



IB Diploma Programme (IB DP) Curriculum Guide

At Canterbury School, we are committed to fostering a unified, caring, and ambitious learning community where every student is encouraged to achieve their personal best and develop the confidence to make a meaningful difference in the world. Our mission is to provide a high-quality international education through a challenging, balanced, and forward-thinking curriculum that prepares students not only for academic success, but also for life beyond school.

The International Baccalaureate Diploma Programme (IB DP), delivered in Years 12 and 13, is a rigorous two-year course designed to develop knowledgeable, inquiring, and reflective young people. It is widely respected by universities around the world and encourages students to think critically, work independently, and engage with global issues.

Students in the IB DP select **six subjects**, studying a broad and balanced curriculum. These are chosen from the following groups and options:

- **Languages and Literature:** English A, Spanish A
- **Language Acquisition:** English B, Spanish B, French B, Spanish Ab Initio
- **Individuals and Societies:** Psychology, Business Management, History, Computer Science
- **Sciences:** Chemistry, Physics, Biology,
- **Mathematics:** Mathematics AA (Analysis and Approaches), Mathematics AI (Applications and Interpretation)
- **The Arts:** Visual Arts
- **Interdisciplinary Option:** Environmental Systems and Societies (ESS)

In addition to these six subjects, all IB Diploma students complete the **IB Core**, which is central to the philosophy of the programme:

- **Extended Essay (EE):** An independent, self-directed research project of up to 4,000 words, allowing students to explore a topic of personal interest in depth.
- **Theory of Knowledge (TOK):** A unique course that encourages students to reflect on the nature of knowledge and how we know what we claim to know.
- **Creativity, Activity, Service (CAS):** A programme that promotes personal and interpersonal development through artistic pursuits, physical activity, and community service.

Together, the subjects and core elements of the IB Diploma Programme create a holistic educational experience that develops intellectual curiosity, academic discipline, and a strong sense of responsibility to local and global communities.

Students are supported throughout their IB journey to make informed subject choices that reflect their strengths, interests, and future aspirations. While the programme is demanding, it is also highly rewarding, helping students grow into confident, independent learners who are well prepared for university and beyond.

This guide provides an overview of each subject offered, along with assessment information and course expectations, enabling parents to understand the structure of the IB Diploma Programme and to actively support their son/daughter throughout this important stage of their education.

International Baccalaureate Diploma Programme Subject Brief

Language A: language and literature

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.

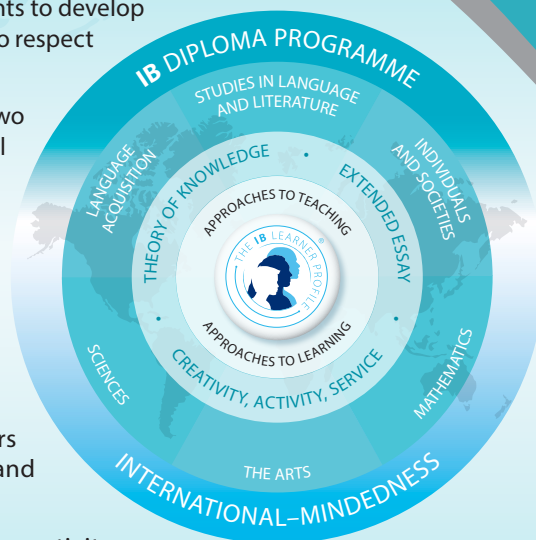
In addition, three core elements—the extended essay, theory of knowledge and creativity, activity, service—are compulsory and central to the philosophy of the programme.

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

The language A: language and literature course aims at studying the complex and dynamic nature of language and exploring both its practical and aesthetic dimensions. The course will explore the crucial role language plays in communication, reflecting experience and shaping the world, and the roles of individuals themselves as producers of language. Throughout the course, students will explore the various ways in which language choices, text types, literary forms and contextual elements all effect meaning.

Through close analysis of various text types and literary forms, students will consider their own interpretations, as well as the critical perspectives of others, to explore how such positions are shaped by cultural belief systems and to negotiate meanings for texts.

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

- engage with a range of texts, in a variety of media and forms, from different periods, styles and cultures
- develop skills in listening, speaking, reading, writing, viewing, presenting and performing
- develop skills in interpretation, analysis and evaluation
- develop sensitivity to the formal and aesthetic qualities of texts and an appreciation of how they contribute to diverse responses and open up multiple meanings

- develop an understanding of relationships between texts and a variety of perspectives, cultural contexts, and local and global issues, and an appreciation of how they contribute to diverse responses and open up multiple meanings
- develop an understanding of the relationships between studies in language and literature and other disciplines
- communicate and collaborate in a confident and creative way
- foster a lifelong interest in and enjoyment of language and literature.

II. Curriculum model overview

Syllabus component	Recommended teaching hours	
	SL	HL
Readers, writers and texts	50	80
Time and space	50	80
Intertextuality: connecting texts	50	80
Total teaching hours	150	240

III. Assessment model

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

1. Know, understand and interpret:
 - a range of texts, works and/or performances, and their meanings and implications
 - contexts in which texts are written and/or received
 - elements of literary, stylistic, rhetorical, visual and/or performance craft
 - features of particular text types and literary forms.
2. Analyse and evaluate:
 - ways in which the use of language creates meaning
 - uses and effects of literary, stylistic, rhetorical, visual or theatrical techniques
 - relationships among different texts
 - ways in which texts may offer perspectives on human concerns.
3. Communicate:
 - ideas in clear, logical and persuasive ways
 - in a range of styles, registers and for a variety of purposes and situations
 - (for literature and performance only) ideas, emotion, character and atmosphere through performance.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)		Weighting of final grade (%)	
		SL	HL	SL	HL
External					
Paper 1: Guided textual analysis	Guided analysis of unseen non-literary passage/passages from different text types.	1.25	2.25	35	35
Paper 2: Comparative essay	Comparative essay based on two literary works written in response to a choice of one out of four questions.	1.75	1.75	35	25
HL essay	Written coursework component: 1,200–1,500 word essay on one literary work or a non-literary body of work studied.				20
Internal					
Individual oral	Prepared oral response on the way that one literary work and one non-literary body of work studied have approached a common global issue.			30	20

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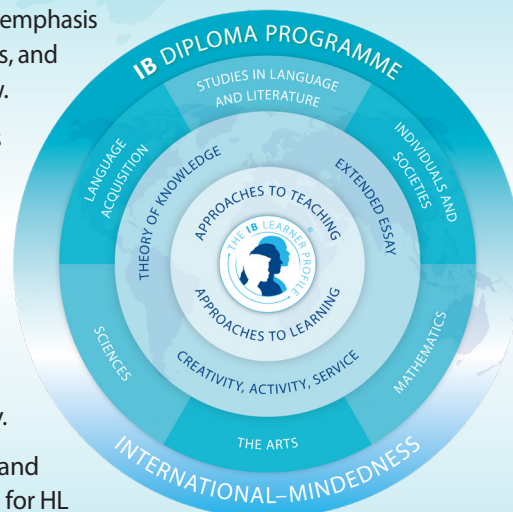
Language acquisition: Language B

First assessment 2029

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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.



I. Course description and aims

The DP language B course is intended for students who already have some experience in the target language they choose to study. Most language B subjects are available at both SL and HL.

Language B is designed to develop the competences and intercultural understanding needed for successful communication within and outside of the classroom in contexts in which the target language is used. Understanding the relationship between language and culture, and their inseparability, provides insight into how users of the target language view the world and how the evolving world view influences language. Learning and using the target language develops international-mindedness, fosters respect for cultural diversity, and is central to the IB mission of education for a better, more peaceful world.

Language B students will view language through the lenses of cultures, communication and perspectives. They will develop sociolinguistic skills (the use of language appropriate to the context), linguistic skills (the knowledge and understanding of the language system), and pragmatic skills (the handling of ideas for the construction and communication of messages). In learning how language works, students will use and develop critical-thinking skills. In experimenting with language, students will use and develop creative-thinking skills.

A key distinction between SL and HL is in the proficiency the student already has when entering the course and the proficiency they are expected to develop during the course.

At both SL and HL, students continue to learn how to communicate in the target language in familiar and unfamiliar contexts. They describe situations, narrate events, make comparisons, explain problems, and

state and support their opinions on a variety of topics. They engage with and create a variety of texts, with degrees of complexity and nuance, for a range of purposes and audiences.

The study of two literary works originally written in the target language is required for language B HL.

The aims for language B SL and HL are as follows.

- Develop international-mindedness through the study of languages, cultures, and ideas and issues of global significance.
- Enable students to communicate in the target language in a range of contexts and for a variety of purposes.
- Encourage an awareness and appreciation of a variety of perspectives of people from diverse cultures through the study of texts, and through social interaction.
- 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 with opportunities for intellectual engagement and the development of critical- and creative-thinking skills through language learning and the process of inquiry.
- 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 DP language B course has communication as its focus. As students develop in the target language, communication becomes more successful and effective, and is evidenced through the demonstration of receptive, productive and interactive skills across a range of contexts and purposes appropriate to the level of the course.

Students develop the ability to communicate in the target language by engaging with language, themes, texts and concepts. Communication becomes more successful and effective with the continued development of receptive, productive and interactive skills.

Language B has five prescribed themes which provide relevant contexts for study and opportunities for students to communicate about matters of personal, local, national and global interest. They allow students to compare the target language and culture(s) to other languages and cultures with which they are familiar.

Theme	Guiding principle	Optional recommended topics
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
Human ingenuity	Explore the ways in which human creativity and innovation affect our world.	Entertainment Artistic expressions Communication and media Technology Scientific innovation

Identities	Explore the nature of the self and what it is to be human.	Lifestyles Health and wellbeing Beliefs and values Subcultures Language and identity
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
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 world of work Law and order

III. Assessment model

The following assessment objectives apply to language B SL and HL.

- Communicate clearly and effectively in a range of contexts and for a variety of purposes.
- Understand and use language appropriate to a range of contexts—interpersonal and intercultural—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 multimedia texts.

Assessment at a glance

Type of assessment	Format of assessment	Weighting of final grade
External		75%
Paper 1 (productive skills)	SL —One writing task of 250–400 words from a choice of three, using an appropriate text type from the options given HL —One writing task of 450–600 words from a choice of three, using an appropriate text type from the options given	25%
Paper 2 (receptive skills)	SL/HL —Comprehension exercises on three audio passages and three written texts, based on the five prescribed themes	Listening: 25% Reading: 25%

Internal		25%
Individual oral assessment (productive, receptive and interactive skills)	SL —A student presentation based on a visual stimulus, a student–teacher discussion, and a conversation that includes at least one additional course theme HL —A student presentation based on a literary extract, a student–teacher discussion, and a conversation that includes at least one additional course theme	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 HL assessments.

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For further information on the IB Diploma Programme, visit: <https://ibo.org/en/dp>.

Complete subject guides can be accessed through the programme resource centre or purchased through the IB store: <https://www.ibo.org/new-store>.

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International Baccalaureate Diploma Programme Subject Brief

Language ab initio

First assessment 2020

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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.

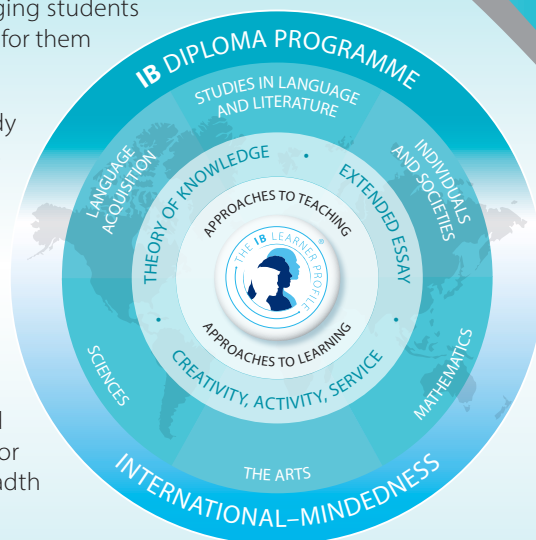
This IB DP subject brief has four key components:

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 through 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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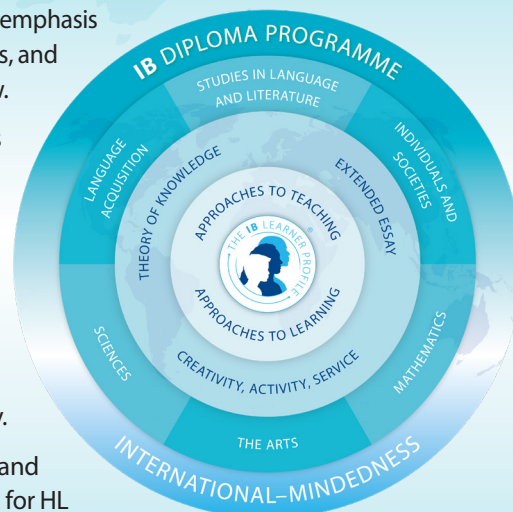
Individuals and Societies: Psychology

First assessment 2027

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I. Course description and aims

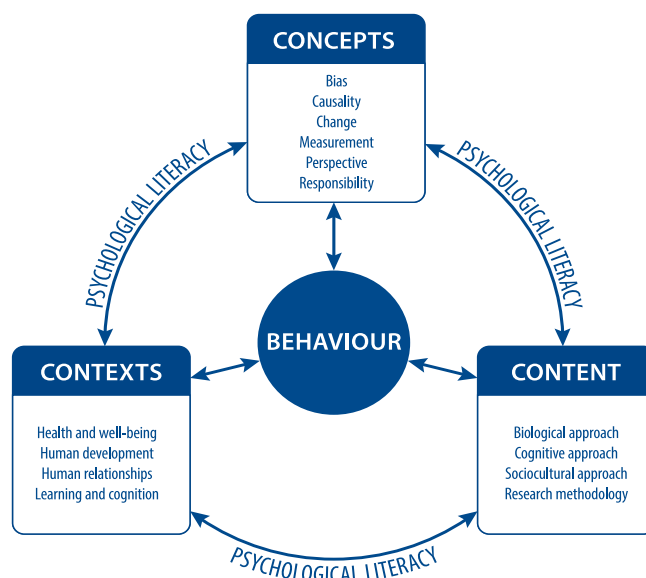
The Diploma Programme (DP) psychology course aims to develop students' knowledge and understanding of psychological concepts, content and contexts, as well as the models and theories associated with these areas. Through the course, students will develop the ability to engage in critical thinking, assess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

The aims of the psychology course are for students to:

- develop knowledge and understanding of psychological concepts, content and contexts including models and theories
- think critically and creatively about behaviour and cognitive processes
- engage with problems facing individuals, groups and societies using psychological understanding and skills.

II. Curriculum model overview

The DP psychology course focus is on conceptual understanding and the ability to apply concepts across a variety of contexts as opposed to simple memorization of theories supporting studies. Framing the psychology course through concepts, content and context allows for the development and application of psychological knowledge when studying the contexts.



Concepts, content and contexts are meant to be integrated when investigating human behaviour. The content provides the psychological terminology and theories needed to understand how the biological, cognitive and sociocultural approaches assist in understanding behaviour in different contexts while using a variety of research methodology. Concepts provide a framework through which specific content is considered and contexts provide the real-world setting in which concepts and content are applied.

Standard level (SL) and higher level (HL) students will investigate four contexts using psychological content and concepts relevant to that area of study. The internal assessment will require SL and HL students to create a research proposal to investigate a topic with a population of interest. Reading empirical research and everyday claims in the media are opportunities to identify concepts and further the knowledge of psychological content applied within a context. Students will be required to think critically about data analysis and interpretation in psychological research and everyday claims (for example, in social media). HL students will have the opportunity to study four extensions: the role of culture, motivation and technology in shaping human behaviour, and data analysis and interpretation.

Syllabus component	Teaching hours	
	SL	HL
Concepts, content and contexts	100	100
Integrating concepts and content in the understanding of contexts		
Class practicals (minimum 4)	30	30
Extensions (HL only)		
The role of culture, motivation and technology in shaping human behaviour	n/a	45
Data analysis and interpretation		45
Internal assessment	20	20
Psychology research proposal to investigate a topic in relation to a specified population of interest.		
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.

Knowledge and understanding (AO1)

- A range of psychological concepts, contexts, theories, models and examples
- Biological, cognitive and sociocultural approaches to understanding human behaviour
- Research methodology for understanding human behaviour

Application and analysis (AO2)

- Explain and formulate arguments in response to a specific question or prompt using relevant/appropriate concepts and psychological research
- Apply and analyse a range of psychological theories and models
- Apply and analyse knowledge relevant to psychology in a variety of contexts

HL

- Interpret data to draw conclusions for experimental and non-experimental research

Synthesis and evaluation (AO3)

- Evaluate psychological theories and research
- Draw conclusions from different types of evidence
- Justify a position and critique claims
- Discuss how psychological concepts interact
- Design a study to investigate a research question

HL

- Draw conclusions about the influence of culture, motivation and technology on human behaviour

Assessment objective	Paper 1—SL and HL			Paper 2—SL and HL		Paper 3 (HL only)	Internal assessment
	Section A	Section B	Section C	Section A	Section B		
AO1 – knowledge and understanding	√		√	√	√		
AO2 – application and analysis	√	√		√		√	
AO3 – synthesis and evaluation			√	√	√	√	√

Assessment at a glance

Assessment outline—SL

Assessment component	Weighting
External assessment (3 hours)	70%
Paper 1 (1.5 hours) Integration of the concepts, content and contexts (35 marks) Section A: two compulsory short-answer questions from two of the three content areas Section B: two compulsory short-answer questions asking students to apply their knowledge of content to an unseen situation, each from one of four contexts Section C: two concept-based extended response questions, each from a different context	35%
Paper 2 (1.5 hours) Applying concepts and content to research contexts (35 marks) Section A: four compulsory questions that focus on the class practicals Section B: evaluation of an unseen research study with regard to two or more concepts	35%
Internal assessment (20 hours)	30%
Research proposal (24 marks) Develop a research proposal using one of the four research methods used in the class practicals. This component is internally assessed by the teacher and externally moderated by the IB at the end of the course.	30%

Assessment outline—HL

Assessment component	Weighting
External assessment (4.75 hours)	80%
Paper 1 (1.5 hours) Integration of the concepts, content and contexts (35 marks) Section A: two compulsory short-answer questions from two of the three content areas Section B: two compulsory questions asking students to apply their knowledge of content to an unseen situation, each from one of four contexts Section C: two concept-based extended response questions, each from a different context	25%
Paper 2 (1.5 hours) Applying concepts and content to research contexts (35 marks) Section A: four compulsory questions that focus on the class practicals Section B: evaluation of an unseen research study with regard to two or more concepts	25%
Paper 3 (1.75 hours) Data analysis and interpretation of research data (30 marks) Four source-based questions with quantitative and qualitative findings. The focus of the questions will be from one of the HL extensions.	30%
Internal assessment (20 hours)	20%
Research proposal (24 marks) Develop a research proposal using one of the four research methods used in the class practicals. This component is internally assessed by the teacher and externally moderated by the IB at the end of the course.	

IV. Sample questions

Paper 1: Concepts, contexts and content

Section A: Two short-answer questions designed to assess knowledge and content from two of the three content areas (biological, cognitive, sociocultural).

Biological approach to understanding human behaviour

1. Describe how **one** chemical messenger plays a role in **one** human behaviour. (4 marks)

Cognitive approach to understanding human behaviour

2. Explain anchoring bias with reference to **one** example of human behaviour. (4 marks)

Section B: Two compulsory short answer questions that are designed to assess the student's ability to apply knowledge to a new situation or in a new scenario.

3. With reference to this study, explain the role of models in the study of cognitive processes. (6 marks)
4. Explain how social learning theory could be used to achieve this goal. (6 marks)

Section C: Two concept-based extended response questions, each from a different context. Students will choose one of the two questions to answer.

5. In the context of human development, evaluate **one or more** strategies used by developmental psychologists to measure theory of mind.

6. One claim in health and well-being psychology is that one perspective is not enough to explain mental health. Discuss this claim with reference to **one** biological explanation of one or more disorders.

Paper 2: Research methodology

Section A: Four compulsory questions that focus on the class practicals.

- 1a. Describe how you used an interview or focus group in your class practical. (4 marks)
- 1b. Explain the concept of bias in relation to your interview or focus group class practical. (4 marks)
- 1c. Compare and contrast the use of an interview or focus group used in your class practical with an experiment. (6 marks)
- 1d. Design an observation to investigate the same topic as you investigated in your class practical. (6 marks)

Section B: An experiment or non-experimental study from one of the contexts is provided as stimulus material for which students discuss applying two or more concepts.

2. Discuss the following study with reference to two or more of the following concepts: bias, causality, measurement, and/or responsibility. (15 marks)

Paper 3 (HL only): Source-based questions

Students will be presented with 4–6 sources with research from one of the HL extension topics. Questions will be on the interpretation of graphs, data analysis, research considerations and a synthesis of the sources.

1. Explain one issue that limits the interpretation of the data in source 1. (3 marks)
2. Analyse the findings from source 2 and state a conclusion linked to the claim that use of technology in education may have a negative effect on the mental health of students. (6 marks)
3. Discuss how the researcher could improve the credibility of the findings in source 3. (6 marks)
4. To what extent can we conclude that the use of technology in education may have a negative effect on the mental health of students? (15 marks)

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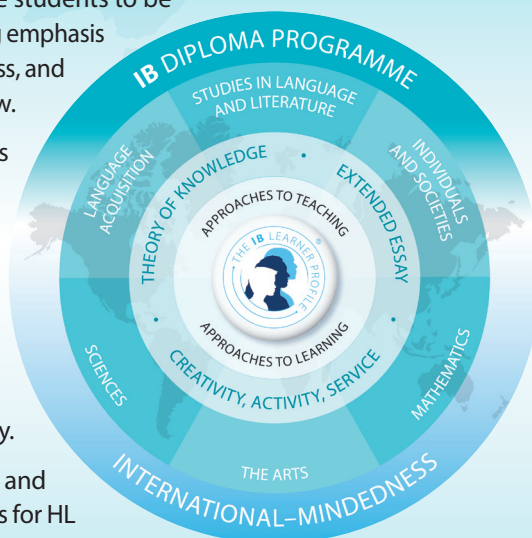
Individuals and societies: Business management—higher level

First assessments 2024

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.



I. Course description and aims

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

Through the exploration of four interdisciplinary concepts: **creativity, change, ethics** and **sustainability**, this course empowers students to explore these concepts from a business perspective. Business management focuses on business functions, management processes and decision-making in contemporary contexts of strategic uncertainty.

Students examine how business decisions are influenced by factors that are internal and external to an organization and how these decisions impact upon a range of internal and external stakeholders. Emphasis is placed on strategic decision-making and the operational business functions of human resource management, finance and accounts, marketing, and operations management.

Business management is a challenging and dynamic discipline that more than meets the needs of our students growing and developing in a complex business environment. This course prepares students to be global citizens ready to face up to the challenges and opportunities awaiting them in our ever-changing world.

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

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

II. Curriculum model overview

Component	Recommended teaching hours
Unit 1: Introduction to business management 1.1 What is a business? 1.2 Types of business entities 1.3 Business objectives 1.4 Stakeholders 1.5 Growth and evolution 1.6 Multinational companies (MNCs)	20
Unit 2: Human resource management 2.1 Introduction to human resource management 2.2 Organizational structure 2.3 Leadership and management 2.4 Motivation and demotivation 2.5 Organizational (corporate) culture (HL only) 2.6 Communication 2.7 Industrial/employee relations (HL only)	35
Unit 3: Finance and accounts 3.1 Introduction to finance 3.2 Sources of finance 3.3 Costs and revenues 3.4 Final accounts 3.5 Profitability and liquidity ratio analysis 3.6 Debt/equity ratio analysis (HL only) 3.7 Cash flow 3.8. Investment appraisal 3.9 Budgets (HL only)	45
Unit 4: Marketing 4.1 Introduction to marketing 4.2 Marketing planning 4.3 Sales forecasting (HL only) 4.4 Market research 4.5 The seven Ps of the marketing mix 4.6 International marketing (HL only)	35

Unit 5: Operations management	45
5.1 Introduction to operations management	
5.2 Operations methods	
5.3 Lean production and quality management (HL only)	
5.4 Location	
5.5 Break-even analysis	
5.6 Production planning (HL only)	
5.7 Crisis management and contingency planning (HL only)	
5.8 Research and development (HL only)	
5.9 Management information systems (HL only)	
Business management toolkit	35
Research time allocated for the pre-released statement in paper 1	5
Internal assessment	20

III. Assessment model

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

AO1: Knowledge and understanding

Demonstrate knowledge and understanding of:

- business management tools and theories
- course topics and concepts
- business problems, issues and decisions
- HL extension topics (HL only).

AO2: Application and analysis

Apply and analyse:

- business management tools and theories
- course topics and concepts
- business problems, issues and decisions
- business decisions and issues through the selection and use of appropriate data
- HL extension topics (HL only).

AO3: Synthesis and evaluation

Synthesize and evaluate:

- business management tools and theories
- course topics and concepts
- business problems, issues and decisions
- stakeholder interests to reach informed business decisions
- recommendations for competing future strategic options (HL only)
- HL extension topics (HL only).

AO4: Use and application of appropriate skills

- Select and apply relevant business management tools, theories and concepts to support research into a business issue or problem.
- Select, interpret and analyse business materials from a range of primary and secondary sources.
- Create well-structured materials using business management terminology.

- Communicate analysis, evaluation and conclusions of research effectively.

Assessment at a glance

Type of assessment	Format of assessment	Time	Weighting of final grade (%)
External		4 hours 30 minutes	80
Paper 1	Based on a pre-released statement that specifies the <i>context</i> and <i>background</i> for the unseen case study	1 hour 30 minutes	25
Paper 2	Based on unseen stimulus material with a quantitative focus	1 hour 45 minutes	30
Paper 3	Based on unseen stimulus material about a social enterprise	1 hour 15 minutes	25
Internal			
Business research project	Students produce a research project about a real business issue or problem facing a particular organization using a conceptual lens	20 hours	20

IV. Sample questions

Paper 1

- Explain **one** advantage and **one** disadvantage for *MT* of being a small business. [4]
- Discuss whether Jackie should accept or reject *KC*'s offer to buy *MT*. [10]

Paper 2

- Using the data provided in **Table 7**, other information in the stimulus, and a Boston Consulting Group (BCG) matrix, recommend to *QS* which e-scooter model should be removed from *QS*'s portfolio in order for the company to remain profitable. [10]

Paper 3

- Using all the resources provided and your knowledge of business management, recommend a possible plan of action to ensure the sustainability of *SML* for the next five years. [17]

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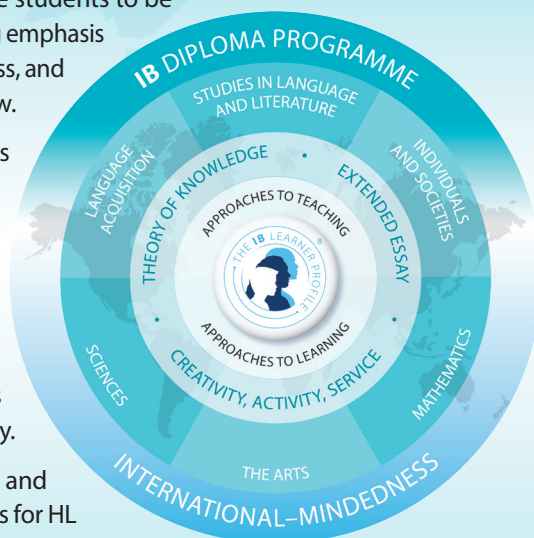
Individuals and societies: Business management—standard level

First assessments 2024

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I. Course description and aims

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Students examine how business decisions are influenced by factors that are internal and external to an organization and how these decisions impact upon a range of internal and external stakeholders. Emphasis is placed on strategic decision-making and the operational business functions of human resource management, finance and accounts, marketing, and operations management.

Business management is a challenging and dynamic discipline that more than meets the needs of our students growing and developing in a complex business environment. This course prepares students to be global citizens ready to face up to the challenges and opportunities awaiting them in our ever-changing world.

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

1. develop as confident, creative and compassionate business leaders, entrepreneurs, social entrepreneurs and as change agents
2. foster an informed understanding of ethical and sustainable business practices
3. explore the connections between individuals, businesses and society
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II. Curriculum model overview

Component	Recommended teaching hours
Unit 1: Introduction to business management 1.1 What is a business? 1.2 Types of business entities 1.3 Business objectives 1.4 Stakeholders 1.5 Growth and evolution 1.6 Multinational companies (MNCs)	20
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Unit 4: Marketing 4.1 Introduction to marketing 4.2 Marketing planning 4.3 Sales forecasting (HL only) 4.4 Market research 4.5 The seven Ps of the marketing mix 4.6 International marketing (HL only)	30

Unit 5: Operations management	15
5.1 Introduction to operations management	
5.2 Operations methods	
5.3 Lean production and quality management (HL only)	
5.4 Location	
5.5 Break-even analysis	
5.6 Production planning (HL only)	
5.7 Crisis management and contingency planning (HL only)	
5.8 Research and development (HL only)	
5.9 Management information systems (HL only)	
Business management toolkit	10
Research time allocated for the pre-released statement in paper 1	5
Internal assessment	20

III. Assessment model

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

AO1: Knowledge and understanding

Demonstrate knowledge and understanding of:

- business management tools and theories
- course topics and concepts
- business problems, issues and decisions
- HL extension topics (HL only).

AO2: Application and analysis

Apply and analyse:

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- course topics and concepts
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- HL extension topics (HL only).

AO3: Synthesis and evaluation

Synthesize and evaluate:

- business management tools and theories
- course topics and concepts
- business problems, issues and decisions
- stakeholder interests to reach informed business decisions
- recommendations for competing future strategic options (HL only)
- HL extension topics (HL only).

AO4: Use and application of appropriate skills

- Select and apply relevant business management tools, theories and concepts to support research into a business issue or problem.
- Select, interpret and analyse business materials from a range of primary and secondary sources.
- Create well-structured materials using business management terminology.

- Communicate analysis, evaluation and conclusions of research effectively.

Assessment at a glance

Type of assessment	Format of assessment	Time	Weighting of final grade (%)
External		3 hours	70
Paper 1	Based on a pre-released statement that specifies the <i>context</i> and <i>background</i> for the unseen case study	1 hour 30 minutes	35
Paper 2	Based on unseen stimulus material with a quantitative focus	1 hour 30 minutes	35
Internal			
Business research project	Students produce a research project about a real business issue or problem facing a particular organization using a conceptual lens	20 hours	30

IV. Sample questions

Paper 1

- Explain **one** advantage and **one** disadvantage for *MT* of being a small business. [4]
- Discuss whether Jackie should accept or reject KC's offer to buy *MT*. [10]

Paper 2

- Using the information in the stimulus, evaluate WM's decision to shift from mass production to mass customization. [10]

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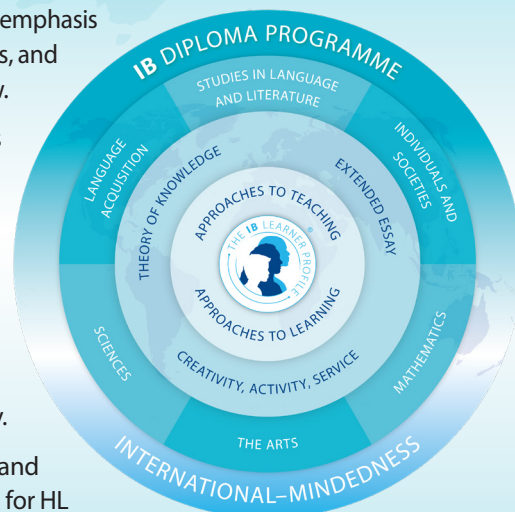
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First assessment 2028

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I. Course description and aims

DP history is a dynamic, evidence-based, interpretative discipline that engages with the past.

The overarching emphasis of the DP history course is on teaching students to think historically. This means engaging students in different forms of historical inquiry. The course allows students to explore the past through a variety of contexts, concepts, content and skills. In this interpretative discipline, students will engage with diverse perspectives and evidence to reach their own judgements.

The DP history course is a world history course, grounded in a variety of global, regional and national themes, and allowing for a mixture of comparative, thematic and in-depth studies. It provides a balance of structure and flexibility, enabling the course to be implemented in a wide range of contexts.

History is both an academic discipline and a part of the everyday, lived experience of all students. History informs identity, culture, society, politics, and the relationships between individuals and communities. Through the course, students will develop an understanding and appreciation of history in all these dimensions.

All individuals and societies subjects help young people develop a connection to our shared planet, exploring how to live sustainably and promoting the well-being of all people in our pursuit of a more peaceful world.

The aims of all the individuals and societies subjects are to equip students to:

- explore and critically engage with multiple perspectives and ways of thinking
- investigate and evaluate the interactions between individuals and societies
- think and act as informed and principled individuals in societies
- understand and value the variety and diversity of the human experience across time and place.

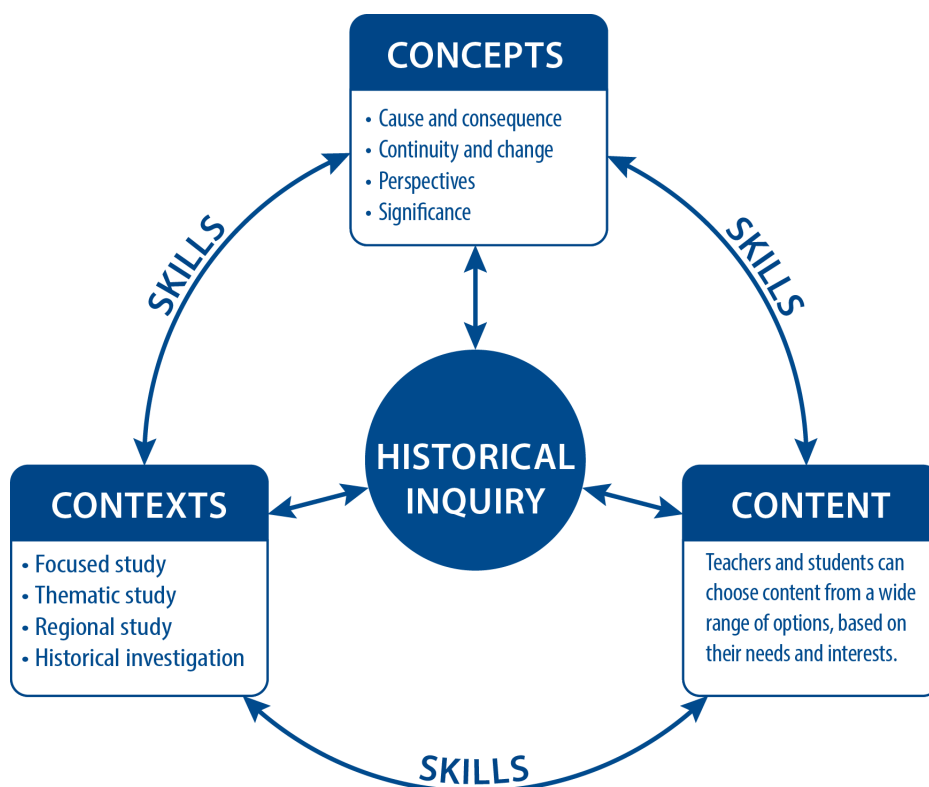
In the DP history course, students will:

- inquire into the past through historical contexts, concepts, content and skills
- investigate historical events, issues and topics
- explore and evaluate diverse historical perspectives and arguments
- examine diverse historical identities and experiences.

II. Curriculum model overview

The curriculum model integrates contexts, concepts, content and skills through historical inquiry (figure 1).

Figure 1: Curriculum model



At the centre of the curriculum model is historical inquiry. Historical inquiry should be understood as an active, student-centred process of constructing meaning about the past. Students are invited not simply to “study history”, but to “do history”.

All the parts of the curriculum model are interconnected, both with each other and with historical inquiry. These parts are as follows.

- **Concepts** situate content in different ways. The history course uses four inquiry contexts to scaffold the course content, enabling the study of diverse topics in different ways. These include the focused study, thematic study, regional study and historical investigation.
- **Concepts** focus historical inquiry with powerful, pervasive and debatable ideas. The history course has four specified historical concepts: cause and consequence, continuity and change, perspectives, and significance.
- **Content** informs historical inquiry with detail and examples. Teachers and students can choose content from a wide range of options, based on their needs and interests.
- **Skills** support historical inquiry with practical processes. The history course highlights a variety of historical skills.

Syllabus component	Teaching hours	
	SL	HL
Focused study Select one of the five following options. Each option contains two focused studies, both of which must be studied. • Independence and identity • Political and economic transitions • Conflict and displacement • Climate and innovation • Protest and change	50	50
Thematic study Select one of the four following options. • Conflict (from 750 CE) • Innovation and transformation (from 750 CE) • Authoritarian rule (from 1750 CE) • Popular movements (from 1750 CE)	80	80
Regional study (HL only) Select one region, and then two studies from the chosen region. • Africa and the Middle East • The Americas • Asia and Oceania • Europe	-	90
Historical investigation Internal assessment	20	20
Total teaching hours	150	240

III. Assessment model

The course assesses students' **knowledge and understanding, application and analysis, and evaluation and synthesis** of six different elements of the course. These elements are:

- historical inquiry contexts
- historical concepts
- historical sources
- historical content
- historical arguments
- historical inquiry questions.

The following table shows how the different elements of the course are assessed in different ways. It also shows, in parentheses, the assessment component (paper 1, paper 2, paper 3 or the internal assessment [IA]) that is associated with each assessment objective.

Element	Knowledge and understanding	Application and analysis	Evaluation and synthesis
Historical inquiry contexts	Know and understand historical inquiry contexts (paper 1, paper 2, paper 3, IA)	Apply historical inquiry contexts (paper 1, paper 2, paper 3, IA)	
Historical concepts	Know and understand historical concepts (paper 1, paper 2, paper 3, IA)	Apply historical concepts (paper 1, paper 2, paper 3, IA) and analyse concepts (paper 2)	
Historical sources	Understand content from historical sources (paper 1, IA)	Analyse context of historical sources (paper 1, IA)	Evaluate and synthesize perspectives of historical sources (paper 1, IA)
Historical content	Know and understand historical content (paper 2, paper 3, IA)	Apply and analyse historical content (paper 2, paper 3, IA)	Synthesize historical content (paper 2)
Historical arguments	Understand historical arguments (paper 1, paper 2, paper 3, IA)	Analyse historical arguments (paper 2, paper 3, IA)	Evaluate and synthesize historical arguments (paper 3)
Historical inquiry questions	Understand historical inquiry questions (paper 1, paper 2, paper 3, IA)	Analyse historical inquiry questions (paper 1, paper 2, paper 3, IA)	Formulate an appropriate historical inquiry question (IA)

In some ways, the table demonstrates how the objectives of the course are progressive and build upon each other. For example, it would be difficult to evaluate a source if you did not first understand the source. However, it does not necessarily follow that the last column is inherently more complex or challenging than earlier columns. To “understand” a concept is a demanding cognitive challenge, and to apply it even more so. It is better to see these ways of thinking about various parts of the course as interconnected and interdependent.

Paper 1

In paper 1, students are assessed on their **understanding** of the content of two historical sources in relation to an inquiry question (question 1), their **analysis** of how the context of a source shapes how it can be used (question 2), and their **synthesis** of the perspectives from diverse historical sources (question 3). In all their responses, students will need to **apply** knowledge and understanding from the relevant focused study.

Paper 2

In paper 2, section A, students are assessed on their **analysis** of historical concepts, illustrated with an **understanding** of a relevant historical example from their thematic study. In section B, part 1, they are assessed on their **understanding** of a historical example from their thematic study. In section B, part 2, they are assessed on their **synthesis** of diverse historical examples from their thematic study to formulate an **analytical** argument. In all their responses, students will need to **apply** knowledge and understanding from their thematic study.

Paper 3 (HL only)

In paper 3, students will need to show an in-depth **understanding** of the argument in the question. They will be assessed on their **evaluation** of historical perspectives to formulate an evaluative argument. Students will need to **apply** knowledge and understanding from the regional study.

Internal assessment

In section 1 of the IA, students are assessed on their **formulation** of an appropriate question to guide their historical investigation. In section 2, they are assessed on their **analysis** of the sources they have chosen. In section 3, students must **synthesize** evidence from the sources to produce a response. Students will need to **apply** knowledge and understanding from their chosen topic.

Assessment at a glance

Assessment outline—SL

Assessment component	Weighting
External assessment (3 hours)	70%
Paper 1 (1 hour 15 minutes) Source-based assessment on the five focused studies, linked by an overarching inquiry question. Students respond to three static questions. Students answer all the questions for one of the focused studies. (24 marks)	30%
Paper 2 (1 hour 45 minutes) Section A: two questions on the specified concepts. Students choose one question to answer. Section B: two questions on each of the four thematic studies. Each question consists of two parts—a short response and an essay response. Students choose one of the two questions for their thematic study and answer both parts of that question. (25 marks)	40%
Internal assessment (20 hours)	30%
Historical investigation This component is internally assessed by the teacher and externally moderated by the IB at the end of the course. Students investigate a historical topic of their choice. They formulate an inquiry question, identify and choose sources, synthesize information and evaluate sources to produce a response. (24 marks)	30%

Assessment outline—HL

Assessment component	Weighting
External assessment (5 hours)	80%
Paper 1 (1 hour 15 minutes) Source-based assessment on the five focused studies, linked by an overarching inquiry question. Students respond to three static questions. Students answer all the questions for one of the focused studies. (24 marks)	20%
Paper 2 (1 hour 45 minutes) Section A: two questions on the specified concepts. Students choose one question to answer. Section B: two questions on each of the four thematic studies. Each question consists of two parts—a short response and an essay response. Students choose one of the two questions for their thematic study and answer both parts of that question. (25 marks)	25%
Paper 3 (2 hours) Separate papers for each of the four regions. Two essay questions on each of the 12 regional studies within the selected region. Students choose to answer two questions, each from a different regional study. (30 marks)	35%
Internal assessment (20 hours)	20%
Historical investigation This component is internally assessed by the teacher and externally moderated by the IB at the end of the course. Students investigate a historical topic of their choice. They formulate an inquiry question, identify and choose sources, synthesize information and evaluate sources to produce a response. (24 marks)	20%

IV. Sample questions

Paper 1

Using the three provided sources on post-Second World War displacement in Europe and considering the overarching inquiry question of “To what extent was persecution the main reason for post-war mass displacement in Europe?”, respond to the following three questions.

1. Explain how the content of both source A and source B can be used to answer the inquiry question.
2. Analyse how the context of source C influences how it can be used to answer the inquiry question.
3. Examine how the perspectives in all the sources can be used to answer the inquiry question.

Paper 2

Section A

- Analyse how historical events can have multiple causes. Use one example from your thematic study to support your response.
- Analyse how historical events can be seen from different perspectives. Use one example from your thematic study to support your response.

Section B

- Part A: Explain how conflict can affect the experience of a marginalized group. Use one example from your thematic study in your response.
- Part B: To what extent has the mobilization of resources been the most important factor in determining the outcome of conflict? Use examples from at least two different conflicts in at least two regions to support your response.

Paper 3 (HL only)

- To what extent do you agree with the claim that papal patronage was the most significant factor in the development of the Italian Renaissance?
- “The Mexican Revolution significantly changed the role of women.” To what extent do you agree with this statement?
- To what extent do you agree with the perspective that the African National Congress (ANC) adopted armed struggle because of the Sharpeville Massacre?
- “The main reason for the outbreak of war in Korea in 1950 was contrasting views on free elections.” To what extent do you agree with this claim?

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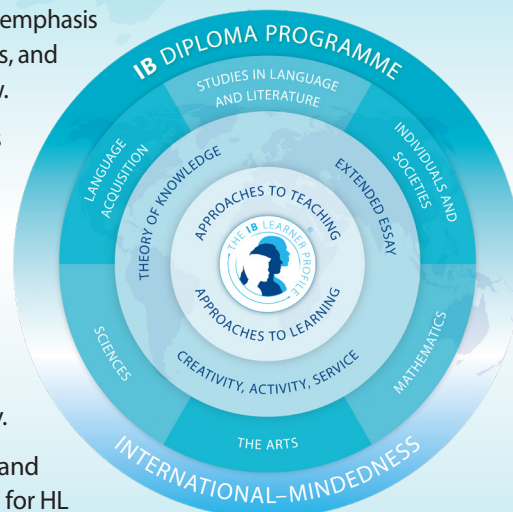
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I. Course description and aims

The DP computer science course requires an understanding of the fundamental concepts of computing systems and the ability to apply the computational thinking process to solve problems in the real world. The course also requires students to develop skills in algorithmic thinking and computer programming.

DP computer science is engaging, accessible, inspiring and rigorous, and has the following characteristics. The course:

- draws on a wide spectrum of knowledge of computer systems
- develops skills in algorithmic thinking and computer programming
- is underpinned by the computational thinking process
- enables and empowers innovation, exploration and the acquisition of further knowledge
- includes the study of machine learning
- raises ethical issues.

Computational thinking involves the ability to:

- specify problems in terms of their computational context and determine success criteria
- decompose complex real-world problems into more manageable problems
- abstract problems and generalize them to enable algorithmic thinking and to develop solutions
- test and evaluate solutions for improvements.

During the course, students will develop a computational solution. This will develop their ability to identify a problem or unanswered question, and design, develop and evaluate a proposed solution.

The course enables students to:

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

II. Curriculum model overview

The DP computer science course is organized into two key themes:

- Theme A: Concepts in computer science
- Theme B: Computational thinking and problem-solving

Theme A focuses on how computing systems work. Theme B focuses on how we can use computing systems to solve real-world problems.

The course also has a practical dimension, comprising the computational solution (internal assessment) and the collaborative sciences project.

The course can be studied in either the Python or Java programming languages.

Component	Recommended teaching hours	
	SL	HL
Syllabus content	105	195
A Concepts of computer science		
A.1 Computer fundamentals	11	18
A.2 Networks	11	18
A.3 Databases	11	18
A.4 Machine learning	5	18
B Computational thinking and problem-solving		
B.1 Computational thinking	5	5
B.2 Programming	40	42
B.3 Object oriented programming (OOP)	7	23
B.4 Abstract data types (HL only)	0	23
Case study	15	30
Internal assessment	35	35
The computational solution	35	35
Collaborative sciences project	10	10
Total teaching hours	150	240

III. Assessment model

There are four assessment objectives for the DP computer science course. At the end of the course, students are expected to have met the following objectives:

Assessment Objective 1—Demonstrate knowledge and understanding of:

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

Assessment Objective 2—Apply and use:

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

Assessment Objective 3—Construct, synthesize, analyse and evaluate:

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

Assessment Objective 4—Demonstrate the application of computational thinking skills to solve real-world problems using computer science solutions.

Assessment at a glance

Type of assessment	Format of assessment	Time (weighting of final grade)	
		SL	HL
External		2 hours 30 minutes (70%)	4 hours (80%)
Paper 1	- Questions focused on the four topics in theme A, “Concepts of computer science”. - The paper also consists of three questions related to the case study.	1 hour 15 minutes (35%)	2 hours (40%)
Paper 2	- Questions for SL and HL focused on the three topics in theme B, “Computational thinking and problem-solving”. - Additional questions for HL, focused on OOP and abstract data types. Students can answer questions in either Java or Python.	1 hour 15 minutes (35%)	2 hours (40%)
Internal			
The computational solution	Students develop a computational solution to a real-world problem of their own choosing. The solution should use the concepts, skills and tools acquired in the course and the computational thinking process.	35 hours (30%)	35 hours (20%)

Programming is required to answer some of the questions on Paper 2. Questions that require programming will have equivalent versions for students to choose from, one in Java and the other in Python, according to the programming language they have studied.

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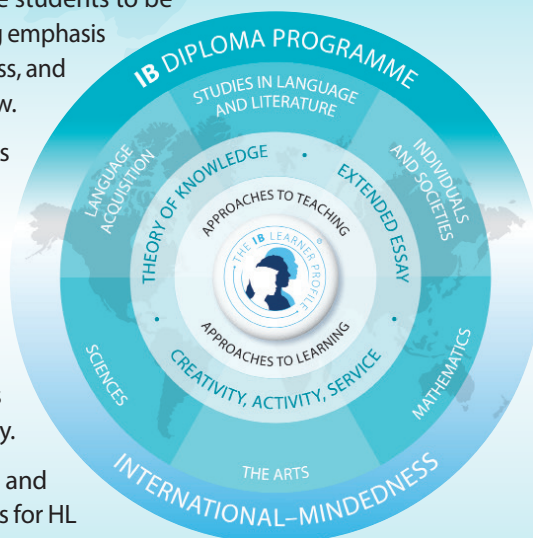
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The course is presented as six academic areas enclosing a central core. Students study two modern languages (or a modern language and a classical language), a humanities or social science subject, an experimental science, mathematics and one of the 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.



I. Course description and aims

As one of the three natural sciences in the IB Diploma Programme, biology is primarily concerned with the study of life and living systems. Biologists attempt to make sense of the world through a variety of approaches and techniques, controlled experimentation and collaboration between scientists. At a time of global introspection on human activities and their impact on the world around us, developing and communicating a clear understanding of the living world has never been of greater importance than it is today.

Through the study of DP biology, students are empowered to make sense of living systems through unifying themes. By providing opportunities for students to explore conceptual frameworks, they are better able to develop understanding and awareness of the living world around them. This is carried further through a study of interactions at different levels of biological organization, from molecules and cells to ecosystems and the biosphere. Integral to the student experience of the DP biology course is the learning that takes place through scientific inquiry. With an emphasis on experimental work, teachers provide students with opportunities to ask questions, design experiments, collect and analyse data, collaborate with peers, and reflect, evaluate and communicate their findings.

DP biology enables students to constructively engage with topical scientific issues. Students examine scientific knowledge claims in a real-world context, fostering interest and curiosity. By exploring the subject, they develop understandings, skills and techniques which can be applied across their studies and beyond.

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

1. develop conceptual understanding that allows connections to be made between different areas of the subject, and to other DP sciences subjects
2. acquire and apply a body of knowledge, methods, tools and techniques that characterize science
3. develop the ability to analyse, evaluate and synthesize scientific information and claims
4. develop the ability to approach unfamiliar situations with creativity and resilience
5. design and model solutions to local and global problems in a scientific context
6. develop an appreciation of the possibilities and limitations of science
7. develop technology skills in a scientific context
8. develop the ability to communicate and collaborate effectively
9. develop awareness of the ethical, environmental, economic, cultural and social impact of science.

II. Curriculum model overview

The DP biology course promotes concept-based teaching and learning to foster critical thinking.

The DP biology course is built on:

- approaches to learning
- nature of science
- skills in the study of biology.

These three pillars support a broad and balanced experimental programme. As students progress through the course, they become familiar with traditional experimentation techniques, as well as the application of technology. These opportunities help them to develop their investigative skills and evaluate the impact of error and uncertainty in scientific inquiry. The scientific investigation then places a specific emphasis on inquiry-based skills and the formal communication of scientific knowledge. Finally, the collaborative sciences project extends the development of scientific communication in a collaborative and interdisciplinary context, allowing students to work together beyond the confines of biology.

Syllabus component	Recommended teaching hours	
	SL	HL
Syllabus content	110	180
Unity and diversity • Water • Nucleic acids • Origins of cells * • Cell structure • Viruses * • Diversity of organisms • Classification and cladistics * • Evolution and speciation • Conservation of biodiversity	19	33

Syllabus component	Recommended teaching hours	
	SL	HL
Form and function • Carbohydrates and lipids • Proteins • Membranes and membrane transport • Organelles and compartmentalization • Cell specialization • Gas exchange • Transport • Muscle and motility * • Adaptation to environment • Ecological niches	26	39
Interaction and interdependence • Enzymes and metabolism • Cell respiration • Photosynthesis • Chemical signalling * • Neural signalling • Integration of body systems • Defence against disease • Populations and communities • Transfer of energy and matter	31	48
Continuity and change • DNA replication • Protein synthesis • Mutations and gene editing • Cell and nuclear division • Gene expression * • Water potential • Reproduction • Inheritance • Homeostasis • Natural selection • Sustainability and change • Climate change	34	60
Experimental programme	40	60
Practical work	20	40
Collaborative sciences project	10	10
Scientific investigation	10	10

* Topics with content that should only be taught to HL students

Skills in the study of biology

The skills and techniques students must experience through the course are encompassed within the tools. These support the application and development of the inquiry process in the delivery of the biology course.

Tools

- Experimental techniques
- Technology
- Mathematics

Inquiry process

- Exploring and designing
- Collecting and processing data
- Concluding and evaluating

Teachers are encouraged to provide opportunities for students to encounter and practise the skills throughout the programme. Rather than being taught as stand-alone topics, these skills should be integrated into the teaching of the syllabus when they are relevant to the syllabus topics being covered.

III. Assessment model

There are four assessment objectives for the DP biology course. Having followed the biology course, students are expected to demonstrate the following assessment objectives.

Assessment objective 1

Demonstrate knowledge of:

- terminology, facts and concepts
- skills, techniques and methodologies.

Assessment objective 2

Understand and apply knowledge of:

- terminology and concepts
- skills, techniques and methodologies.

Assessment objective 3

Analyse, evaluate, and synthesize:

- experimental procedures
- primary and secondary data
- trends, patterns and predictions.

Assessment objective 4

Demonstrate the application of 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	
External		3	4.5	80
Paper 1	Paper 1A: Multiple-choice questions Paper 1B: Data-based questions (four questions that are syllabus related, addressing all themes)	1.5	2	36
Paper 2	Data-based and short-answer questions Extended-response questions	1.5	2.5	44
Internal		10		20
Scientific investigation	The scientific investigation is an open-ended task in which the student gathers and analyses data in order to answer their own formulated research question. The outcome of the scientific investigation will be assessed through the form of a written report. The maximum overall word count for the report is 3,000 words.	10		20

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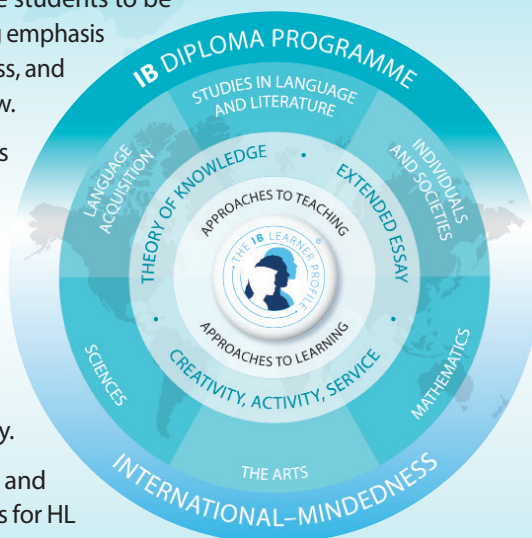
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The course is presented as six academic areas enclosing a central core. Students study two modern languages (or a modern language and a classical language), a humanities or social science subject, an experimental science, mathematics and one of the 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.



I. Course description and aims

As one of the three natural sciences in the IB Diploma Programme, chemistry is primarily concerned with identifying patterns that help to explain matter at the microscopic level. This then allows matter's behaviour to be predicted and controlled at a macroscopic level. The subject therefore emphasizes the development of representative models and explanatory theories, both of which rely heavily on creative but rational thinking.

DP chemistry enables students to constructively engage with topical scientific issues. Students examine scientific knowledge claims in a real-world context, fostering interest and curiosity. By exploring the subject, they develop understandings, skills and techniques which can be applied across their studies and beyond.

Integral to the student experience of the DP chemistry course is the learning that takes place through scientific inquiry both in the classroom and the laboratory.

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

1. develop conceptual understanding that allows connections to be made between different areas of the subject, and to other DP sciences subjects
2. acquire and apply a body of knowledge, methods, tools and techniques that characterize science
3. develop the ability to analyse, evaluate and synthesize scientific information and claims
4. develop the ability to approach unfamiliar situations with creativity and resilience
5. design and model solutions to local and global problems in a scientific context
6. develop an appreciation of the possibilities and limitations of science
7. develop technology skills in a scientific context
8. develop the ability to communicate and collaborate effectively
9. develop awareness of the ethical, environmental, economic, cultural and social impact of science.

II. Curriculum model overview

The DP chemistry course promotes concept-based teaching and learning to foster critical thinking.

The DP chemistry course is built on:

- approaches to learning
- nature of science
- skills in the study of chemistry.

These three pillars support a broad and balanced experimental programme. As students progress through the course, they become familiar with traditional experimentation techniques, as well as the application of technology. These opportunities help them to develop their investigative skills and evaluate the impact of error and uncertainty in scientific inquiry. The scientific investigation then places a specific emphasis on inquiry-based skills and the formal communication of scientific knowledge. Finally, the collaborative sciences project extends the development of scientific communication in a collaborative and interdisciplinary context, allowing students to work together beyond the confines of chemistry.

Syllabus component	Recommended teaching hours	
	SL	HL
Syllabus content	110	180
Structure 1. Models of the particulate nature of matter Structure 1.1—Introduction to the particulate nature of matter Structure 1.2—The nuclear atom Structure 1.3—Electron configurations Structure 1.4—Counting particles by mass: The mole Structure 1.5—Ideal gases	17	21
Structure 2. Models of bonding and structure Structure 2.1—The ionic model Structure 2.2—The covalent model Structure 2.3—The metallic model Structure 2.4—From models to materials	20	30
Structure 3. Classification of matter Structure 3.1—The periodic table: Classification of elements Structure 3.2—Functional groups: Classification of organic compounds	16	31
Reactivity 1. What drives chemical reactions? Reactivity 1.1—Measuring enthalpy change Reactivity 1.2—Energy cycles in reactions Reactivity 1.3—Energy from fuels Reactivity 1.4—Entropy and spontaneity (Additional higher level)	12	22
Reactivity 2. How much, how fast and how far? Reactivity 2.1—How much? The amount of chemical change Reactivity 2.2—How fast? The rate of chemical change Reactivity 2.3—How far? The extent of chemical change	21	31

Reactivity 3. What are the mechanisms of chemical change?	24	45
Reactivity 3.1—Proton transfer reactions		
Reactivity 3.2—Electron transfer reactions		
Reactivity 3.3—Electron sharing reactions		
Reactivity 3.4—Electron-pair sharing reactions		
Experimental programme	40	60
Practical work	20	40
Collaborative sciences project	10	10
Scientific investigation	10	10

Skills in the study of chemistry

The skills and techniques students must experience through the course are encompassed within the tools. These support the application and development of the inquiry process in the delivery of the chemistry course.

Tools

- Experimental techniques
- Technology
- Mathematics

Inquiry process

- Exploring and designing
- Collecting and processing data
- Concluding and evaluating

Teachers are encouraged to provide opportunities for students to encounter and practise the skills throughout the programme. Rather than being taught as stand-alone topics, these skills should be integrated into the teaching of the syllabus when they are relevant to the syllabus topics being covered.

III. Assessment model

There are four assessment objectives for the DP chemistry course. Having followed the chemistry course, students are expected to demonstrate the following assessment objectives.

Assessment objective 1

Demonstrate knowledge of:

- terminology, facts and concepts
- skills, techniques and methodologies.

Assessment objective 2

Understand and apply knowledge of:

- terminology and concepts
- skills, techniques and methodologies.

Assessment objective 3

Analyse, evaluate, and synthesize:

- experimental procedures
- primary and secondary data
- trends, patterns and predictions.

Assessment objective 4

Demonstrate the application of 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	
External		3	4.5	80
Paper 1	Paper 1A: Multiple-choice questions Paper 1B: Data-based questions and questions on experimental work	1.5	2	36
Paper 2	Short answer and extended-response questions	1.5	2.5	44
Internal		10		20
Scientific investigation	The scientific investigation is an open-ended task in which the student gathers and analyses data in order to answer their own formulated research question. The outcome of the scientific investigation will be assessed through the form of a written report. The maximum overall word count for the report is 3,000 words.	10		20

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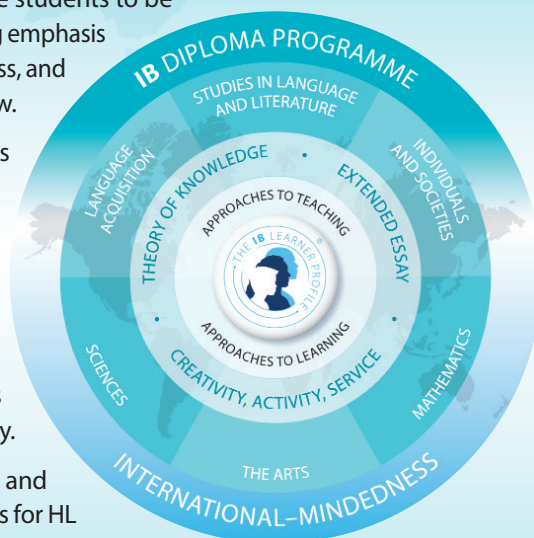
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The course is presented as six academic areas enclosing a central core. Students study two modern languages (or a modern language and a classical language), a humanities or social science subject, an experimental science, mathematics and one of the 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.

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I. Course description and aims

As one of the three natural sciences in the IB Diploma Programme, physics is concerned with an attempt to understand the natural world; from determining the nature of the atom to finding patterns in the structure of the universe. It is the search for answers from how the universe exploded into life to the nature of time itself. Observations are 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 leading to a better understanding of the natural world, physics gives us the ability to alter our environments.

DP physics enables students to constructively engage with topical scientific issues. Students examine scientific knowledge claims in a real-world context, fostering interest and curiosity. By exploring the subject, they develop understandings, skills and techniques which can be applied across their studies and beyond.

Integral to the student experience of the DP physics course is the learning that takes place through scientific inquiry both in the classroom and the laboratory.

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

1. develop conceptual understanding that allows connections to be made between different areas of the subject, and to other DP sciences subjects
2. acquire and apply a body of knowledge, methods, tools and techniques that characterize science
3. develop the ability to analyse, evaluate and synthesize scientific information and claims
4. develop the ability to approach unfamiliar situations with creativity and resilience
5. design and model solutions to local and global problems in a scientific context
6. develop an appreciation of the possibilities and limitations of science
7. develop technology skills in a scientific context

8. develop the ability to communicate and collaborate effectively
9. develop awareness of the ethical, environmental, economic, cultural and social impact of science.

II. Curriculum model overview

The DP physics course promotes concept-based teaching and learning to foster critical thinking.

The DP physics course is built on:

- approaches to learning
- nature of science
- skills in the study of physics.

These three pillars support a broad and balanced experimental programme. As students progress through the course, they become familiar with traditional experimentation techniques, as well as the application of technology. These opportunities help them to develop their investigative skills and evaluate the impact of error and uncertainty in scientific inquiry. The scientific investigation then places a specific emphasis on inquiry-based skills and the formal communication of scientific knowledge. Finally, the collaborative sciences project extends the development of scientific communication in a collaborative and interdisciplinary context, allowing students to work together beyond the confines of physics.

Syllabus component	Recommended teaching hours	
	SL	HL
Syllabus content	110	180
A Space, time and motion A.1 Kinematics • A.2 Forces and momentum • A.3 Work, energy and power • A.4 Rigid body mechanics ... A.5 Galilean and special relativity ...	27	42
B. The particulate nature of matter B.1 Thermal energy transfers • B.2 Greenhouse effect • B.3 Gas laws • B.4 Thermodynamics ... B.5 Current and circuits •	24	32
C. Wave behaviour C.1 Simple harmonic motion .. C.2 Wave model • C.3 Wave phenomena .. C.4 Standing waves and resonance • C.5 Doppler effect ..	17	29
D. Fields D.1 Gravitational fields .. D.2 Electric and magnetic fields .. D.3 Motion in electromagnetic fields • D.4 Induction ...	19	38

E. Nuclear and quantum physics	23	39
E.1 Structure of the atom ••		
E.2 Quantum physics •••		
E.3 Radioactive decay ••		
E.4 Fission •		
E.5 Fusion and stars •		
Experimental programme	40	60
Practical work	20	40
Collaborative sciences project	10	10
Scientific investigation	10	10

Key to table:

- Topics with content that should be taught to all students
- Topics with content that should be taught to all students plus additional HL content
- Topics with content that should only be taught to HL students

Skills in the study of physics

The skills and techniques students must experience through the course are encompassed within the tools. These support the application and development of the inquiry process in the delivery of the physics course.

Tools

- Experimental techniques
- Technology
- Mathematics

Inquiry process

- Exploring and designing
- Collecting and processing data
- Concluding and evaluating

Teachers are encouraged to provide opportunities for students to encounter and practise the skills throughout the programme. Rather than being taught as stand-alone topics, these skills should be integrated into the teaching of the syllabus when they are relevant to the syllabus topics being covered.

III. Assessment model

There are four assessment objectives for the DP physics course. Having followed the physics course, students are expected to demonstrate the following assessment objectives.

Assessment objective 1

Demonstrate knowledge of:

- terminology, facts and concepts
- skills, techniques and methodologies.

Assessment objective 2

Understand and apply knowledge of:

- terminology and concepts
- skills, techniques and methodologies.

Assessment objective 3

Analyse, evaluate, and synthesize:

- experimental procedures
- primary and secondary data
- trends, patterns and predictions.

Assessment objective 4

Demonstrate the application of 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	
External		3	4.5	80
Paper 1	Paper 1A: Multiple-choice questions Paper 1B: Data-based questions	1.5	2	36
Paper 2	Short-answer and extended-response questions	1.5	2.5	44
Internal		10		20
Scientific investigation	The scientific investigation is an open-ended task in which the student gathers and analyses data in order to answer their own formulated research question. The outcome of the scientific investigation will be assessed through the form of a written report. The maximum overall word count for the report is 3,000 words.	10		20

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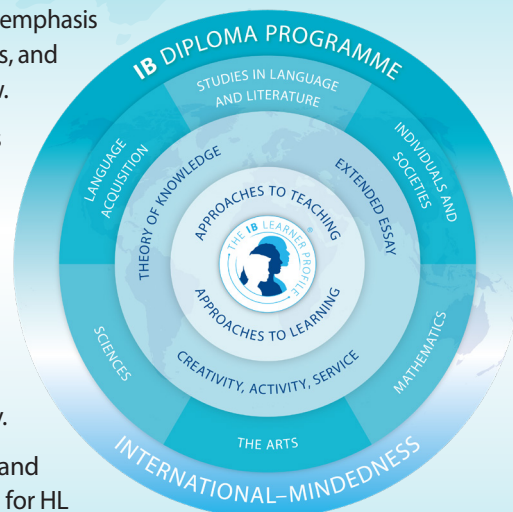
Environmental systems and societies

First assessment 2026

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.



I. Course description and aims

Environmental systems and societies (ESS) is an interdisciplinary course, encompassing both the sciences and individuals and societies and is offered at both standard level (SL) and higher level (HL). As such, ESS combines a mixture of methodologies, techniques and knowledge associated with both the sciences and individuals and societies.

ESS is both a complex and contemporary course that engages students in the challenges of 21st century environmental issues. Consequently, it requires its students to develop a diverse set of skills, knowledge and understanding from different disciplines. Students develop a scientific approach through explorations of environmental systems. They also acquire understandings and methods from individuals and societies subjects whilst studying sustainability issues within social, cultural, economic, political, and ethical contexts. The interdisciplinary nature of the course means students produce a synthesis of understanding from the various topics studied. It also emphasizes the ability to perform research and investigations and to participate in philosophical, ethical, and pragmatic discussions of the issues involved from the local through to the global level.

ESS aims to empower and equip students to:

1. develop understanding of their own environmental impact, in the broader context of the impact of humanity on the Earth and its biosphere
2. develop knowledge of diverse perspectives to address issues of sustainability
3. engage and evaluate the tensions around environmental issues using critical thinking
4. develop a systems approach that provides a holistic lens for the exploration of environmental issues
5. be inspired to engage in environmental issues across local and global contexts.

Because of the interdisciplinary nature of the subject, students can choose to study ESS to count as either a sciences or individuals and societies course, or as both. In this latter option, students have the opportunity to study an additional subject from any other subject group, including the sciences and individuals and societies subjects.

II. Curriculum model overview

The ESS course has at its heart the intention of providing students with the capacity to understand and make informed decisions regarding the pressing environmental issues we face. A conceptual, interdisciplinary approach is essential to problem solving in ESS as this allows for truly holistic thinking about impending sustainability challenges.

The ESS course engages students and teachers with a conceptual approach. All students are encouraged to integrate the three key concepts of perspectives, systems and sustainability throughout the course. These concepts are given special focus within the foundation's unit.

Students at SL and HL share the following:

- the study of a concept-based syllabus
- a course which promotes holistic thinking about environmental issues and their solutions
- a foundations unit which introduces and explores the three concepts: perspectives, systems and sustainability
- one piece of internally assessed work, the internal assessment (IA)
- the collaborative sciences project.

The SL course provides students with a fundamental understanding of environmental studies and experience of the associated concepts and skills. The HL course requires students to extend their knowledge and understanding of the subject, exploring the complexity of issues with additional breadth and depth, providing a solid foundation for further study at university level.

The foundations unit is designed to be the starting point for both standard and higher level courses. Other topics contain additional HL content, which provide both greater breadth and depth. The SL course has a recommended 150 teaching hours and the HL course 240 hours. This difference is reflected in the additional content studied by HL students.

The HL course has three HL only lenses—environmental law, environmental and ecological economics, and environmental ethics. The conceptually more demanding HL lenses allow for far more sophisticated processing and balanced viewpoints. The additional HL content requires the student to make more connections between diverse areas of the syllabus, resulting in increased networked knowledge and a comprehensive understanding of the complexities of environmental issues as well as possible strategies, solutions and management. HL students are required to demonstrate critical evaluation and to synthesize material in the core content (common to both SL and HL), HL extension material and HL lenses, facilitating a more complete view of a problem with analysis at greater breadth and depth.

Syllabus component	Recommended teaching hours	
	SL	HL
Syllabus content	100	190
<i>Topic 1 Foundation</i>	16	
1.1 Perspectives	3	
1.2 Systems	5	
1.3 Sustainability	8	
Topic 2 Ecology	22	35
Topic 3 Biodiversity and conservation	13	26
Topic 4 Water	12	25
Topic 5 Land	8	15
Topic 6 Atmosphere and climate change	10	23
Topic 7 Natural resources	10	18
Topic 8 Human populations and urban systems	9	15
<i>Higher level (HL) lens</i>		
HL.a Environmental law		5
HL.b Environmental and ecological economics		7
HL.c Environmental ethics		5
Experimental programme	50	
Practical work	30	
Collaborative sciences project	10	
Scientific investigation	10	

Skills in the study of environmental systems and societies

The skills and techniques students must experience through the course are encompassed within the tools. These support the application and development of the inquiry process in the delivery of the ESS course.

Tools

- Experimental techniques
- Mathematics
- Technology
- Systems and models

Inquiry process

- Inquiring and designing
- Collecting and processing data
- Concluding and evaluating

Teachers are encouraged to provide opportunities for students to encounter and practise the skills throughout the programme. Rather than being taught as stand-alone topics, these skills should be integrated into the teaching of the syllabus when they are relevant to the syllabus topics being covered.

III. Assessment model

There are four assessment objectives for the DP ESS course. Having studied the course, students are expected to demonstrate the following assessment objectives.

Assessment objective 1

Demonstrate knowledge and understanding of relevant:

- terminology, facts, and concepts
- methodologies and techniques
- perspectives and worldviews.

Assessment objective 2

Apply this knowledge and understanding in the analysis of:

- explanations, concepts, and theories
- primary and secondary data and models
- case studies and examples
- arguments and values.

Assessment objective 3

Evaluate, justify, and synthesize, as appropriate:

- explanations, concepts, theories, and models
- arguments and proposed solutions
- methods of fieldwork and investigation
- political, economic, ethical and sociocultural contexts of issues.

Assessment objective 4

Investigate sustainability issues at the local or global level through:

- identifying an appropriate environmental issue and research question for investigation
- selecting and demonstrate the use of appropriate methods and skills to carry out insightful and ethical investigations into environmental issues.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)		Weighting of final grade %
		SL	HL	
External		3.0	4.5	75 (SL)
				80 (HL)
Paper 1	Students will be provided with data in a variety of forms relating to a specific, previously unseen case study. Questions will be based on the analysis and evaluation of the data in the case study. All questions are compulsory.	1.0	2.0	25 (SL)
				30 (HL)
Paper 2	Section A is made up of short-answer and data-based questions. Section B requires students to answer structured essay questions. There is a limited amount of choice.	2.0	2.5	50 (SL/HL)

Internal		10	25 (SL)
			20 (HL)
Individual investigation	The individual investigation is an open-ended task in which the student gathers and analyses data to answer their own formulated research question. The outcome of the Individual investigation will be assessed through the form of a written report. The maximum overall word count for the report is 3,000 words.	10	25 (SL)
			20 (HL)

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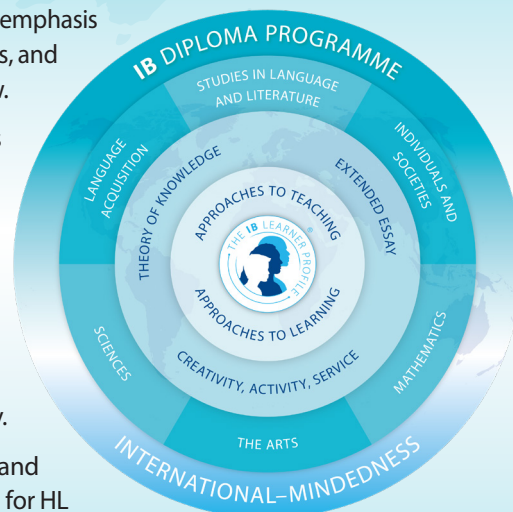
Mathematics: Applications and interpretation

First assessment 2029

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.



I. Course description and aims

The mathematics: applications and interpretation course develops an understanding of the core principles of mathematical modelling and statistical thinking to analyse real-world contexts, construct reasonable solutions and communicate mathematical arguments through key mathematical concepts. The course encourages students to develop skills in problem-solving, mathematical inquiry, practical applications, and using technology in context. It also promotes the dispositions of a successful learner of mathematics. The course has a specific focus on **mathematical modelling and statistical analysis** and includes the study of functions and calculus.

The mathematics: applications and interpretation course is stimulating, accessible, challenging, and comprehensive. The course:

- develops a breadth and depth of mathematical understanding
- fosters problem-solving skills in both familiar and unfamiliar situations
- develops a mathematical inquiry process that empowers exploration, innovation and independent investigation
- develops the key attributes of learners of mathematics.

During the course, students engage in a mathematical exploration that allows them to identify a problem or question of interest and apply the mathematical inquiry process to that problem.

The **mathematical inquiry process** involves:

- **specifying problems** by posing and framing mathematical questions
- choosing appropriate methods, tools or data to **abstract problems** into a mathematical form, and form plans to solve problems
- carrying out **computations**, with or without technology
- critically evaluating results for accuracy and relevance to **interpret** the outcomes of computations.

During the course students develop the understanding and skills to solve problems. This includes the ability to select appropriate mathematical tools and methods, apply these correctly and interpret the results in terms of the original problem. Additionally, students develop the **key attributes** needed to be successful problem solvers and engage in mathematical inquiry.

The **key attributes** of a learner of mathematics include:

- **reasoning** inductively, deductively, abductively and analogically
- **communicating** mathematical thinking and ideas clearly and coherently, observing shared conventions
- **linking** different elements of mathematics through underlying concepts
- **developing dispositions** that include the identity, agency, purpose, creativity and resilience in learning mathematics.

II. Curriculum model overview

The mathematics: applications and interpretation course is organized into five main topics and the mathematical exploration.

Students study each topic using technology and develop conceptual understanding.

Syllabus component	Recommended teaching hours	
	SL	HL
Topic A: Functions A1 Representation of functions A2 Polynomial functions A3 Functions with asymptotes A4 Trigonometric functions A5 Piecewise functions A6 Transformations of graphs and functions (HL only)	31	45
Topic B: Number and algebra B1 Approximation and error B2 Sequences B3 Use of technology applications B4 Exponentials B5 Matrices (HL only)	16	27

Topic C: Geometry C1 Straight line geometry C2 Surface areas, volumes and measurement in circles C3 Trigonometry and its applications C4 Vectors (HL only) C5 Graph theory (HL only)	18	45
Topic D: Probability and statistics D1 Univariate data D2 Bivariate data D3 Probability D4 Probability distributions D5 Inferential statistics	36	52
Topic E: Calculus E1 Principles of differential calculus E2 Techniques of differential calculus E3 Techniques of integral calculus E4 Problem-solving using calculus E5 Differential equations (HL only)	19	41
Internal assessment The mathematical exploration	30	30
Total	150	240

III. Assessment model

The DP mathematics courses assess students' abilities to solve mathematical problems and conduct inquiry in mathematics. The assessment objectives (AOs) for DP mathematics are based on the four stages of the mathematical inquiry process:

- **problem specification**
- **abstraction**
- **computation**
- **interpretation.**

For each stage, there are three levels of cognitive demand, ranging from simple, familiar contexts to complex, unfamiliar contexts. These levels are used to determine the challenge in written assessment and also inform the internal assessment criteria.

Assessment at a glance

Type of assessment	Format of assessment	Time (weighting of final grade)	
		SL	HL
External		3 hours (80%)	5 hours (80%)
Paper 1	Technology required Compulsory short-response questions	1 hour 30 minutes (40%)	2 hours (30%)
Paper 2	Technology required Compulsory extended-response questions	1 hour 30 minutes (40%)	2 hours (30%)
Paper 3	Technology required Two compulsory extended-response questions	-	1 hour (20%)

Internal			
The mathematical exploration	Written work that involves investigating an area of mathematics using the mathematical inquiry process.	30 hours (20%)	30 hours (20%)

Internal assessment

The internal assessment is the mathematical exploration that allows students to engage in mathematical inquiry for a personal area of interest. The internal assessment criteria are the same for standard level and higher level and reflect the mathematics inquiry process.

Criterion	Marks	Strands
A: Problem specification	4	• Problem in context • Desired outcomes
B: Abstraction	6	• Assumptions • Selected techniques and tools • Mathematical form
C: Computation	4	• Calculations • Mathematical communication
D: Interpretation	6	• Interpretation of results • Evaluation of desired outcomes • Refinement

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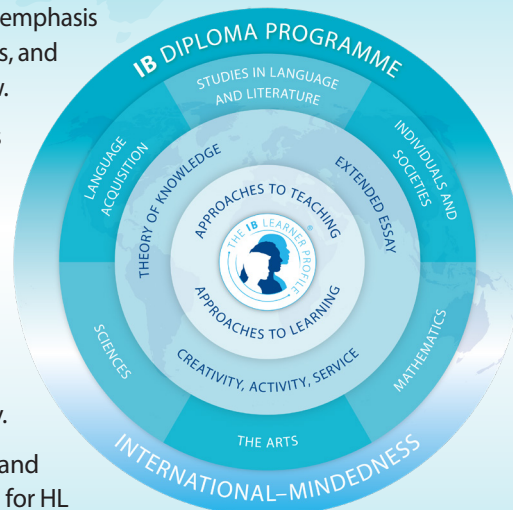
Mathematics: Analysis and approaches

First assessment 2029

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.



I. Course description and aims

The mathematics: analysis and approaches course develops an understanding of the core principles of mathematical reasoning and the capacity to rigorously analyse, construct and communicate arguments through key mathematical concepts. The course encourages students to develop skills in problem-solving, mathematical inquiry, abstract thinking, and applying mathematical techniques in context. It also promotes the dispositions of a successful learner of mathematics. The course allows students to analyse mathematical ideas and solve problems both with and without technology. Students develop strong algebraic skills and procedural fluency and good conceptual understanding. The course has a specific focus on mathematical analysis using **functions and calculus**.

The mathematics: analysis and approaches course is stimulating, accessible, challenging and comprehensive. The course:

- develops a breadth and depth of mathematical understanding
- fosters problem-solving skills in both familiar and unfamiliar situations
- develops a mathematical inquiry process that empowers exploration, innovation and independent investigation
- develops the key attributes of learners of mathematics.

During the course, students engage in a mathematical exploration that allows them to identify a problem or question of interest and apply the mathematical inquiry process to that problem.

The **mathematical inquiry process** involves:

- **specifying problems** by posing and framing mathematical questions
- choosing appropriate methods, tools or data to **abstract problems** into a mathematical form, and form plans to solve problems
- carrying out **computations**, with or without technology
- critically evaluating results for accuracy and relevance to **interpret** the outcomes of computations.

During the course, students develop the understanding and skills to solve problems. This includes the ability to select appropriate mathematical tools and methods, apply these correctly and interpret the results in terms of the original problem. Additionally, students develop the **key attributes** needed to be successful problem-solvers and engage in mathematical inquiry.

The **key attributes** of a learner of mathematics include:

- **reasoning** inductively, deductively, abductively and analogically
- **communicating** mathematical thinking and ideas clearly and coherently, observing shared conventions
- **linking** different elements of mathematics through underlying concepts
- **developing dispositions** that include the identity, agency, purpose, creativity and resilience in learning mathematics.

II. Curriculum model overview

The mathematics: analysis and approaches course is organized into five main topics and the mathematical exploration.

Each topic is studied with and without a calculator.

Syllabus component	Recommended teaching hours	
	SL	HL
Topic A: Number and algebra A1 Sequences A2 Exponents and logarithms A3 Combinatorics A4 Complex numbers (HL only) A5 Proof and algebraic manipulation	19	42
Topic B: Functions B1 Representation of functions B2 Polynomial functions B3 Functions with asymptotes B4 Trigonometric functions B5 Transformations of graphs and functions	33	46
Topic C: Geometry C1 Surface areas, volumes and measurement in circles C2 Trigonometry and its applications C3 Vectors (HL only)	16	35

Topic D: Probability and statistics D1 Univariate data D2 Probability D3 Probability distributions	22	28
Topic E: Calculus E1 Principles of differential calculus E2 Techniques of differential calculus E3 Techniques of integral calculus E4 Problem-solving using calculus E5 Differential equations (HL only) E6 Maclaurin series (HL only)	30	59
Internal assessment The mathematical exploration	30	30
Total	150	240

III. Assessment model

The DP mathematics courses assess students' abilities to solve mathematical problems and conduct inquiry in mathematics. The assessment objectives (AOs) for DP mathematics are based on the four stages of the mathematical inquiry process:

- **problem specification**
- **abstraction**
- **computation**
- **interpretation.**

For each stage, there are three levels of cognitive demand, ranging from simple, familiar contexts to complex, unfamiliar contexts. These levels are used to determine the challenge in written assessment and also inform the internal assessment criteria.

Assessment at a glance

Type of assessment	Format of assessment	Time (weighting of final grade)	
		SL	HL
External		3 hours (80%)	5 hours (80%)
Paper 1	No technology allowed Section A: Compulsory short-response questions Section B: Compulsory extended-response questions	1 hour 30 minutes (40%)	2 hours (30%)
Paper 2	Technology required Section A: Compulsory short-response questions Section B: Compulsory extended-response questions	1 hour 30 minutes (40%)	2 hours (30%)
Paper 3	Technology required Two compulsory extended-response questions	-	1 hour (20%)

Internal			
The mathematical exploration	Written work that involves investigating an area of mathematics using the mathematical inquiry process.	30 hours (20%)	30 hours (20%)

Internal assessment

The internal assessment is the mathematical exploration that allows students to engage in mathematical inquiry for a personal area of interest. The internal assessment criteria are the same for standard level and higher level and reflect the mathematics inquiry process.

Criterion	Marks	Strands
A: Problem specification	4	• Problem in context • Desired outcomes
B: Abstraction	6	• Assumptions • Selected techniques and tools • Mathematical form
C: Computation	4	• Calculations • Mathematical communication
D: Interpretation	6	• Interpretation of results • Evaluation of desired outcomes • Refinement

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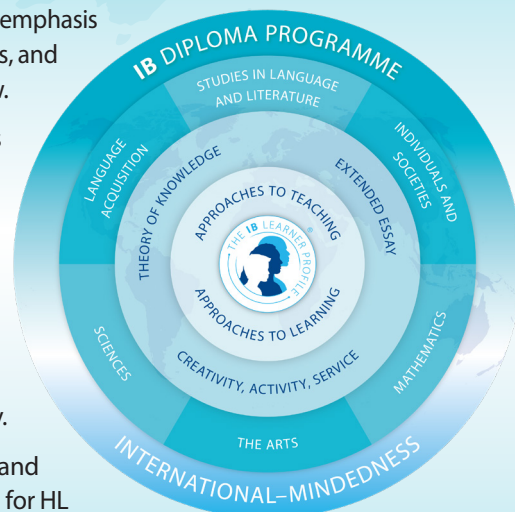
The arts: Visual arts

First assessment 2027

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.



I. Course description and aims

Visual arts are an integral part of our daily lives. They have social, political, ritual, spiritual, decorative and functional values. The theories and practices of visual arts are dynamic and ever-changing, connecting different areas of knowledge and human experience. Visual arts enable us to make sense of the world, to explore our place within it, and to transform our individual and collective ways of being in and with the world.

In this visual arts course students learn how to **create**, **communicate** and **connect** as artists.

Students engage in creative practices and processes working with a variety of art-making forms and creative strategies, and learn art-making as inquiry. Teachers and students can adapt the curriculum to their unique contexts, interests and passions. Together, they are invited to transform the classroom into a contemporary visual arts studio. This becomes a collaborative, inclusive, creative and conceptually rich space where students develop their art through personal lines of inquiry guided by artistic intentions.

The course encourages students to engage with the world through individual and shared experiences, imagination and action, and it fosters creativity, communication, critical thinking and collaboration—skills essential in a variety of rapidly evolving fields and professions. The syllabus supports learning through authentic art-making experiences and student choice, encouraging teachers to support their students in becoming progressively more independent art practitioners.

Teaching and learning of conceptual and material skills and methods allow students to think and work like artists. During the course they develop a personal visual language and learn to communicate artistic intentions to different audiences, connecting with the work of other artists and considering the significance of context(s). Students learn that by making art they are empowered to engage, transform and emerge, both as individuals and as members of a community. These positive and creative approaches will stay with students after they complete the course, enriching any of their future pursuits.

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

1. explore the diversity of the arts across time, cultures and contexts
2. develop as imaginative and skilled creators and collaborators
3. express ideas creatively and with competence
4. critically reflect on the process of creating and experiencing the arts
5. develop as informed, perceptive and analytical practitioners
6. enjoy lifelong engagement with the arts.

The visual arts course aims to enable students to:

7. appreciate that art-making enhances knowledge, develops understanding and transforms ways of being
8. employ curiosity, creativity and dialogue to more openly engage with self, the world and others
9. draw on artmaking and artworks for their own, and their communities', well-being and flourishing.

II. Curriculum model overview

The visual arts course is a creative, practice-based course.

Students work in the classroom as they would in an art studio. Art-making as inquiry is at the centre of the syllabus and students learn through three core areas—create, connect and communicate. These are introduced as discrete elements of the course; however, in practice, this division will only occasionally predominate.

Learning art-making as inquiry will mostly integrate create, connect and communicate. This is to allow students to embrace the holistic nature of visual arts practice. However, teachers will at times need to make explicit the division of content and focus on just one of the core areas, to ensure that students have sufficient understanding, skills and methods to develop their artistic intentions and their artwork.

Students gain a deeper understanding of the visual arts through working with a variety of art-making forms and creative strategies, and develop a personal visual language as well as critical and curatorial skills and methods.

During the two years of the course, students are supported and guided by their teachers to become increasingly more independent visual artists. Seven assessment objectives, clearly defined and embedded in the creative process, guide teachers and students from the beginning to the end of the course.

Students learn to nurture their artistic practice and to develop their ideas, work and reflections through observation, experimentation and investigation. The course is designed to deepen students' understanding of the interactive and generative nature of the work of visual artists, and to promote flexible and iterative creative processes.

Visual arts journals—which might take a variety of formats—are used by students to generate, progress and develop their art-making as inquiry and their learning across the three core areas. Students realize and resolve artworks to communicate with audiences through synthesis of concept and form. Understanding of context(s) and cultural significance are also part of the curriculum, and students learn to consider the complex and dynamic relationships between artist, artwork, audience and context. Not only do students

connect with the work of other artists, but they also learn to situate the artworks they study as well as their own.

As part of the visual arts course students learn to employ curiosity, creativity and dialogue to openly engage with the self, the world and others. They develop the skills to work independently, persist and repurpose, reflect critically and communicate effectively and with coherence as visual artists.

Syllabus area	Teaching hours	
	SL	HL
Create Teachers introduce a variety of art-making forms and creative strategies. Students learn how to generate ideas from investigation and observation, and engage with experimentation or in resolving artworks. They learn how to follow lines of inquiry from conception to realization and to develop a visual language.	20	30
Connect Teachers introduce ways to investigate artworks from different times and contexts. Students consider the relationships between artwork, artist and audience. They learn how to situate their art-making in relation to context and to consider cultural significance.	20	30
Communicate Teachers introduce methods of visual and written presentation, and create opportunities for dialogue and critique. Students learn how to curate, share and situate their artwork. Teachers introduce methods to digitally document and curate artwork.	20	30
Integration of create, connect, communicate The majority of teaching hours in visual arts are devoted to making art as inquiry. Students integrate the core areas of create, connect and communicate, through the pursuit of personal lines of inquiry and while developing a coherent body of resolved artworks. They learn to: • develop their artistic intentions and creative processes • connect their art-making with the work of others • create their artworks in context • communicate with audiences. Teachers plan time and set reasonable deadlines for students to prepare the three summative assessment tasks.	90	150
Total teaching hours	150	240

III. Assessment model

At the end of the course, students select and organize visual and written materials to submit to the IB for online assessment—both SL and HL students curate and digitally submit three assessment tasks to evidence their learning.

All assessment tasks are non-examination based. Two tasks are externally assessed, and one is internally assessed by the teacher and externally moderated by the IB. The assessment model clearly differentiates the requirements between SL and HL, reflecting the teaching hours allocated at each level and the greater depth and breadth of work required in the HL course.

Task 1 is common to SL and HL. All students complete the **art-making inquiries portfolio**.

Task 2 is designed differently for SL and HL, to fully reflect the different allocation of teaching time at each level. SL students complete the **connections study** and HL students complete the **artist project**.

Task 3 is the internal assessment (IA), differentiated between SL and HL. The IA is focused on the student's ability to create a **coherent body of work**. Both SL and HL students submit **five resolved artworks**, but some of the requirements of the task are different for each level.

Student work is assessed through assessment criteria and marks are allocated by applying level descriptors.

For their summative end-of-course assessment, students are expected to provide evidence of how they learned to create, connect and communicate as visual arts practitioners. There are seven assessment objectives common to SL and HL that provide measurable indicators of success and help to shape learning and teaching. The visual arts objectives are embedded in the creative process to support authentic learning and the design of valid, reliable and manageable assessment tasks.

Visual arts students are expected to evidence how, as part of their art-making, they:

- **curate** visual and written materials, including both developing and resolved artworks, to communicate artistic intentions and inquiry
- **investigate** art forms and creative strategies, as well as meaning and cultural significance of artworks within and across contexts
- **generate** intentions and artworks through inquiry and the application of creative strategies
- **refine** artistic intentions and their own art-making through investigation, dialogue and critical reflection as part of inquiry
- **resolve** artworks to fulfil intentions and convey meaning
- **situate** their own artworks and art-making, as well as those of other artists, in relation to context(s), audience(s) and communities of artistic practice
- **synthesize** concept and form through creative and curatorial practices to create artworks, communicate artistic intentions and connect with audience(s).

Assessment at a glance

Assessment outline—SL	Weighting
External assessment	60%
Art-making inquiries portfolio (32 marks) This is an SL and HL task focused on the student’s art-making as inquiry. The student selects and organizes visual evidence of their personal investigations, discoveries and creations, supported by critical reflections, all in a portfolio. They provide curated evidence of their art-making as inquiry in a variety of art-making forms and creative strategies. The portfolio demonstrates how the student developed and refined their visual language through one or more lines of inquiry and must explicitly include the inquiry questions or generative statements they worked with. SL students submit two mandatory files. • One PDF file of up to 15 screens including visual evidence accompanied by written materials. The total word count must not exceed 3,000 words. • One separate text file listing the sources.	40%
Connections study (24 marks) This is an SL-only task focused on the student situating in context one of their resolved artworks, chosen from the five they submit for IA. The study presents curated visual and written evidence to demonstrate the connections between the student’s chosen resolved artwork and their own context(s), and between the chosen artwork and at least two artworks by different artists. The connections must be informed by research, and the study must demonstrate understanding of the cultural significance of the two artworks by different artists. SL students submit two mandatory files. • One PDF file of up to 10 screens including visual evidence and supporting written materials. The total word count must not exceed 2,500 words. • One separate text file listing the sources.	20%
Internal assessment	40%
This component is internally assessed by the teacher and externally moderated by the IB at the end of the course. Resolved artworks (32 marks) This is an SL-only task focused on the student’s ability to create a coherent body of work. Each student submits five resolved artworks to demonstrate their best achievements in communicating their artistic intentions coherently. The student provides evidence of synthesis of concept and form, and of their competence in resolving artworks. They also write a rationale to articulate their artistic intentions and the choices that informed the making of their coherent body of artworks. SL students submit six mandatory files. • Five image or video files (each up to three minutes long) of artworks—each accompanied by a title and details on medium and size. Two optional supporting image files per artwork can be submitted to show details or additional views. • One PDF file of up to two screens for the rationale (which must not exceed 700 words).	40%

Assessment outline—HL	Weighting
External assessment	60%
Art-making inquiries portfolio (32 marks) This is an SL and HL task focused on the student’s art-making as inquiry. The student selects and organizes visual evidence of their personal investigations, discoveries and creations, supported by critical reflections, all in a portfolio. They provide curated evidence of their art-making as inquiry in a variety of art-making forms and creative strategies. The portfolio demonstrates how the student developed and refined their visual language through one or more lines of inquiry and must explicitly include the inquiry questions or generative statements they worked with. HL students submit two mandatory files. • One PDF file of up to 15 screens including visual evidence accompanied by written materials. The total word count must not exceed 3,000 words. • One separate text file listing the sources.	30%
Artist project (40 marks) This is a stand-alone, HL-only task focused on the student creating and situating in context an artwork that they ideate and realize as part of a project of their choice. The artist project demonstrates through curated evidence how the student work was informed by investigations of context, by connections with at least two artworks by different artists, and by dialogues. A short video curated by the student shows where and how the project artwork was realized to communicate with the audience in the chosen context. HL students submit three mandatory files. • One PDF file of up to 12 screens including visual evidence and supporting written materials. The total word count must not exceed 2,500 words and the student must comply with the exact word counts set for each section. • One video file up to three minutes long presenting the project artwork realized in the chosen context. The video is submitted accompanied by the artwork details and a short text with the finalized artistic intentions (100 words maximum). • One separate text file listing the sources.	30%

Internal assessment	40%
This component is internally assessed by the teacher and externally moderated by the IB at the end of the course. Selected resolved artworks (40 marks) This is an HL-only task focused on the student's ability to create a coherent body of work selected from their wider production. Each student submits five selected resolved artworks to demonstrate their best achievements in communicating their artistic intentions coherently. The student provides evidence of synthesis of concept and form, and of their competence in resolving artworks. They also write a rationale to articulate how they realized their artistic intentions through a selection process for the five resolved artworks, from at least eight of their works. Five artwork texts situate through critical analysis each of the selected resolved artworks in a wider artistic context and in relation to the student's practice. HL students submit six mandatory files. • Five image or video files (each up to three minutes long) of artworks—each accompanied by a title and details on medium and size. Two optional supporting image files per artwork can be submitted to show details or additional views. • One PDF file of up to eight screens including the rationale (which must not exceed 700 words) and five artwork texts (with a total word count not exceeding 1,000 words).	40%

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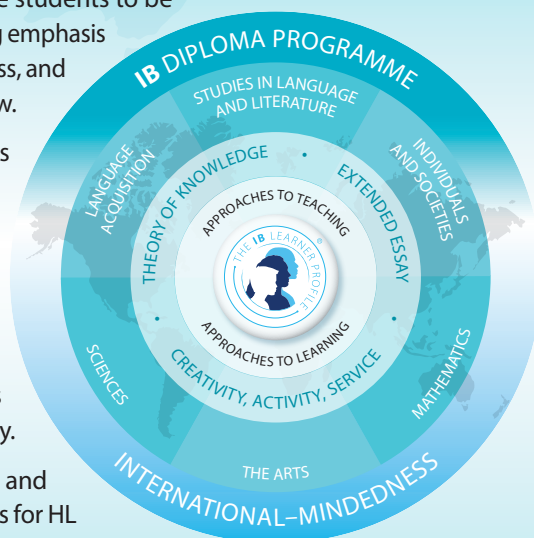
Diploma Programme core: Theory of knowledge

First assessment 2022

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.



I. Course description and aims

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

The aims of the TOK course are:

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

II. Curriculum model overview

Course elements	Minimum teaching hours
Core theme: Knowledge and the knower This theme provides an opportunity for students to reflect on themselves as knowers and thinkers, and on the different communities of knowers to which we belong.	32
Optional themes Students are required to study two optional themes from the following five options. • Knowledge and technology • Knowledge and language • Knowledge and politics • Knowledge and religion • Knowledge and indigenous societies	
Areas of knowledge Students are required to study the following five areas of knowledge. • History • The human sciences • The natural sciences • The arts • Mathematics	50

III. Assessment model

Students are required to complete **two** assessment tasks for TOK.

- Theory of knowledge exhibition
- Theory of knowledge essay on a prescribed title

Assessment objectives

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

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

Assessment details

Type of assessment	Format of assessment	Hours	Weighting
External	Theory of knowledge essay	10	2/3 or 67%
Students are required to write an essay in response to one of the six prescribed titles that are issued by the IB for each examination session. As an external assessment component, it is marked by IB examiners.			
Internal	Theory of knowledge exhibition	8	1/3 or 33%
Students are required to create an exhibition of three objects with accompanying commentaries that explores how TOK manifests in the world around us. This component is internally assessed by the teacher and externally moderated by the IB at the end of the course.			

IV. Sample questions

Specimen essay titles

- How important are the opinions of experts in the search for knowledge? Answer with reference to the arts and one other area of knowledge.
- Is the division of the natural sciences and mathematics into separate areas of knowledge artificial?
- When historians and natural scientists say that they have explained something, are they using the word “explain” in the same way?
- Are there fewer ethical constraints on the pursuit of knowledge in the arts than in the human sciences?
- How do our expectations impact our interpretations? Discuss with reference to history and one other area of knowledge.
- To what extent do you agree with the claim that “knowledge is of no value unless you put it into practice” (Anton Chekhov)? Answer with reference to two areas of knowledge.

Sample exhibition prompts

- What counts as knowledge?
- On what grounds might we doubt a claim?
- Are some types of knowledge less open to interpretation than others?
- Is bias inevitable in the production of knowledge?
- Should some knowledge not be sought on ethical grounds?
- What role do experts play in influencing our consumption or acquisition of knowledge?
- How can we distinguish between knowledge, belief and opinion?

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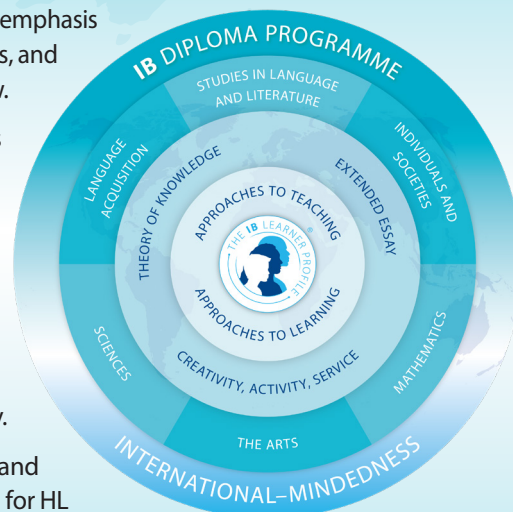
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I. Course description and aims

The extended essay, a component of the DP core, is a compulsory, externally assessed piece of independent research, presented as a formal piece of academic writing. It is an in-depth study of a focused topic, undertaken either through a subject-focused approach, or an interdisciplinary approach combining two DP subjects.

Students choose from the list of available Diploma Programme subjects for the examination session in question. For those taking the diploma this is normally one of the student's six selected subjects, or two in the case of the interdisciplinary pathway. Students can also choose a topic in which they have some background knowledge.

The EE is intended to promote academic research and writing skills. It gives students the opportunity to engage in personal research on their own choice of topic, under the guidance of a supervisor (an appropriately qualified member of staff within the school). Students produce a significant piece of appropriately presented and structured writing, in which their ideas and findings are communicated in a coherent, reasoned manner that is suitable for the chosen subject(s).

The extended essay aims are to enable students to:

- experience the excitement of intellectual exploration
- engage in student-led academic research on a topic of personal interest
- develop skills in research, thinking, self-management, and communication
- reflect on the learning experience of producing an extended essay.

II. Overview of the extended essay process

The research process

The research process involves the following steps, though the order may unfold differently for different students.

- Choose a broad topic then refine and focus it.
- Decide the appropriate pathway: interdisciplinary or subject-focused.
- Choose the approved DP subject(s).
- Undertake some preparatory reading.
- Form a well-focused research question.
- Plan the research and writing process.
- Plan a structure for the essay. This may change as the research develops.
- Carry out the research.

Writing and formal presentation

The required elements of the final submission are as follows.

- Title page
- Contents page
- Introduction
- Body of the essay
- Conclusion
- References and bibliography

The upper limit of 4,000 words includes the introduction, body, conclusion and any quotations.

Reflection process

Reflection is the process by which students recapture their experience and think about its impact on them as learners. This includes how they envisage applying what they have learned to other circumstances, including future studies, career, or life in general. To assist students with this, there are three mandatory, formal reflection sessions with the supervisor.

The reflection sessions also give students the opportunity to:

- reflect on their engagement with the research process
- consider the effectiveness of their choices
- re-examine their ideas and decide whether changes are needed.

The final reflection session is the viva voce, a short interview (10–15 minutes) between the student and the supervisor. The viva voce serves to check academic integrity, reflect on successes and difficulties, and think about what has been learned.

Reflective thinking is recorded as a 500-word reflective statement. The student writes the statement at the end of the extended essay process and includes it on the Reflection and progress form (RPF). The form also notes the student's attendance at each reflection session.

III. Assessment model

The extended essay, whether subject-focused or interdisciplinary, is assessed against common criteria.

In working on the extended essay, students are expected to achieve the following assessment objectives.

Assessment objectives	
Know and understand	- To demonstrate knowledge and understanding of the topic chosen and the research question posed. - To demonstrate knowledge and understanding of terminology and concepts. - To demonstrate knowledge and understanding of relevant research methods.
Apply and analyse	- To apply relevant research methods to respond to the research question. - To analyse the research to determine appropriate findings.
Synthesize and evaluate	- To discuss in a balanced way the significance of the research findings. - To develop a clear line of argument that links the research question, research findings, and conclusions. - To evaluate the effectiveness of the essay. - To evaluate the extended essay learning experience and reflect on the growth of the learner.
Communicate research	- To communicate research according to appropriate structural conventions. - To understand and demonstrate academic integrity.

Assessment at a glance

Assessment criteria	Guiding question
Framework for the essay	Do the research question, research methods, and structural conventions followed provide an effective framework for the essay?
Knowledge and understanding	Does the student demonstrate knowledge and understanding of the subject matter being used in their research?
Analysis and line of argument	Does the student analyse the information presented in the essay and produce a line of argument?
Discussion and evaluation	Does the student discuss the findings and evaluate the essay?
Reflection	Does the student evaluate the effect of the extended essay learning experience on them as a learner?

The extended essay contributes to the student's overall score for the diploma through points awarded in conjunction with theory of knowledge. A maximum of three points are awarded according to a student's combined performance in both the extended essay and theory of knowledge.

Example extended essay topics

Research question	Approach
Language A: How effectively does Oscar Wilde both present and critique social expectations in <i>The Importance of Being Earnest</i> ?	Various social expectations are identified, such as marriage, manners, religion, duty and gender. How effectively Wilde presents and critiques them is investigated through a close reading of the play and attention to language. Some background research into Victorian society provides social context, but the focus is on the play.
Economics: Does current economic research into minimum wage invalidate the neoclassical argument that increasing the minimum wage will lead to increased levels of unemployment?	The neoclassical argument is researched and presented. The counterarguments are researched and evaluated in terms of the nature of the evidence and studies that have been carried out.
Psychology: Is mindfulness or cognitive behaviour therapy (CBT) the more effective means of coping with stress?	Research that directly compares the two treatments is analysed, leading to a well evidenced conclusion.
Chemistry: What is the effect of manganese oxide versus copper (II) oxide in the catalysation of hydrogen peroxide at 21°C?	Background information is sought regarding the decomposition of hydrogen peroxide and different catalytic pathways and mechanisms. This is followed by practical research using carefully selected variables.
Visual arts: To what extent do the skull series of compositions by the artist Joni Brenner embody the cyclical nature of life and death?	The socio-historical context of Apartheid and the art produced in the post-Apartheid era is researched. This is followed by an analysis of the artistic and symbolic aspects of Brenner's skull compositions.

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International Baccalaureate Diploma Programme Subject Brief

Creativity, activity, service

For students graduating in 2017 and after

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. Description and aims

II. Programme overview

III. Learning outcomes

IV. Sample projects



I. Description and aims

Creativity, activity, service (CAS) is at the heart of the DP. With its holistic approach, CAS is designed to strengthen and extend students' personal and interpersonal learning from the Primary Years Programme (PYP) and Middle Years Programme (MYP).

CAS is organized around the three strands of creativity, activity and service defined as follows.

- Creativity—exploring and extending ideas leading to an original or interpretive product or performance.
- Activity—physical exertion contributing to a healthy lifestyle.
- Service—collaborative and reciprocal engagement with the community in response to an authentic need.

CAS aims to develop students who:

- enjoy and find significance in a range of CAS experiences
- purposefully reflect upon their experiences
- identify goals, develop strategies and determine further actions for personal growth
- explore new possibilities, embrace new challenges and adapt to new roles
- actively participate in planned, sustained and collaborative CAS projects
- understand they are members of local and global communities with responsibilities towards each other and the environment.

A CAS experience is a specific event in which the student engages with one or more of the three CAS strands. It can be a single event or an extended series of events. A CAS project is a collaborative series of sequential CAS experiences lasting at least one month. Typically, a student's CAS

programme combines planned/unplanned singular and ongoing experiences. All are valuable and may lead to personal development. However, a meaningful CAS programme must be more than just a series of unplanned/singular experiences. Students must be involved in at least one CAS project during the programme.

II. Programme overview

The CAS programme formally begins at the start of the DP and continues regularly for at least 18 months with a reasonable balance between creativity, activity and service.

A CAS experience must:

- fit within one or more of the CAS strands
- be based on a personal interest, skill, talent or opportunity for growth
- provide opportunities to develop the attributes of the IB learner profile
- not be used or included in the student's DP course requirements.

CAS students have guidance at the school level through a variety of resources including the school's CAS handbook, information sessions and meetings. In addition, students have three formal interviews with the school's CAS coordinator/adviser.

Typically, students' service experiences involve the following stages.

- Investigation, preparation and action that meets an identified need.
- Reflection on significant experiences throughout to inform problem-solving and choices.
- Demonstration allowing for sharing of what has taken place.

All CAS students are expected to maintain and complete a CAS portfolio as evidence of their engagement with CAS. The CAS portfolio is a collection of evidence that showcases CAS experiences and student reflections; it is not formally assessed.

A school's CAS programme is evaluated as part of the school's regular programme evaluation and self-study process that assesses the overall implementation of the DP.

III. Learning outcomes

Completion of CAS is based on student achievement of the seven CAS learning outcomes. Through their CAS portfolio, students provide the school with evidence demonstrating achievement of each learning outcome. Some learning outcomes may be achieved many times, while others may be achieved less frequently. In their CAS portfolio, students provide the school with evidence of having achieved each learning outcome at least once through their CAS programme.

Learning outcome	Descriptor
Identify own strengths and develop areas for growth.	Students are able to see themselves as individuals with various abilities and skills, of which some are more developed than others.
Demonstrate that challenges have been undertaken, developing new skills in the process.	A new challenge may be an unfamiliar experience or an extension of an existing one. The newly acquired or developed skills may be shown through new experiences or through increased expertise in an established area.
Demonstrate how to initiate and plan a CAS experience.	Students can articulate the stages from conceiving an idea to executing a plan for individual or collaborative CAS experiences. Students may show their knowledge and awareness by building on a previous experience or by launching a new idea or process.
Show commitment to, and perseverance in, CAS experiences.	Students demonstrate regular involvement and active engagement in CAS.

Demonstrate the skills and recognize the benefits of working collaboratively.	Students are able to identify, demonstrate and critically discuss the benefits and challenges of collaboration gained through CAS experiences.
Demonstrate engagement with issues of global significance.	Students are able to identify and demonstrate their understanding of global issues, make responsible decisions and take appropriate action in response to the issue either locally, nationally or internationally.
Recognize and consider the ethics of choices and actions.	Students show awareness of the consequences of choices and actions in planning and carrying out CAS experiences.

IV. Sample projects

- **Creativity:** A student group plans, designs and creates a mural.
- **Activity:** Students organize and participate in a sports team including training sessions and matches against other teams.
- **Service:** Students set up and conduct tutoring for people in need.
- **Service and activity:** Students plan and participate in the planting and maintenance of a garden with members of the local community.
- **Creativity, activity and service:** Students rehearse and perform a dance production for a community retirement home.

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