

# International Baccalaureate Diploma Programme Subject Brief

## The arts:

### Visual arts—Standard level

First assessments 2016 – Last assessments 2022

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

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

These IB DP subject briefs illustrate three key course components.

I. Course description and aims

II. Curriculum model overview

III. Assessment model



## I. Course description and aims

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

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

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

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

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

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

## II. Curriculum model overview

Component	Recommended teaching hours
<p><b>Visual arts in context</b></p> <ul style="list-style-type: none"> <li>• Examine and compare the work of artists from different cultural contexts.</li> <li>• Consider the contexts influencing their own work and the work of others.</li> <li>• Make art through a process of investigation, thinking critically and experimenting with techniques.</li> <li>• Apply identified techniques to their own developing work.</li> <li>• Develop an informed response to work and exhibitions they have seen and experienced.</li> <li>• Begin to formulate personal intentions for creating and displaying their own artworks.</li> </ul>	<b>50</b>

<p><b>Visual arts methods</b></p> <ul style="list-style-type: none"> <li>• Look at different techniques for making art.</li> <li>• Investigate and compare how and why different techniques have evolved and the processes involved.</li> <li>• Experiment with diverse media and explore techniques for making art.</li> <li>• Develop concepts through processes informed by skills, techniques and media.</li> <li>• Evaluate how their ongoing work communicates meaning and purpose.</li> <li>• Consider the nature of “exhibition” and think about the process of selection and the potential impact of their work on different audiences.</li> </ul>	<b>50</b>
<p><b>Communicating visual arts</b></p> <ul style="list-style-type: none"> <li>• Explore ways of communicating through visual and written means.</li> <li>• Make artistic choices about how to most effectively communicate knowledge and understanding.</li> <li>• Produce a body of artwork through a process of reflection and evaluation, showing a synthesis of skill, media and concept.</li> <li>• Select and present resolved works for exhibition.</li> <li>• Explain the ways in which the works are connected.</li> <li>• Discuss how artistic judgments impact the overall presentation.</li> </ul>	<b>50</b>

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

### III. Assessment model

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

1. Demonstrate knowledge and understanding of specified content
  - Identify various contexts in which the visual arts can be created and presented
  - Describe artwork from differing contexts, and identify the ideas, conventions and techniques employed by the art-makers
  - Recognize the skills, techniques, media, forms and processes associated with the visual arts
  - Present work, using appropriate visual arts language, as appropriate to intentions
2. Demonstrate application and analysis of knowledge and understanding
  - Express concepts, ideas and meaning through visual communication

- Analyse artworks from a variety of different contexts
  - Apply knowledge and understanding of skills, techniques, media, forms and processes related to art-making
3. Demonstrate synthesis and evaluation
    - Critically analyse and discuss artworks created by themselves and others and articulate an informed personal response
    - Formulate personal intentions for the planning, development and making of artworks that consider how meaning can be conveyed to an audience
    - Demonstrate the use of critical reflection to highlight success and failure in order to progress work
    - Evaluate how and why art-making evolves and justify the choices made in their own visual practice
  4. Select, use and apply a variety of appropriate skills and techniques
    - Experiment with different media, materials and techniques in art-making
    - Make appropriate choices in the selection of images, media, materials and techniques in art-making
    - Demonstrate technical proficiency in the use and application of skills, techniques, media, images, forms and processes
    - Produce a body of resolved and unresolved artworks as appropriate to intentions

### Assessment at a glance

Type of assessment	Format of assessment	Weighting of final grade (%)
External		60
Comparative study	<ul style="list-style-type: none"> <li>• 10–15 screens which examine and compare at least 3 artworks, at least 2 of which should be by different artists</li> <li>• A list of sources used</li> </ul>	20
Process portfolio	<ul style="list-style-type: none"> <li>• 9–18 screens which evidence the student’s sustained experimentation, exploration, manipulation and refinement of a variety of art-making activities</li> </ul>	40
Internal		40
Exhibition	<ul style="list-style-type: none"> <li>• A curatorial rationale that does not exceed 400 words</li> <li>• 4–7 artworks</li> <li>• Exhibition text (stating the title, medium, size and intention) for each artwork</li> </ul>	40

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# International Baccalaureate Diploma Programme Subject Brief

## The arts:

### Visual arts—Higher level

First assessments 2016 – Last assessments 2022

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

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

These IB DP subject briefs illustrate three key course components.

I. Course description and aims

II. Curriculum model overview

III. Assessment model



## I. Course description and aims

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

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

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

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

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

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

## II. Curriculum model overview

Component	Recommended teaching hours
<p><b>Visual arts in context</b></p> <ul style="list-style-type: none"> <li>• Examine and compare the work of artists from different cultural contexts.</li> <li>• Consider the contexts influencing their own work and the work of others.</li> <li>• Make art through a process of investigation, thinking critically and experimenting with techniques.</li> <li>• Apply identified techniques to their own developing work.</li> <li>• Develop an informed response to work and exhibitions they have seen and experienced.</li> <li>• Begin to formulate personal intentions for creating and displaying their own artworks.</li> </ul>	<b>80</b>

<p><b>Visual arts methods</b></p> <ul style="list-style-type: none"> <li>• Look at different techniques for making art.</li> <li>• Investigate and compare how and why different techniques have evolved and the processes involved.</li> <li>• Experiment with diverse media and explore techniques for making art.</li> <li>• Develop concepts through processes informed by skills, techniques and media.</li> <li>• Evaluate how their ongoing work communicates meaning and purpose.</li> <li>• Consider the nature of “exhibition”, and think about the process of selection and the potential impact of their work on different audiences.</li> </ul>	<b>80</b>
<p><b>Communicating visual arts</b></p> <ul style="list-style-type: none"> <li>• Explore ways of communicating through visual and written means.</li> <li>• Make artistic choices about how to most effectively communicate knowledge and understanding.</li> <li>• Produce a body of artwork through a process of reflection and evaluation, showing a synthesis of skill, media and concept.</li> <li>• Select and present resolved works for exhibition.</li> <li>• Explain the ways in which the works are connected.</li> <li>• Discuss how artistic judgments impact the overall presentation.</li> </ul>	<b>80</b>

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

### III. Assessment model

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

1. Demonstrate knowledge and understanding of specified content
  - Identify various contexts in which the visual arts can be created and presented
  - Describe artwork from differing contexts, and identify the ideas, conventions and techniques employed by the art-makers
  - Recognize the skills, techniques, media, forms and processes associated with the visual arts
  - Present work, using appropriate visual arts language, as appropriate to intentions
2. Demonstrate application and analysis of knowledge and understanding
  - Express concepts, ideas and meaning through visual communication

- Analyse artworks from a variety of different contexts
  - Apply knowledge and understanding of skills, techniques, media, forms and processes related to art-making
3. Demonstrate synthesis and evaluation
    - Critically analyse and discuss artworks created by themselves and others and articulate an informed personal response
    - Formulate personal intentions for the planning, development and making of artworks that consider how meaning can be conveyed to an audience
    - Demonstrate the use of critical reflection to highlight success and failure in order to progress work
    - Evaluate how and why art-making evolves and justify the choices made in their own visual practice
  4. Select, use and apply a variety of appropriate skills and techniques
    - Experiment with different media, materials and techniques in art-making
    - Make appropriate choices in the selection of images, media, materials and techniques in art-making
    - Demonstrate technical proficiency in the use and application of skills, techniques, media, images, forms and processes
    - Produce a body of resolved and unresolved artworks as appropriate to intentions

### Assessment at a glance

Type of assessment	Format of assessment	Weighting of final grade (%)
External		60
Comparative study	<ul style="list-style-type: none"> <li>• 10–15 screens which examine and compare at least 3 artworks, at least 2 of which need to be by different artists</li> <li>• 3–5 screens which analyse the extent to which the student’s work and practices have been influenced by the art and artists examined</li> <li>• A list of sources used</li> </ul>	20
Process portfolio	<ul style="list-style-type: none"> <li>• 13–25 screens which evidence sustained experimentation, exploration, manipulation and refinement of a variety of art-making activities</li> </ul>	40
Internal		40
Exhibition	<ul style="list-style-type: none"> <li>• A curatorial rationale that does not exceed 700 words</li> <li>• 8–11 artworks</li> <li>• Exhibition text (stating the title, medium, size and intention) for each artwork</li> </ul>	40

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The IB Diploma Programme, for students aged 16 to 19, is an academically challenging and balanced programme of education that prepares students for success at university and life beyond. Students take courses in six different subject groups, maintaining both breadth and depth of study. Psychology higher level is in group 3, individuals and societies. In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

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

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

## Overview of the psychology higher level course and curriculum model

### I. Course description and aims

The IB Diploma Programme higher level psychology course aims to develop an awareness of how research findings can be applied to better understand human behaviour and how ethical practices are upheld in psychological inquiry. Students learn to understand the biological, cognitive and sociocultural influences on human behaviour and explore alternative explanations of behaviour. They also understand and use diverse methods of psychological inquiry.

In addition, the course is designed to:

- encourage the systematic and critical study of human experience and behaviour; physical, economic and social environments; and the history and development of social and cultural institutions
- develop the capacity to identify, analyse critically and evaluate theories, concepts and arguments about the nature and activities of the individual and society
- enable students to collect, describe and analyse data used in studies, test hypotheses; and interpret complex data and source material
- enable the student to recognize that the content and methodologies are contestable and that their study requires the toleration of uncertainty
- develop an awareness of how psychological research can be applied for the better understanding of human behaviour
- ensure that ethical practices are upheld in psychological inquiry
- develop an understanding of the biological, cognitive and sociocultural influences on human behaviour
- develop an understanding of alternative explanations of behavior
- understand and use diverse methods of psychological inquiry.

### II. Curriculum model overview

#### Psychology higher level

<i>Core</i>	90 hours of instruction on three topics <ul style="list-style-type: none"> <li>• The biological level of analysis</li> <li>• The cognitive level of analysis</li> <li>• The sociocultural level of analysis</li> </ul>	90 hours
<i>Options</i>	30 hours of instruction on two additional topics <ul style="list-style-type: none"> <li>• Abnormal psychology</li> <li>• Developmental psychology</li> <li>• Health psychology</li> <li>• Psychology of human relationships</li> <li>• Sport psychology</li> </ul>	60 hours
<i>Additional higher level</i>	Qualitative research in psychology	50 hours
<i>Experimental study</i>	Introduction to experimental research methodology	40 hours
<b>Total teaching hours</b>		<b>240 hours</b>

### III. Assessment model

#### Assessment for psychology higher level

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

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

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

- knowledge and comprehension of specified content, research methods, theories, such as key concepts, biological, cognitive and sociocultural levels of analysis
- application and analysis, including using psychological research and psychological concepts to formulate an argument in response to a specific question
- synthesis and evaluation of psychological theories, empirical studies, and research methods used to investigate behaviour
- selection and use of skills appropriate to psychology, the acquisition of knowledge, skills required for experimental design, data collection and presentation, data analysis and interpretation
- data analysis using an appropriate inferential statistical test and write an organized response.

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

On external assessments, students must be able to demonstrate an understanding of both basic facts and complex concepts related to the biological, cognitive and sociocultural levels of analysis. Students in higher level courses are also assessed on their knowledge and understanding of qualitative research. For their internal assessment, psychology higher level students plan, undertake and report on a simple experimental study.

#### Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
<b>External</b>			<b>80</b>
<i>Paper 1</i>	Question response and an essay	2	35
<i>Paper 2</i>	Answer 2 of 15 questions in essay form	2	25
<i>Paper 3</i>	Answer three questions	1	20
<b>Internal</b>			<b>20</b>
<i>Study report</i>	A report of a simple experimental study conducted by the student		

### IV. Sample questions

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

1. To what extent does genetic inheritance influence behaviour? Use relevant research studies in your response. (Paper 1)
2. Evaluate two research studies investigating the role of communication in maintaining relationships. (Paper 2)
3. The study outlined above uses the phrase "inductive content analysis". Explain the advantages and disadvantages of using this research strategy in the context of this specific study. (Paper 3, with regard to a supplied study)

\* the syllabus for examinations current until 2016

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

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

## Overview of the music standard level course and curriculum model

### I. Course description and aims

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

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

### II. Curriculum model overview

#### Music standard level

Components		
Core	Musical perception	75 hours
Options	Students choose one of the three options <ul style="list-style-type: none"> <li>• Creating</li> <li>• Solo performing</li> <li>• Group performing</li> </ul>	75 hours
<b>Total teaching hours</b>		<b>150 hours</b>

### III. Assessment model

#### Assessment for music standard level

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

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

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

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

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

## Assessment for music standard level (continued)

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

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

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

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

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

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

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

## Assessment at a glance

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

## IV. Sample questions

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

### Listening paper section A

Sample: *El Salón México* by A Copland

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

\* the syllabus for examinations current until 2019

### Listening paper section B

Sample: *First movement* from *Symphony No 1, Op 25*

“*Classical*” by S Prokofiev (score provided)

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

Sample: Unidentified Piece (no score provided)

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

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

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

## Overview of the music higher level course and curriculum model

### I. Course description and aims

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

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

### II. Curriculum model overview

#### Music higher level

Components	
<i>Musical perception</i>	90 hours
<i>Creating</i>	75 hours
<i>Solo performing</i>	75 hours
<b>Total teaching hours</b>	<b>240 hours</b>

### III. Assessment model

#### Assessment for music higher level

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

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

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

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

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

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

## Assessment for music higher level (continued)

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

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

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

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

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

## Assessment at a glance

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

## IV. Sample questions

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

### Listening paper section A

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

### Listening paper section B

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

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

\* the syllabus for examinations current until 2019

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# International Baccalaureate Diploma Programme Subject Brief

## Mathematics:

### Mathematics – Standard level

First assessments 2014 – Last assessments 2020

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

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

These IB DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions



## I. Course description and aims

The IB DP mathematics standard level (SL) course focuses on introducing important mathematical concepts through the development of mathematical techniques. The intention is to introduce students to these concepts in a comprehensible and coherent way, rather than insisting on the mathematical rigour required for mathematics HL. Students should, wherever possible, apply the mathematical knowledge they have acquired to solve realistic problems set in an appropriate context.

The internally assessed exploration offers students the opportunity for developing independence in their mathematical learning. Students are encouraged to take a considered approach to various mathematical activities and to explore different mathematical ideas. The exploration also allows students to work without the time constraints of a written examination and to develop the skills they need for communicating mathematical ideas.

The aims of all mathematics courses in group 5 are to enable students to:

- enjoy mathematics, and develop an appreciation of the elegance and power of mathematics
- develop an understanding of the principles and nature of mathematics
- communicate clearly and confidently in a variety of contexts
- develop logical, critical and creative thinking, and patience and persistence in problem-solving

- employ and refine their powers of abstraction and generalization
- apply and transfer skills to alternative situations, to other areas of knowledge and to future developments
- appreciate how developments in technology and mathematics have influenced each other
- appreciate the moral, social and ethical implications arising from the work of mathematicians and the applications of mathematics
- appreciate the international dimension in mathematics through an awareness of the universality of mathematics and its multicultural and historical perspectives
- appreciate the contribution of mathematics to other disciplines, and as a particular “area of knowledge” in the TOK course.

## II. Curriculum model overview

Component	Recommended teaching hours
<b>Topic 1</b> Algebra	9
<b>Topic 2</b> Functions and equations	24
<b>Topic 3</b> Circular functions and trigonometry	16
<b>Topic 4</b> Vectors	16

<b>Topic 5</b> Statistics and probability	35
<b>Topic 6</b> Calculus	40
<b>Mathematical exploration</b> Internal assessment in mathematics SL is an individual exploration. This is a piece of written work that involves investigating an area of mathematics.	10

### III. Assessment model

Having followed the mathematics standard level course, students will be expected to demonstrate the following.

- Knowledge and understanding: recall, select and use their knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts.
- Problem-solving: recall, select and use their knowledge of mathematical skills, results and models in both real and abstract contexts to solve problems.
- Communication and interpretation: transform common realistic contexts into mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation.
- Technology: use technology, accurately, appropriately and efficiently both to explore new ideas and to solve problems.
- Reasoning: construct mathematical arguments through use of precise statements, logical deduction and inference, and by the manipulation of mathematical expressions.
- Inquiry approaches: investigate unfamiliar situations, both abstract and real-world, involving organizing and analysing information, making conjectures, drawing conclusions and testing their validity.

### Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		3	80
Paper 1 (non-calculator)	Section A: Compulsory short-response questions based on the whole syllabus. Section B: Compulsory extended-response questions based on the whole syllabus.	1.5	40
Paper 2 (graphical display calculator required)	Section A: Compulsory short-response questions based on the whole syllabus. Section B: Compulsory extended-response questions based on the whole syllabus.	1.5	40
Internal			20
Mathematical exploration	Internal assessment in mathematics SL is an individual exploration. This is a piece of written work that involves investigating an area of mathematics.		

### IV. Sample questions

- A data set has a mean of 20 and a standard deviation of 6.
  - Each value in the data set has 10 added to it. Write down the value of
    - the new mean;
    - the new standard deviation.
  - Each value in the original data set is multiplied by 10.
    - Write down the value of the new mean.
    - Find the value of the new variance.
- Given that  $f(x) = 1/x$ , answer the following.
  - Find the first four derivatives of  $f(x)$ .
  - Write an expression for  $f^{(n)}$  in terms of  $x$  and  $n$ .

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# International Baccalaureate Diploma Programme Subject Brief

## Mathematics:

### Mathematics – Higher level

First assessments 2014 – Last assessments 2020

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

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

These IB DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions



## I. Course description and aims

The IB DP higher level mathematics course focuses on developing important mathematical concepts in a comprehensible, coherent and rigorous way, achieved by a carefully balanced approach. Students are encouraged to apply their mathematical knowledge to solve problems set in a variety of meaningful contexts. Development of each topic should feature justification and proof of results. Students should expect to develop insight into mathematical form and structure, and should be intellectually equipped to appreciate the links between concepts in different topic areas. They are also encouraged to develop the skills needed to continue their mathematical growth in other learning environments. The internally assessed exploration allows students to develop independence in mathematical learning. Students are encouraged to take a considered approach to various mathematical activities and to explore different mathematical ideas. The exploration also allows students to work without the time constraints of a written examination and to develop the skills they need for communicating mathematical ideas.

The aims of all mathematics courses in group 5 are to enable students to:

- enjoy and develop an appreciation of the elegance and power of mathematics
- develop an understanding of the principles and nature of mathematics
- communicate clearly and confidently in a variety of contexts
- develop logical, critical and creative thinking, and patience and persistence in problem-solving
- employ and refine their powers of abstraction and generalization

- apply and transfer skills to alternative situations, to other areas of knowledge and to future developments
- appreciate how developments in technology and mathematics have influenced each other
- appreciate the moral, social and ethical implications arising from the work of mathematicians and the applications of mathematics
- appreciate the international dimension in mathematics through an awareness of the universality of mathematics and its multicultural and historical perspectives
- appreciate the contribution of mathematics to other disciplines, and as a particular “area of knowledge” in the TOK course.

## II. Curriculum model overview

Component	Recommended teaching hours
<b>Topic 1</b> Algebra	30
<b>Topic 2</b> Functions and equations	22
<b>Topic 3</b> Circular functions and trigonometry	22
<b>Topic 4</b> Vectors	24
<b>Topic 5</b> Statistics and probability	36
<b>Topic 6</b> Calculus	48

<b>Option syllabus content</b> Students must study one of the following options. <b>Topic 7</b> Statistics and probability <b>Topic 8</b> Sets, relations and groups <b>Topic 9</b> Calculus <b>Topic 10</b> Discrete mathematics	48
<b>Mathematical exploration</b> A piece of individual written work that involves investigating an area of mathematics.	10

### III. Assessment model

Having followed the mathematics higher level course, students will be expected to demonstrate the following:

- Knowledge and understanding: recall, select and use knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts.
- Problem-solving: recall, select and use their knowledge of mathematical skills, results and models in both real and abstract contexts to solve problems.
- Communication and interpretation: transform common realistic contexts into mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation.
- Technology: use technology, accurately, appropriately and efficiently both to explore new ideas and to solve problems.
- Reasoning: construct mathematical arguments through use of precise statements, logical deduction and inference, and by the manipulation of mathematical expressions.
- Inquiry approaches: investigate unfamiliar situations, both abstract and real-world, involving organizing and analysing information, making conjectures, drawing conclusions and testing their validity.

### Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		5	80
Paper 1 (non-calculator)	Section A: Compulsory short-response questions based on the core syllabus. Section B: Compulsory extended-response questions based on the core syllabus.	2	30
Paper 2 (graphical display calculator required)	Section A: Compulsory short-response questions based on the core syllabus. Section B: Compulsory extended-response questions based on the core syllabus.	2	30
Paper 3 (graphical display calculator required)	Compulsory extended-response questions based mainly on the syllabus options.	1	20
Internal			20
Mathematical exploration	The individual exploration is a piece of written work that involves investigating an area of mathematics.		

### IV. Sample questions

- The vectors  $a$ ,  $b$ ,  $c$  satisfy the equation  $a+b+c=0$ . Show that  $a \times b = b \times c = c \times a$ .
- Consider the following system of equations:
 
$$\begin{aligned}x + y + z &= 1 \\2x + 3y + z &= 3 \\x + 3y - z &= \lambda\end{aligned}$$
 where  $\lambda \in \mathbb{R}$ .
  - Show that this system does not have a unique solution for any value of  $\lambda$ .
  - Determine the value of  $\lambda$  for which the system is consistent.
    - For this value of  $\lambda$ , find the general solution of the system.

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# International Baccalaureate Diploma Programme Subject Brief

## Language acquisition:

### Language B – Standard level

First assessments 2013 – Last assessments 2019

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

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

These IB DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions



## I. Course description and aims

The IB DP language B course provides students with the opportunity to acquire or develop an additional language and to promote an understanding of other cultures through the study of language.

Language B is designed for students who possess a degree of knowledge and experience in the target language. High performing standard level students should be able to follow university courses in other disciplines in the language B that is studied.

The aims of the language B standard level course are to:

- develop students' intercultural understanding
- enable students to understand and use the language they have studied in a range of contexts and for a variety of purposes
- encourage, through the study of texts and social interaction, an awareness and appreciation of the different perspectives of people from other cultures
- develop students' awareness of the role of language in relation to other areas of knowledge
- develop students' awareness of the relationship between the languages and cultures with which they are familiar
- provide students with a basis for further study, work and leisure through the use of an additional language
- provide the opportunity for enjoyment, creativity and intellectual stimulation through knowledge of an additional language.

## II. Curriculum model overview

Component	Recommended teaching hours
<b>Core</b> <b>Instruction on three topics</b> <ul style="list-style-type: none"> <li>• communication and media</li> <li>• global issues</li> <li>• Social relationships</li> </ul>	150
<b>Options</b> <b>Two options from the following five</b> <ul style="list-style-type: none"> <li>• cultural diversity</li> <li>• customs and traditions</li> <li>• health</li> <li>• leisure</li> <li>• science and technology</li> </ul>	

### III. Assessment model

The assessments aim to test all students' ability to understand and use the language of study as well as key concepts through:

- learning a language by engaging with its use and meaning within a social framework
- developing receptive, productive and interactive skills in the language of study.

Students will be assessed on their ability to:

- communicate clearly and effectively in a range of situations, demonstrating linguistic competence and intercultural understanding
- use language appropriate to a range of interpersonal and/or cultural contexts
- understand and use language to express and respond to a range of ideas with accuracy and fluency
- organize ideas on a range of topics, in a clear, coherent and convincing manner
- understand, analyse and respond to a range of written and spoken texts.

### Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External			70
Paper 1	Text handling exercise on 4 written texts	1.5	25
Paper 2	Written productive skills through 1 writing exercise	1.5	25
Written assignment	Written exercise and rationale based on intertextual reading		20
Internal			30
Oral work	Individual oral presentation		20
	Interactive oral activities		10

### IV. Sample questions

Students are asked to write 250-400 words based on one of five available topics, such as:

- Social isolation can be considered a problem for today's teenagers. In class, you have been asked to give a speech to your classmates informing them about the problem. Write the text of your speech. [based on Option: Health]
- You are a student at an international school in a (target language) speaking country. Write an article to be published in the school magazine on how your experience at the international school will affect your future job prospects. [based on Option: Cultural diversity]

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# International Baccalaureate Diploma Programme Subject Brief

## Language acquisition: Language B – Higher level

First assessments 2013 – Last assessments 2019

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

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

These IB DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions



## I. Course description and aims

The IB DP language B course provides students with the opportunity to acquire or develop an additional language and to promote an understanding of other cultures through the study of language.

Language B is designed for students who possess a degree of knowledge and experience in the target language. Those learning a language B at higher level should be able to follow university courses in other disciplines in the language B that is studied.

The aims of the language B higher level course are to:

- develop students' intercultural understanding
- enable students to understand and use 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 the different perspectives of people from other cultures
- develop students' awareness of the role of language in relation to other areas of knowledge
- develop students' awareness of the relationship between the languages and cultures with which they are familiar
- provide students with a basis for further study, work and leisure through the use of an additional language
- provide the opportunity for enjoyment, creativity and intellectual stimulation through knowledge of an additional language.

## II. Curriculum model overview

Component	Recommended teaching hours
<b>Core</b> <b>Instruction on three topics</b> <ul style="list-style-type: none"> <li>• communication and media</li> <li>• global issues</li> <li>• Social relationships</li> </ul>	240
<b>Options</b> <b>Two options from the following five</b> <ul style="list-style-type: none"> <li>• cultural diversity</li> <li>• customs and traditions</li> <li>• health</li> <li>• leisure</li> <li>• science and technology</li> </ul>	
<b>Literature</b> <ul style="list-style-type: none"> <li>• Read 2 works of literature</li> </ul>	

### III. Assessment model

The assessments aim to test all students' ability to understand and use the language of study as well as key concepts through:

- learning a language by engaging with its use and meaning within a social framework
- developing receptive, productive and interactive skills to meet the objectives of the course.

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

Students will be assessed on their ability to:

- communicate clearly and effectively in a range of situations, demonstrating linguistic competence and intercultural understanding
- use language appropriate to a range of interpersonal and/or cultural contexts
- understand and use language to express and respond to a range of ideas with accuracy and fluency
- organize ideas on a range of topics, in a clear, coherent and convincing manner
- understand, analyse and respond to a range of written and spoken texts
- understand and use works of literature written in the target language of study

### Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External			70
Paper 1	Receptive skills Text handling exercise on 4 written texts.	1.5	25
Paper 2	Written productive skills through 2 writing exercises	1.5	25
Written assignment	Receptive and written productive skills Creative writing and rationale based on one literary text read during the course		20
Internal			30
Oral work	Individual oral presentation Interactive oral activities.		20 10

### IV. Sample questions

Students are asked to write 250-400 words based on one of five available topics, such as:

- Social isolation can be considered a problem for today's teenagers. In class, you have been asked to give a speech to your classmates informing them about the problem. Write the text of your speech. [based on Option: Health]
- You are a student at an international school in a (target language) speaking country. Write an article to be published in the school magazine on how your experience at the international school will affect your future job prospects. [based on Option: Cultural diversity]

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# International Baccalaureate Diploma Programme Subject Brief

## Language acquisition:

### Language ab initio – Standard level

First assessments 2013 – Last assessments 2019

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

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

These IB DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions



## I. Course description and aims

The IB DP language ab initio course is 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. This process encourages the learner to go beyond the confines of the classroom, expanding an awareness of the world and fostering respect for cultural diversity. The language ab initio course develops students' linguistic abilities through the development of receptive, productive and interactive skills by providing them opportunities to respond and interact appropriately in a defined range of everyday situations. Language ab initio is available at standard level only.

The aims of the language ab initio course are to:

- develop students' intercultural understanding
- enable students to understand and use 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 the different perspectives of people from other cultures
- develop students' awareness of the role of language in relation to other areas of knowledge
- develop students' awareness of the relationship between the languages and cultures with which they are familiar
- provide students with a basis for further study, work and leisure through the use of an additional language
- provide the opportunity for enjoyment, creativity and intellectual stimulation through knowledge of an additional language.

## II. Curriculum model overview

Three areas of study – language, themes and texts – provide the basis of the language ab initio course. These three fundamental areas, as well as intercultural understanding, are all interrelated and should be studied concurrently.

### Areas of Study

#### Language

- Receptive skills: the ability to comprehend straightforward written and spoken language.
- Productive skills: the ability to write and speak the target language effectively.
- Interactive skills: the ability to understand and respond effectively to written and spoken language.

#### Themes

- Individuals and society – Daily routines; education; food and drink; personal details; appearance and character physical health; relationships; shopping
- Leisure and work – Employment; entertainment; holidays; media; sport; technology; transport
- Urban and rural environment – Environmental concerns; global issues; neighbourhood; physical geography; town and services; weather

#### Texts

During the course, students are taught to understand and produce a variety of spoken, written and visual texts. Use of authentic texts is encouraged. Examples of texts to be studied include articles, letters, maps, timetables and web pages.

### III. Assessment model

Having followed the language ab initio standard level course, students will be assessed on their ability to:

- demonstrate an awareness and understanding of the intercultural elements related to the prescribed topics
- communicate clearly and effectively in a range of situations
- understand and use accurately the basic structures of the language
- understand and use an appropriate range of vocabulary
- use a register and a format that are appropriate to the situation.

### Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External			75
Paper 1: Receptive skills	Understanding of four written texts. Text-handling exercises.	1.5	30
Paper 2: Productive skills	Two compulsory writing exercises. Section A: One question to be answered from a choice of two. Section B: One question to be answered from a choice of three.	1	25
Written assignment: Receptive and productive skills	A piece of writing, 200–300 words, in the target language carried out under teacher guidance.	2	20
Internal			25
Individual oral: Interactive skills	1. Presentation of a visual stimulus (from a choice of two) by the student 2. Follow-up questions on the visual stimulus 3. General conversation including at least two questions on the written assignment	10 minutes	25

### IV. Sample questions

- Your teacher has asked you to speak about the disadvantages of using public transport. Write the text of your speech. Mention at least three disadvantages.
- You are on holiday in a (target language) speaking country. On your personal blog you post a message about someone you have just met. In your blog entry you explain:
  - three details about this person
  - where you met
  - what you have been doing together
  - what your future plans are

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# 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
<b>Total teaching hours</b>	<b>150</b>	<b>240</b>

### 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
<b>External</b>					
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
<b>Internal</b>					
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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# International Baccalaureate Diploma Programme Subject Brief

## The Arts: Film

First assessments 2019



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

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

These IB DP subject briefs illustrate the following key course components

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



## I. Course description and aims

The DP film course aims to develop students as proficient interpreters and makers of film texts. Through the study and analysis of film texts, and practical exercises in film production, students develop critical abilities and appreciation of artistic, cultural, historical and global perspectives in film. They examine concepts, theories, practices and ideas from multiple perspectives, challenging their own views to understand and value those of others. Students are challenged to acquire and develop critical thinking, reflective analysis and the imaginative synthesis through practical engagement in the art, craft and study of film.

Students experiment with film and multimedia technology, acquiring the skills and creative competencies required to successfully communicate through the language of the medium. They develop an artistic voice and learn how to express personal perspectives through film. The course emphasizes the importance of working collaboratively, international and intercultural dynamics, and an appreciation of the development of film across time and culture.

The film syllabus allows for greater breadth and depth in teaching and learning at HL through an additional assessment task, requiring HL students to reflect on the core syllabus areas to formulate their own intentions for a completed film. They work collaboratively as a core production team in order to effectively communicate on screen.

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

- explore the various contexts of film and make links to, and between, films, filmmakers and filmmaking techniques (**inquiry**)
- acquire and apply skills as discerning interpreters of film and as creators of film, working both individually and collaboratively (**action**)

- develop evaluative and critical perspectives on their own film work and the work of others (**reflection**).

## II. Curriculum model overview

Syllabus component	Teaching hours	
	SL	HL
<b>Reading film</b> Examine film as an art form, studying a broad range of film texts from a variety of <b>cultural contexts</b> and analysing how <b>film elements</b> combine to create meaning.	45	45
<b>Contextualizing film</b> Explore the evolution of film across time and culture. Examine various areas of <b>film focus</b> in order to recognize the similarities and differences that exist between films from contrasting <b>cultural contexts</b> .	45	45
<b>Exploring film production roles</b> Explore various <b>film production roles</b> through engagement with all phases of the filmmaking process. Acquire, develop and apply skills through filmmaking exercises, experiments and completed films.	60	60
<b>HL only: Collaboratively producing film</b> Focus on the collaborative aspects of filmmaking and experience working in <b>core production teams</b> to fulfill shared artistic intentions. Work in chosen <b>film production roles</b> and contribute to all phases of the filmmaking process to collaboratively create original completed films.		90
<b>Total teaching hours</b>	150	240

### III. Assessment model

It is expected that by the end of the film course, students at SL or HL will be able to demonstrate the following.

#### 1. Knowledge and understanding of specified contexts and processes

- Identify the film elements associated with conveying meaning in a variety of film texts.
- Formulate personal intentions for work, which arise from both research and artistic endeavour.
- Identify informative moments and examples from their own filmmaking work to support analysis.
- Present ideas, discoveries and learning that arise from both research and practical engagement with films, filmmakers and techniques.

#### 2. Application and analysis of knowledge and understanding

- Analyse film from various cultural contexts and explain links between areas of film focus and film elements employed by filmmakers.
- Demonstrate knowledge and understanding of films, filmmakers and their various cultural contexts in order to influence, inform and impact the creation of film work.
- Explore and experiment with a variety of film-production roles in order to understand the associated skills, techniques and processes employed by filmmakers.

#### 3. Synthesis and evaluation

- Critically interpret various sources of information in order to support analysis.
- Compare and contrast filmmakers, their films and their various cultural contexts in order to further the understanding of particular areas of film focus.
- Evaluate films created by themselves and others and articulate an informed personal response using appropriate cinematic language and vocabulary.
- Reflect on the process of collaboration and on the successes and challenges encountered as a member of a core production team.

#### 4. Select, use and apply a variety of appropriate skills and techniques

- Make appropriate choices in the selection of words, images, sounds and techniques when assembling their own work for presentation.
- Experiment in a variety of film-production roles in order to produce film work that conveys meaning on screen.
- Collaborate effectively with others in the creation of film work.

### Assessment at a glance

Type of assessment	Format of assessment	Weighting of final grade (%)	
		SL	HL
External		60	40
Textual analysis	Textual analysis (max 1,750 words) of a prescribed film text based on a chosen extract (max 5 mins), and list of sources.	30	20
Comparative study	Recorded multimedia comparative study (max 10 mins), and list of sources.	30	20
Internal		40	60
Film portfolio	Portfolio pages (max 9 pages: 3 pages per production role) and list of sources. A film reel (max 9 mins: 3 mins per production role, including 1 completed film).	40	25
Collaborative film project (HL only)	Completed film (max 7 mins). Project report (max 2,000 words) and list of sources.		35

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# International Baccalaureate Diploma Programme Subject Brief

## Individuals and societies: History—higher level

First assessments 2017—last assessments 2025

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

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



These DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions

### I. Course description and aims

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

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

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

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

- develop an understanding of, and continuing interest in, the past
- encourage students to engage with multiple perspectives and to appreciate the complex nature of historical concepts, issues, events and developments
- promote international-mindedness through the study of history from more than one region of the world

- develop an understanding of history as a discipline and to develop historical consciousness including a sense of chronology and context, and an understanding of different historical perspectives
- develop key historical skills, including engaging effectively with sources
- increase students' understanding of themselves and of contemporary society by encouraging reflection on the past.

### II. Curriculum model overview

Component	Recommended teaching hours
<b>Prescribed subjects</b> <b>One of the following, using two case studies, each taken from a different region of the world:</b> <ol style="list-style-type: none"> <li>1. Military leaders</li> <li>2. Conquest and its impact</li> <li>3. The move to global war</li> <li>4. Rights and protest</li> <li>5. Conflict and intervention</li> </ol>	<b>40</b>

<b>World history topics</b> <b>Two of the following, using topic examples from more than one region of the world:</b> <ol style="list-style-type: none"> <li>1. Society and economy (750–1400)</li> <li>2. Causes and effects of medieval wars (750–1500)</li> <li>3. Dynasties and rulers (750–1500)</li> <li>4. Societies in transition (1400–1700)</li> <li>5. Early Modern states (1450–1789)</li> <li>6. Causes and effects of Early Modern wars (1500–1750)</li> <li>7. Origins, development and impact of industrialization (1750–2005)</li> <li>8. Independence movements (1800–2000)</li> <li>9. Evolution and development of democratic states (1848–2000)</li> <li>10. Authoritarian states (20th century)</li> <li>11. Causes and effects of 20th-century wars</li> <li>12. The Cold War: Superpower tensions and rivalries (20th century)</li> </ol>	<b>90</b>
<b>HL options: Depth studies</b> <b>One of the following:</b> <ol style="list-style-type: none"> <li>1. History of Africa and the Middle East</li> <li>2. History of the Americas</li> <li>3. History of Asia and Oceania</li> <li>4. History of Europe</li> </ol>	<b>90</b>
<b>Internal assessment</b> Historical investigation	<b>20</b>

#### Assessment objective 4: Use and application of appropriate skills

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

#### Assessment at a glance

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

### III. Assessment model

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

#### Assessment objective 1: Knowledge and understanding

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

#### Assessment objective 2: Application and analysis

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

#### Assessment objective 3: Synthesis and evaluation

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

### IV. Sample questions

Paper 1

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

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

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# International Baccalaureate Diploma Programme Subject Brief

Interdisciplinary course:

Environmental systems and societies—standard level

First assessments 2017—last assessments 2023



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



These DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions

## I. Course description and aims

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

ESS is firmly grounded in both a scientific exploration of environmental systems in their structure and function, and in the exploration of cultural, economic, ethical, political and social interactions of societies with the environment. As a result of studying this course, students will become equipped with the ability to recognize and evaluate the impact of our complex system of societies on the natural world.

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

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

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

## II. Curriculum model overview

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

### The group 4 project

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

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

## III. Assessment model

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

### Assessment objective 1

Demonstrate knowledge and understanding of relevant:

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

### Assessment objective 2

Apply this knowledge and understanding in the analysis of:

- explanations, concepts and theories
- data and models
- case studies in unfamiliar contexts
- arguments and value systems.

### Assessment objective 3

Evaluate, justify and synthesize, as appropriate:

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

### Assessment objective 4

Engage with investigations of environmental and societal issues at the local and global level through:

- evaluating the political, economic and social contexts of issues
- selecting and applying the appropriate research and practical skills necessary to carry out investigations
- suggesting collaborative and innovative solutions that demonstrate awareness and respect for the cultural differences and value systems of others.

## Assessment at a glance

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

## IV. Sample questions

Paper 1

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

Paper 2

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

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# International Baccalaureate Diploma Programme Subject Brief

Sciences:

## Computer science – Higher level

First assessments 2014 – Last assessments 2020

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

These IB DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions



## I. Course description and aims

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

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

The aims of the computer science HL courses are to:

- provide opportunities for study and creativity within a global context that will stimulate and challenge students developing the skills necessary for independent and lifelong learning
- provide a body of knowledge, methods and techniques that characterize computer science
- enable students to apply and use a body of knowledge, methods and techniques that characterize computer science
- demonstrate initiative in applying thinking skills critically to identify and resolve complex problems
- engender an awareness of the need for, and the value of, effective collaboration and communication in resolving complex problems

- develop logical and critical thinking as well as experimental, investigative and problem-solving skills
- develop and apply the students' information and communication technology skills in the study of computer science to communicate information confidently and effectively
- raise awareness of the moral, ethical, social, economic and environmental implications of using science and technology
- develop an appreciation of the possibilities and limitations associated with continued developments in IT systems and computer science
- encourage an understanding of the relationships between scientific disciplines and the overarching nature of the scientific method.

## II. Curriculum model overview

Component	Recommended teaching hours
<b>Core syllabus content</b>	
<b>SL/HL core</b>	80
<ul style="list-style-type: none"> <li>• Topic 1: System fundamentals</li> <li>• Topic 2: Computer organization</li> <li>• Topic 3: Networks</li> <li>• Topic 4: Computational thinking, problem-solving and programming</li> </ul>	
<b>HL extension</b>	45
<ul style="list-style-type: none"> <li>• Topic 5: Abstract data structures</li> <li>• Topic 6: Resource management</li> <li>• Topic 7: Control</li> </ul>	
<b>Case study</b>	30
Additional subject content introduced by the annually issued case study	

<b>Option</b>	
<b>SL/HL core</b>	30
<b>HL extension</b>	15
Students study one of the following options:	
<ul style="list-style-type: none"> <li>• Option A: Databases</li> <li>• Option B: Modelling and simulation</li> <li>• Option C: Web science</li> <li>• Option D: Object-oriented programming (OOP)</li> </ul>	
<b>Internal assessment</b>	
<b>Solution</b>	30
Practical application of skills through the development of a product and associated documentation	
<b>Group 4 project</b>	10

### III. Assessment model

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

Know and understand:

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

Apply and use:

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

Construct, analyse, evaluate and formulate:

- success criteria, solution specifications including task outlines, designs and test plans
- appropriate techniques within a specified solution.

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

### Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External			80
Paper 1	<ul style="list-style-type: none"> <li>• Section A consists of several compulsory short answer questions.</li> <li>• Section B consists of five compulsory structured questions.</li> </ul>	2 hours, 10 min.	40
Paper 2	An examination paper of between three and seven compulsory question; linked to the option studied.	1 hour, 20 min.	20
Paper 3	An examination paper consisting of four compulsory questions based on a pre-seen case study.	1 hour	20
Internal			20
Written commentary	A report of The development of a computational solution. Students must produce: <ul style="list-style-type: none"> <li>• a cover page that follows the prescribed format</li> <li>• a product</li> <li>• supporting documentation (word limit 2,000 words).</li> </ul>	30 hours	25
<b>Group 4 project</b>	To be assessed using the criterion Personal skills.	10 hours	

### IV. Sample questions

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

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# International Baccalaureate Diploma Programme Subject Brief

## Individuals and societies:

### Business management— Standard level

First assessments 2016 – Last assessments 2022

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



These IB DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions

## I. Course description and aims

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

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

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

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

1. encourage a holistic view of the world of business
2. empower students to think critically and strategically about individual and organizational behaviour

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

## II. Curriculum model overview

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

<b>Unit 3: Finance and accounts</b>	<b>35</b>
3.1 Sources of finance	
3.2 Costs and revenues	
3.3 Break-even analysis	
3.4 Final accounts (some HL only)	
3.5 Profitability and liquidity ratio analysis	
3.6 Cash flow	
3.7 Investment appraisal (some HL only)	
<b>Unit 4: Marketing</b>	<b>35</b>
4.1 The role of marketing	
4.2 Marketing planning (including introduction to the four Ps)	
4.3 Market research	
4.4 The four Ps (product, price, promotion, place)	
4.5 E-commerce	
<b>Unit 5: Operations management</b>	<b>10</b>
5.1 The role of operations management	
5.2 Production methods	
5.3 Location	
<b>Internal assessment</b>	<b>15</b>

### III. Assessment model

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

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

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### Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		3	75
Paper 1	Structured questions	1.25	35
Paper 2	Structured and extended response questions	1.75	40
Internal		15	25
Written commentary	Students produce a written commentary based on three to five supporting documents about a real issue or problem facing a particular organization. Maximum 1,500 words.	15	25

### IV. Sample questions

- Apply the Boston Consulting Group (BCG) matrix to B-Pharma's product portfolio.
- Examine possible strategies for Dan Electro to prevent cash flow difficulties.
- With reference to one organization that you have studied, examine what changes globalization brings about in the management of human resources.

# International Baccalaureate Diploma Programme Subject Brief

Individuals and societies:

Business management—Higher level

First assessments 2016 – Last assessments 2022

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

These IB DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview



- III. Assessment model
- IV. Sample questions

## I. Course description and aims

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

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

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

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

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

## II. Curriculum model overview

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

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

### III. Assessment model

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

- Demonstrate knowledge and understanding of:
  - the business management tools, techniques and theories specified in the syllabus content
  - the six concepts that underpin the subject
  - real-world business problems, issues and decisions
  - the HL extension topics.

- Demonstrate application and analysis of:
  - knowledge and skills to a variety of real-world and fictional business situations
  - business decisions by explaining the issue(s) at stake, selecting and interpreting data, and applying appropriate tools, techniques, theories and concepts
  - the HL extension topics.
- Demonstrate synthesis and evaluation of:
  - business strategies and practices, showing evidence of critical thinking
  - business decisions, formulating recommendations
  - the HL extension topics.
- Demonstrate a variety of appropriate skills to:
  - produce well-structured written material using business terminology
  - select and use quantitative and qualitative business tools, techniques and methods
  - select and use business material, from a range of primary and secondary sources.

### Assessment at a glance

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

### IV. Sample questions

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

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# International Baccalaureate Diploma Programme Subject Brief

Individuals and societies:

World religions – Standard level

First assessments 2013 – Last assessments 2019

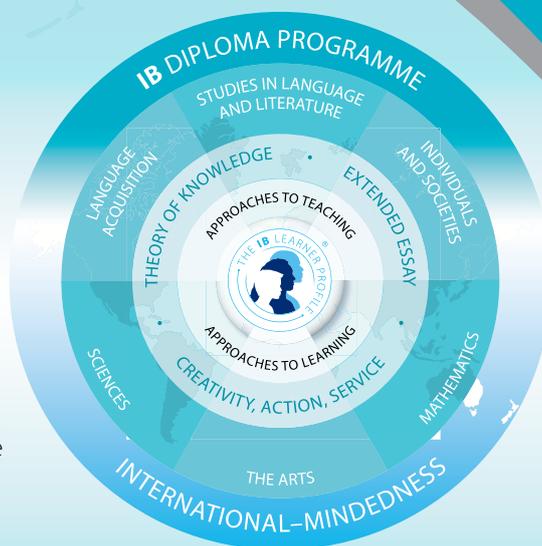
The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural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

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

These IB DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions



## I. Course description and aims

The IB DP world religions course is a systematic, analytical yet empathetic study of the variety of beliefs and practices encountered in nine main religions of the world. The course seeks to promote an awareness of religious issues in the contemporary world by requiring the study of a diverse range of religions.

The religions are studied in such a way that students acquire a sense of what it is like to belong to a particular religion and how that influences the way in which the followers of that religion understand the world, act in it, and relate and respond to others.

The aims of the world religions standard level courses are to:

- promote an inquiring, analytical and empathetic approach to the study of religion
- develop an informed understanding of the diversity of world religions
- foster a respectful awareness of the significance of the beliefs and practices for the faith member
- develop an understanding of how religion affects people's lives
- encourage a global appreciation of the issues surrounding religious and spiritual beliefs, controversies and movements in the world today
- promote responsible and informed international citizenship.

## II. Curriculum model overview

Component	Recommended teaching hours
<p><b>Part 1: Introduction to world religions</b> Five world religions will be studied from a choice of nine, at least one to be chosen from each of the following three categories</p> <ul style="list-style-type: none"> <li>• Hinduism, Buddhism, Sikhism</li> <li>• Judaism, Christianity, Islam</li> <li>• Taoism, Jainism, Baha'i Faith</li> </ul> <p>The following three questions underpin the study of all world religions.</p> <ul style="list-style-type: none"> <li>• What is the human condition?</li> <li>• Where are we going?</li> <li>• How do we get there</li> </ul>	50
<p><b>Part 2: In-depth studies</b> Two world religions to be studied from a choice of six, one to be chosen from each category</p> <ul style="list-style-type: none"> <li>• Hinduism, Buddhism, Sikhism</li> <li>• Judaism, Christianity, Islam</li> </ul> <p>The study of each religion will be guided through the following themes:</p> <ul style="list-style-type: none"> <li>• Rituals</li> <li>• Sacred texts</li> <li>• Doctrines/beliefs</li> <li>• Religious experience</li> <li>• Ethics and moral conduct</li> </ul>	80
<p><b>Part 3: Internal assessment</b> Investigative study</p>	20

### III. Assessment model

Having followed the Diploma Programme world religions at standard level, students will be expected to do the following.

#### Demonstrate knowledge and understanding of specified content

- Demonstrate knowledge and understanding of five world religions chosen for the introductory unit
- Define, understand and use concepts associated with particular world religions
- Demonstrate in-depth knowledge and understanding of two religions reflecting different traditions
- In internal assessment, demonstrate knowledge and understanding of a specific world religions investigative study

#### Demonstrate application and analysis of knowledge and understanding

- Demonstrate how the key concepts of a religion are expressed in the behaviour of believers
- Demonstrate application and analysis of concepts
- Research, select and analyse material from both primary and secondary sources

#### Demonstrate synthesis and evaluation

- Evaluate concepts associated with world religions
- Synthesize by integrating evidence and critical commentary
- Select, use and apply a variety of appropriate skills and techniques
- Select, use and apply the prescribed world religions skills in appropriate contexts
- Demonstrate the ability to organize ideas into a clear, logical, coherent and balanced account
- Evaluate the reliability of evidence and the chosen method of research for the internal assessment

### Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External			75
Paper 1	Five (of nine possible) stimulus response questions, covering at least three religions	1.25	30
Paper 2	Two (of fourteen possible) essay questions based on guiding themes	1.5	45
Internal			25
Written analysis	Structured format based on an investigative study	20	25

### IV. Sample questions

- Explain Taoist ideas about opposites and their reconciliation.
- Define what “haumai” means for Sikhs.
- With reference to both creed and scripture, evaluate two different interpretations of the resurrection of Jesus Christ.
- Compare and contrast the bases for the authority of the Qur’an and the Hadiths.

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# International Baccalaureate Diploma Programme Subject Brief

## Sciences: Sports, exercise and health science

First assessments: SL – 2014; HL - 2018



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



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

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions

## I. Course description and aims

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

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

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

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

- appreciate scientific study and creativity within a global context through stimulating and challenging opportunities
- acquire a body of knowledge, methods and techniques that characterize science and technology
- apply and use a body of knowledge, methods and techniques that characterize science and technology

- develop an ability to analyse, evaluate and synthesize scientific information
- develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities
- develop experimental and investigative scientific skills including the use of current technologies
- develop and apply 21st century communication skills in the study of science
- become critically aware, as global citizens, of the ethical implications of using science and technology
- develop an appreciation of the possibilities and limitations of science and technology
- develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge.

## II. Curriculum model overview

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

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

### The group 4 project

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

## III. Assessment model

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

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

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## Assessment at a glance

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

## IV. Sample questions

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

# International Baccalaureate Diploma Programme Subject Brief

Sciences:

Physics—Higher level

First assessments 2016 – Last assessments 2022

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- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions

## I. Course description and aims

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

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

By studying physics students should become aware of how scientists work and communicate with each other. While the scientific method may take on a wide variety of forms, it is the emphasis on a practical approach through experimental work that characterizes the subject. Teachers provide students with opportunities to develop manipulative skills, design investigations, collect data, analyse results and evaluate and communicate their findings.

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

1. appreciate scientific study and creativity within a global context through stimulating and challenging opportunities
2. acquire a body of knowledge, methods and techniques that characterize science and technology
3. apply and use a body of knowledge, methods and techniques that characterize science and technology

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

## II. Curriculum model overview

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

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

### The group 4 project

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

### III. Assessment model

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

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

### Assessment at a glance

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

### IV. Sample questions

- Why is wave-particle duality used in describing the properties of light?
  - Light is both a wave and a particle
  - Both wave and particle models can explain all the properties of light
  - Different properties of light can be more clearly explained by using one of the wave or particle models
  - Scientists feel more confident when using more than one model to explain a phenomenon (Paper 1)
- The tower is 120m high with an internal diameter of 3.5m. When most of the air has been removed, the pressure in the tower is 0.96 Pa. Determine the number of molecules of air in the tower when the temperature of the air is 300 K. (Paper 2)
- The streamlines above the airfoil are closer to each other than the streamlines below the airfoil. Suggest why this implies that the speed of the air above the airfoil is greater than the speed of air below the airfoil. (Paper 3)

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# International Baccalaureate Diploma Programme Subject Brief

Diploma Programme core:

Theory of knowledge

First assessments 2015 – Last assessments 2021



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

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

These IB DP subject briefs illustrate four key course components.

- I. Course description and aims
- II. Curriculum model overview

- III. Assessment model
- IV. Sample questions



## I. Course description and aims

Theory of knowledge (TOK) is a course about critical thinking and inquiring into the process of knowing, rather than about learning a specific body of knowledge. It plays a special role in the DP by providing an opportunity for students to reflect on the nature of knowledge, to make connections between areas of knowledge and to become aware of their own perspectives and those of the various groups whose knowledge they share. It is a core element undertaken by all DP students, and schools are required to devote at least 100 hours of class time to the course. The overall aim of TOK is to encourage students to formulate answers to the question "how do you know?" in a variety of contexts, and to see the value of that question. This allows students to develop an enduring fascination with the richness of knowledge.

The aims of the TOK course are to:

- make connections between a critical approach to the construction of knowledge, the academic disciplines and the wider world
- develop an awareness of how individuals and communities construct knowledge and how this is critically examined
- develop an interest in the diversity and richness of cultural perspectives and an awareness of personal and ideological assumptions
- critically reflect on their own beliefs and assumptions, leading to more thoughtful, responsible and purposeful lives
- understand that knowledge brings responsibility which leads to commitment and action.

## II. Curriculum model overview

### Component

#### **Knowing about knowing**

TOK examines how we know what we claim to know, by encouraging students to analyse knowledge claims and explore knowledge questions. A knowledge claim is the assertion that "I/we know X" or "I/we know how to Y", or a statement about knowledge; a knowledge question is an open question about knowledge. The distinction between shared knowledge and personal knowledge is intended to help teachers construct their TOK course and to help students explore the nature of knowledge.

#### **Ways of knowing**

While there are arguably many ways of knowing (WOKs), TOK identifies eight specific WOKs: language, sense perception, emotion, reason, imagination, faith, intuition, and memory. Students must explore a range of ways of knowing, and it is suggested to study four of these in depth.

#### **Areas of knowledge**

Areas of knowledge are specific branches of knowledge, each of which can be seen to have a distinct nature and different methods of gaining knowledge. TOK distinguishes between eight areas of knowledge: mathematics, the natural sciences, the human sciences, the arts, history, ethics, religious knowledge systems, and indigenous knowledge systems. Students must explore a range of areas of knowledge, and it is suggested to study six of these eight.

### III. Assessment model

Having followed the TOK course, students will be expected to demonstrate the following:

- Identify and analyse the various kinds of justifications used to support knowledge claims.
- Formulate, evaluate and attempt to answer knowledge questions.
- Examine how academic disciplines/areas of knowledge generate and shape knowledge.
- Understand the roles played by ways of knowing in the construction of shared and personal knowledge.
- Explore links between knowledge claims, knowledge questions, ways of knowing and areas of knowledge.
- Demonstrate an awareness and understanding of different perspectives and be able to relate these to one's own perspective.
- Explore a real-life/contemporary situation from a TOK perspective in the presentation.

### IV. Sample prescribed titles

- Using history and at least one other area of knowledge, examine the claim that it is possible to attain knowledge despite problems of bias and selection.
- "It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts" (Arthur Conan Doyle). Consider the extent to which this statement may be true in two or more areas of knowledge.
- In what ways may disagreement aid the pursuit of knowledge in the natural and human sciences?

### Assessment at a glance

Type of assessment	Format of assessment	Weighting of final grade (%)
External		
Part 1: Essay on a prescribed title	One essay on a title chosen from a list of six prescribed titles.	67
Internal		
Part 2: Presentation	One presentation to the class by an individual or a group (max of three persons); approximately 10 minutes per student. One written presentation planning document for each student.	33

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

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# International Baccalaureate Diploma Programme Subject Brief

## Diploma Programme Core:

### Extended essay, including the world studies option

First assessment 2018



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

To ensure both breadth and depth of knowledge and understanding, students must choose six courses from six distinct groups:

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



These DP subject briefs illustrate four key course components.

I. Course description and aims

II. Overview of the extended essay process

III. Assessment model

IV. Sample extended essay topics

## I. Course description and aims

The extended essay is a compulsory, externally assessed piece of independent research into a topic chosen by the student and presented as a formal piece of academic writing. The extended essay is intended to promote high-level research and writing skills, intellectual discovery and creativity while engaging students in personal research. This leads to a major piece of formally presented, structured writing of up to 4,000 words in which ideas and findings are communicated in a reasoned, coherent and appropriate manner.

Students are guided through the process of research and writing by an assigned supervisor (a teacher in the school). All students undertake three mandatory reflection sessions with their supervisor, including a short interview, or *viva voce*, following the completion of the extended essay.

Extended essay topics may be chosen from a list of approved DP subjects—normally one of the student's six chosen subjects for the IB diploma or the world studies option. World studies provides students with the opportunity to carry out an in-depth interdisciplinary study of an issue of contemporary global significance, using two IB disciplines.

The aims of the extended essay are to provide students with the opportunity to:

- engage in independent research with intellectual initiative and rigour
- develop research, thinking, self-management and communication skills
- reflect on what has been learned throughout the research and writing process.

## II. Overview of the extended essay process

### The extended essay process

#### The research process

1. Choose the approved DP subject.
2. Choose a topic.
3. Undertake some preparatory reading.
4. **Formulate a well-focused research question.**
5. Plan the research and writing process.
6. Plan a structure (outline headings) for the essay. This may change as the research develops.
7. Carry out the research.

### Writing and formal presentation

The required elements of the final work to be submitted 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

As part of the supervision process, students undertake three mandatory reflection sessions with their supervisor. These sessions form part of the formal assessment of the extended essay and research process. The purpose of these sessions is to provide an opportunity for students to reflect on their engagement with the research process and is intended to help students consider the effectiveness of their choices, re-examine their ideas and decide on whether changes are needed. The final reflection session is the viva voce.

The viva voce is a short interview (10–15 minutes) between the student and the supervisor, and is a mandatory conclusion to the process.

The viva voce serves as:

- a check on plagiarism and malpractice in general
- an opportunity to reflect on successes and difficulties
- an opportunity to reflect on what has been learned
- an aid to the supervisor's report.

## III. Assessment model

The extended essay, including the world studies option, is assessed against common criteria and is interpreted in ways appropriate to each subject. Students are expected to:

- provide a logical and coherent rationale for their choice of topic
- review what has already been written about the topic
- formulate a clear research question
- offer a concrete description of the methods used to investigate the question
- generate reasoned interpretations and conclusions based on their reading and independent research in order to answer the question
- reflect on what has been learned throughout the research and writing process.

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## Assessment at a glance

Assessment criteria	Description
Focus and method	The topic, the research question and the methodology are clearly stated.
Knowledge and understanding	The research relates to the subject area/discipline used to explore the research question, and knowledge and understanding is demonstrated through the use of appropriate terminology and concepts.
Critical thinking	Critical-thinking skills have been used to analyse and evaluate the research undertaken.
Presentation	The presentation follows the standard format expected for academic writing.
Engagement	The student's engagement with their research focus and the research process.

The extended essay contributes to the student's overall score for the diploma through the award of points 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.

## IV. Sample extended essay topics

- What is the relationship between the length of an exhaust pipe and the frequency of the sound it emits?
- How far was the Christian Democrat victory in the Italian elections of 1948 influenced by Cold War tensions?
- How effective is Friedrich Dürrenmatt's use of colour to convey his message in the play *Der Besuch der alten Dame*?

# 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
<b>Identify own strengths and develop areas for growth.</b>	Students are able to see themselves as individuals with various abilities and skills, of which some are more developed than others.
<b>Demonstrate that challenges have been undertaken, developing new skills in the process.</b>	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.
<b>Demonstrate how to initiate and plan a CAS experience.</b>	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.
<b>Show commitment to, and perseverance in, CAS experiences.</b>	Students demonstrate regular involvement and active engagement in CAS.

<b>Demonstrate the skills and recognize the benefits of working collaboratively.</b>	Students are able to identify, demonstrate and critically discuss the benefits and challenges of collaboration gained through CAS experiences.
<b>Demonstrate engagement with issues of global significance.</b>	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.
<b>Recognize and consider the ethics of choices and actions.</b>	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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