
21	Aspects of Contract and Business Law	10	3
22	Aspects of Civil Liability for Business	10	3
23	Aspects of the Legal System and Law-making Process	5	3
24	Aspects of Criminal Law Relating to Business	10	2
	Administration Pathway Optional units		
25	Supporting Business Activities	10	3
26	Managing Business Information	10	4
27	Understanding Health and Safety in the Business Workplace	5	2
28	Business Project Management	2	3

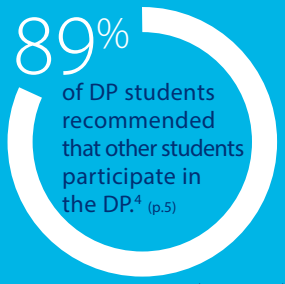
Facts & Figures:
The Diploma Programme
Around the World

1.3 million* DP graduates

140+ countries

*as of May 2015

In a recent DP study at the University of Oregon's Honors College,



of DP students recommended that other students participate in the DP.[4] (p.5)

sample size: 18 students

Alumni of the Diploma Programme attend top-ranking universities, studies find.[1]

DP students not only do well academically while in high school, but also go on to perform well at the university level.[2]

79% of DP graduates in China attended universities in the US, UK, Hong Kong, Singapore and Canada.[5]

DP students in the US who enrolled in post-secondary education immediately after high school **enrolled in and graduated from four-year institutions at much higher rates than the national average.**

95% of DP cohort

60% national cohort

enrollment at four-year institutions (public and private)

79% of DP cohort

39% national cohort

average graduation rate at four-year institutions (public and private)

A+ University admissions officials say the **DP is the best qualification** for developing students' non-academic skills and preparing them for further education and careers.[5]

Encouraging independent inquiry

37%	A Levels
87%	Diploma Programme
47%	Scottish Highers

Developing workplace skills

3%	A Levels
57%	Diploma Programme
9%	Scottish Highers

Nurturing an open mind

15%	A Levels
71%	Diploma Programme
26%	Scottish Highers

Developing self-management skills

26%	A Levels
76%	Diploma Programme
30%	Scottish Highers

Developing global awareness and connectivity

6%	A Levels
80%	Diploma Programme
10%	Scottish Highers

DP alumni report the IB has profound, long-lasting effects on students' lives. It helps them **develop critical thinking, analytical and writing skills and a broader world view**. In addition, they point out that they earned advanced credits for university.[6]

International-mindedness means having the opportunity to have doors opened in other countries and widely renowned universities.[7]

(DP student, p.38).

A recent study among DP schools in Australia, China and India found that international-mindedness can be categorized as a tool for individual gain, an orientation towards shared understanding and a way to push boundaries for change.

1. http://ibo.org/globalassets/publications/ib-research/dp/chinasummaryinenglishweb.pdf
   http://ibo.org/contentassets/d74675437b4f4ab3831270259 9a432f1/mexicodpresearchsummary_e.pdf
   http://ibo.org/contentassets/d74675437b4f4ab3831270259 9a432f1/ibstudentsstudyingatukhighereducationinstitution showdotheyfare2011.pdf
2. http://ibo.org/globalassets/publications/ib-research/dp/dp-student-enrollment-outcomes-us-brief-en.pdf
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6. http://ibo.org/globalassets/publications/ib-research/continuum/longer-term-outcomes-summary-en.pdf
7. http://www.ibo.org/globalassets/publications/ib-research/dp/international-mindedness-summary-en.pdf

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Learn more about the IB at ibo.org

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