**RMS IB DP Team:**

Mr. Chaudhry Faisal Mushtaq
IB Diploma Head of School

Mrs. Uzma Shujjat
IB Diploma Program Manager

Ms. Snober Sohail
IB Diploma Coordinator

**Venue :**

Roots Millennium Schools
No. 308, Street 3, 1-9/3, Islamabad.

**Contact details:** www.ibo.org


Mrs. Uzma Shujjat
IB Diploma Manager
Uzma.shujjat@rootsschools.edu.pk

Ms. Snober Sohail
IB Diploma Coordinator
snober.sohail@rootsschools.edu.pk



Millennium Campus International
No. 308, Street 3, Sector I-9/3,
Islamabad 44000 Pakistan
UAN: +92 51 111 111 193
Tel: +92 51 8439981 - 6
Fax: +92 51 4449199

Email: info@millenniumschools.edu.pk



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MILLENNIUM
ROOTS SCHOOLS

ROOTS MILLENNIUM FLAGSHIP CAMPUS
IS AN IB CANDIDATE SCHOOL

# INTERNATIONAL BACCALAUREATE DIPLOMA PROGRAMME

## EDUCATION FOR A BETTER WORLD

# PARENTS & STUDENTS HANDBOOK

# The IB continuum of international education

**IB mission statement**

**IB learner profile**

**Programme standards and practices**

IB CONTINUUM
CONTINUUM DE L'IB
CONTINUO DEL IB

**PYP** **MYP** **DP**



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# Messages



## Welcome Note by the Founder & CEO

Welcome to an incredibly warm and inviting community of inquiring learners and the Millennium Roots School family, a place where each and every student has the opportunity to explore, discover, thrive and become the global citizen of tomorrow! We are a school that believes in "Education for a better world."

Thank you for your interest in our school. It is my hope that by exploring and learning about our quality academic programs and the comprehensive activities we offer, you will come to know our vibrant and innovative school.

RMS has a long and distinguished history of serving students from all backgrounds regardless of religion, ethnic background, caste and creed.

Being an IB DP candidate school, we have upgraded our school facilities to cater to the needs of our students, currently we are a state-of-the-art, and a purpose built campus. We have a highly qualified, IB DP trained teaching faculty which supports our comprehensive approach to international education.

We pride ourselves in personalized inquiry-based education experiences for all learners in a nurturing and inclusive environment. Our goal is to provide our students with a high quality education that will equip and enable them to acquire the attributes of the IB learner profile and to gain entrance to and succeed at the finest international universities around the world. To this end, we strive to provide a nurturing and rich educational climate that is committed to developing our students academically, socially, emotionally and ethically. RMS is the leader and the school of choice for quality international education in the country!

As a testament to its quality and commitment to a truly international education for all students, RMS has received authorization from the International Baccalaureate Organization to provide: the Middle Years Programme (MYP) that makes it the second authorized MYP School in the twin city!

Our families describe RMS as a professional and welcoming community. I invite you to come and discover for yourself the rich and exciting educational opportunities we provide for all learners as you seek to explore, discover, thrive and belong to an international community that is committed to making a difference – the RMS difference!

Good luck!

Faisal Mushtaq

Chaudhry Faisal Mushtaq TI
CEO and National Guidance Counsellor

# Message from the Principal

**The IB Diploma Program (DP) is an academically challenging and balanced program of education that prepares students aged 16 to 19, for success at university and life beyond. It has been designed to address the intellectual, social, emotional and physical well-being of students.**

**After becoming the IB World School, the school gains access to high quality programs of education, professional development support and collaborate with a worldwide network of IB World Schools.**

**Research indicates that diploma program graduates complete college faster than their peers, feel more prepared for college-level coursework involving research and are better able to cope with demanding workloads and time-management challenges.**

**An IB education aims to transform students as they learn, through dynamic cycles of inquiry, action and reflection. Teachers enable and support students as they develop the approaches to learning they need for both academic and personal success. IB programs aim to help students explore and construct their own personal and cultural identities.**

**The Millennium Schools promote holistic development of students and prepare them for the Universities across the globe. The philosophy of IB matches with the way students are nurtured at Roots Millennium Schools.**

**Thank you**

Ayesha Ansar

**Ayesha Ansar**





# Message from the IB Programme Manager

It gives me immense pleasure to walk you through Roots Millennium School's journey as it introduces the International Baccalaureate Diploma programme, in turn joining a global league of IB schools. Currently in its Candidacy phase, the Roots Millennium School is soon to reach authorization, certifying to become a prestigious, world-class IB World School.

It was an exciting, yet challenging task. From hiring professional teachers to giving teachers training on IB Diploma. From holding wide-scale collaborative meetings to preparing customized course outlines and unit plans. From upgrading school facilities to meet IB standards to educating parents, students and the wider community on the benefits of the IB Diploma programme – it was a thrilling journey.

Building a new and complex Diploma programme would not have been possible without the vision of our Chief Executive Chaudhry Faisal Mushtaq TI. Furthermore, the exceptional teamwork of dedicated staff and teachers will help turn RMS into an IB Diploma programme school.

RMS aims to be a global school committed to meeting the needs and ambitions of a diverse range of students by providing challenging academic programmes underpinned by globally accredited qualifications, social diversity, academic excellence and entrepreneurial centered achievement.

RMS is devoted to bring out the best in their students - mentally, intellectually, academically, physically & culturally speaking - by developing the attitudes, skills, knowledge and values of students. Through advancements in our school curriculum, teaching pedagogy, school culture and learning environment, and technology, our students become Millennials who are equipped to meet global challenges of the 21st century.

Similarly, IB World Schools share a common philosophy—a commitment to improve the teaching and learning of a diverse and inclusive community of students by delivering challenging, high quality programmes of international education that share a powerful vision.

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

I'm happy to announce that Roots Millennium School in Pakistan will soon be a part of this fantastic programme, enriching more teachers, more students and ultimately the society at large, by offering an internationally-recognized world class education.

Thank you

Uzma Shujjat

Uzma Shujjat

# To the students from the Diploma Coordinator

Dear students,

I welcome you to this new and a very rigorous programme called International Baccalaureate Diploma Programme at Roots Millennium Schools, Islamabad. Our commitment at RMS is to provide an intellectually challenging environment that will empower students to become innovative thinkers, creative problem solvers, open-minded and caring to deal with challenges of the twenty-first century. We as an educational institute have high standards and expectation for each student in regard to academic performance, co-curricular activities participation and responsible citizenship.

DP is designed for the students who are ready and willing to work hard and take increased learning opportunities and challenges. Students who enter the diploma programme are required to commit a two years plan of study and are supposed to study 6 subjects and 3 cores; Theory of Knowledge, Creativity, Activity and Service, and Extended Essay in order to obtain the diploma. You will have a variety of subjects from 6 different groups to explore your interests and talents with the IB diploma programme.

Besides helping you with subject selection process, ensuring that textbooks, resources and facilities are available according to your needs and you meet programme & examination requirement and fulfill International Baccalaureate Organization regulations, I will also be teaching you English Language B, and Theory of Knowledge.

You must always pursue the path which interests and motivates you. I wish you all the very best of luck with this programme.

Thank you!

Snober Sohail

Snober Sohail









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## Roots Millennium Schools, One World Campus, Islamabad is an "IB World School" for

# International Baccalaureate Middle Years Programme IB MYP

We are the first in the twin cities of Islamabad and Rawalpindi and 4th in Pakistan to be authorized for IB MYP.

# Purpose Build Campuses Nationwide


Millennium Campus - Islamabad


Wahid Campus - Islamabad


One World Campus - Islamabad


Greenwich Campus - Islamabad


Capital Campus - Islamabad


Khyber Campus - Peshawar


Garrison Campus - Gujranwala


Jinnah Campus - Gujrat


Hill View  Campus - Mirpur AJK



# Roots Millennium Schools Background and History

Innovated & inspired modern education standards with universally acclaimed academic excellence of students for more than one quarter of a century.

Roots Millennium Schools (RMS) is part of the Roots School System founded in 1988 by Mrs. Riffat Mushtaq Aizaz-e-Fazeelat. The new generation Millennium Schools are labeled and founded by her son Mr. Chaudhry Faisal Mushtaq – Tamgha-i-Imtiaz; recipient of the prestigious National Civil Award from Government of Pakistan, who himself is a celebrated national educational icon and decorated educational counselor, to help scale education, learning and teaching as per the aspiration of the 21st century child; commonly referred as the 'Millennial Child'.

The Institution was established in April 1988 at 74 Harley Street Rawalpindi by Mrs. Riffat Mushtaq (Aizaz-e-Fazeelat) a dedicated and committed teacher fired with enthusiasm and missionary spirit in the field of education. She took the challenge of introducing modern Methodology of Montessori System. In the formative years she introduced the International Montessori Method of education.

Roots is the pioneer institution in having introduced an exclusive Montessori in the twin cities of Rawalpindi & Islamabad in 1988 and brought awareness about this method of teaching across Pakistan. The growth of learners in this institution is the success of the "Teaching Methodology, Curriculum, faculty & Creativity". The phenomenal success and growth behind the institution is now credited to her son Faisal Mushtaq (Tamgha-i-Imtiaz) who has now founded Roots Millennium Schools.

Roots Schools has gained recognition as an International educational institution recognized at National as well as International level commonly labeled as a school of achievement, excellence, excitement, opportunity and discovery. Roots School System is a model institution styled on the modern educational system of International standards especially designed to meet the requirements of the child in his early, formative years by involving the three Es Exposure, Expansion and Exploration. Since the early years of founding of Roots Montessori School, each child is to be assisted in growing according to his/her natural design without deprivation or forcing, in an environment and by a process, which also supplies a social direction to his achievement.

At roots where each child is assisted in growing by a system so that he feels the thrill of success and finds his own worth and dignity. Mrs. Riffat Mushtaq's roots can be traced back to her illustrious Grand Father, Late Khan Mohammad Khan Sahib (MLA) who is commonly known as the "Sir Sayyed of Kashmir. The success of Roots School System of education is evident from the high quality of students the Institution is producing as the school offers continuous education from Montessori to Undergraduate level.

# Mission, Values & Vision

To promote high quality teaching; developing full potential of learners in an enterprising & engaging environment.

Thinking about your child's future at one and the only Roots Millennium Schools; aiming to develop a truly inclusive, successful and diverse academic skills set with a global perspective, coaching and counseling, an internationally recognized and accredited academic qualification, to benefit from diversity of languages offered, to enhance skill development through award winning digital literacy and ICT integration programmes, to scale opportunity creation through entrepreneurial engagement, to inculcate environmental and community education as active responsible green citizens, to promote aptitude development through robotics, to benefit from ultimate learning eco system which is globally competitive and a personalized school/college culture which is beyond schooling today. Roots Millennium Schools, Pakistan purpose built campuses nationwide can help you achieve your desired goals and aspirations.

## Millennial Mission Statement

RMS aims to be a global school committed to meeting the needs and ambitions of a diverse range of students by providing challenging academic programmes underpinned by globally accredited qualifications, social diversity, academic excellence and entrepreneurial centered achievement.

Roots Millennium Schools aim is to bring out the best in a child/student mentally, intellectually, academically, physically & culturally by developing the attitudes, skills, knowledge and values in the students, thus required to meet the Global Challenges as Millennials in the 21st century through advancements in our school curriculum, teaching pedagogy, school culture, learning environment and enabling technology."

## Millennium Values

The values that are broadly shared at Roots Millennium Schools are not just practiced thoroughly but they also outline the framework within which the School strives for excellence in achieving its goals through the School Development Plan SDP. Students, staff members and employees are engaged intellectually, motivated to achieve great results, act with integrity, respect others and take responsibility for their actions and thus play a helping role in building an environment of mutual growth within and outside the school community. Roots Millennium Schools is the only school to implement United Nations Actions Days as part of school curriculum; committed to the 21st Century United Nations four pillars of education;

1. Learning to Know
2. Learning to be
3. Learning to do
4. Learning to live together

As Millennials we prepare our students to be creative, responsible, entrepreneurial, skilled individuals suited for the modern day world, transmiting to the communities in which we live and work today.

Millennium Schools prioritize the needs, welfare and experience of our students first. We place high value on developing a mature approach to 'learning' in which students are encouraged to challenge 'conventional wisdom', 'handle complexity' and benefit from 'difference' and 'diversity'.



## Millennium Vision 2025

Over the next 15 years Roots Millennium Schools is destined to develop its role as a leading International Montessori / School / College / University thus championing a socially inclusive approach to participation in education. We deliver outstanding academic qualifications, departments and training programmes at all our purpose built campuses. Enabling the students to be independent thinkers and self reliant. Millennium Schools have evolved the ' Teaching' and the 'Learning' paradigm with the LEARNER as the common denominator, pioneering the development of new knowledge, scholarly understanding and professionally practice curriculum and support the sustainable development of social eco-systems and the wider community. We are committed in fostering an adaptive environment through the development of talented, highly skilled motivated staff, effective governance, management, technology enablement and leadership to benefit from collaboration and partnerships with other institutions/organizations internationally.

Millennium Schools believes in instilling high aspirations, opportunities and achievements to create a culture of 'learning' that enhances innovation and economic prosperity. In the sphere of College education, Roots Millennium College has an edge to be different by scaling an environment in which each student is coached, mentored, counseled and provided ample support and opportunity to discover themselves; be it in terms of entrepreneurship or in the broader terms of University applications and acceptances. It is our academic focus and personal attention to each and every student that makes us distinct. High quality teaching and learning at Roots Millennium Schools is ensured at all tiers, with an unswerving dedication to the development and application of original knowledge and also sharpen scales of analysis, creative thinking and potential to be a convincing contributors of the society. Our inclusive culture nurtures the individual student and encourages the fulfillment of his/her potential. At Roots we ensures that every child has equal opportunity to stretch intellectually and socially. Embedding faith in our tireless sincere resolution and endeavors in anticipation of a formidable future for our scholars.

# International Baccalaureate Diploma Program

## IB Mission Statement

*"The International Baccalaureate® aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.*

*To this end the organization works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.*

*These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right."*



# International Baccalaureate Diploma Program. An Overview

### What is the International Baccalaureate Organization (IBO)?

The IBO Headquarters is located in Geneva, Switzerland, and the IBO Curriculum and Assessment Center is in Cardiff, Wales. The IBO has regional offices in North and South America, Asia, Europe and Africa.

The IB diploma is highly regarded for entry into universities throughout the world and for advanced placement at many colleges and universities in the United States and Canada. Oxford University was the first university to accept the IB diploma as an entrance qualification. Now universities world-wide recognize the diploma graduate as having completed one of the finest liberal arts educations available.

### What is an IB Education

In 1968, the IB Diploma Programme (DP) was established to provide a challenging and comprehensive education that would enable students to understand and manage the complexities of our world and provide them with skills and attitudes for taking responsible action for the future. Such an education was rooted in the belief that people who are equipped to make a more just and peaceful world need an education that crosses disciplinary, cultural, national and geographical boundaries. With the introduction of the Middle Years Programme (MYP) in 1994 and the Primary Years Programme (PYP) in 1997, the IB identified a continuum of international education for students aged 3 to 19. A decade later, the adoption of the IB learner profile across the continuum described internationally minded learners of all ages. The learner profile continues to provide important common ground for these challenging, standalone programmes, each developed as a developmentally appropriate expression of the IB's educational approach. The introduction of the IB Career-related Certificate (IBCC) in 2012 enriches this continuum by providing a choice of international education pathways for 16- to 19-year-old students. The IB's work is informed by research and by over 40 years of practical experience. This overview honours the vision that launched the IB and sustains its growth today. The dynamic legacy of the IB's founders continues to support a growing global network of schools dedicated to high-quality education, ongoing professional development and shared accountability. values the progressive thinking of the past while remaining open to future innovation. The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world. Informed by these values, an IB education:

- centres on learners
- develops effective approaches to teaching and learning
- works within global contexts
- explores significant content.

Working together, these four characteristics define an IB education.


# IB learner profile

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

As IB learners we strive to be:

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

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

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

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

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

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

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

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

**BALANCED**
We understand the importance of balancing dierent aspects of our lives intellectual, physical, and emotional to achieve wellbeing for ourselves and others. We recognize our interdependence with other people and with the world in which we live.

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

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





# Approaches to Teaching and Learning

Approaches to teaching and learning (ATL) are deliberate strategies, skills and attitudes that permeate the teaching and learning environment of the DP. These approaches and tools, intrinsically linked with the IB learner profile attributes, enhance student learning and assist student preparation for DP assessment and beyond.

## IB Approaches to Learning Skills

- Thinking skills
- Communications skills
- Social skills
- Self-management skills
- Research skills

## IB Approaches to Teaching Skills

- based on inquiry
- focused on conceptual understanding
- developed in local and global contexts
- focused on effective teamwork and collaboration
- differentiated to meet the needs of all learners
- informed by formative and summative assessment

# International Baccalaureate Diploma Programme
# Roots Millennium School




# IB Curriculum at Roots Millennium Schools

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced two-year programme of education designed to prepare students aged 16 to 19 for success at university and in life beyond. The DP provides opportunities to develop both disciplinary and interdisciplinary knowledge and understanding that meet rigorous standards. It is a truly international programme incorporating the best educational practices from around the world, while remaining free from the influence of any particular system or government. In addition to academic excellence, it encourages inquiry, caring, open-mindedness, intercultural understanding, and the attitudes necessary to respect and evaluate a range of viewpoints.

An IB Diploma candidate is required to study at least one subject from five different disciplines over the course of two years:

| Group | Description | Subject | Level | |
|---|---|---|---|---|
| | | | HL | SL |
| 1 | Language and Literature A | English Literature A | ✓ | ✓ |
| | | Urdu Language and Literature. | ✓ | ✓ |
| 2 | Language Acquisition B | English Language B | ✓ | ✓ |
| | | German Language B | ✓ | ✓ |
| 3 | Individual and Societies | Business and Management | ✓ | ✓ |
| | | Economics | ✓ | ✓ |
| | | Psychology | ✓ | ✓ |
| 4 | Sciences | Biology | ✓ | ✓ |
| | | Physics | ✓ | ✓ |
| | | Chemistry | ✓ | ✓ |
| | | Computer Science | ✓ | ✓ |
| 5 | Mathematics | Mathematics HL | ✓ | |
| | | Mathematics SL | | ✓ |
| CORE | Compulsory subjects | Extended Essay | | |
| | | Theory of Knowledge | | |
| | | Creativity, Activity, Service | | |

# IB Core subjects

The Diploma Programme core aims to broaden students' educational experience and challenge them to apply their knowledge and skills.

### Extended Essay

The extended essay is an in-depth, externally assessed, independent research project into a topic of the student's choice. The extended essay is up to 4,000 words in length and promotes high-level research and writing skills, intellectual discovery and creativity.

Several studies from the US, UK and Canada collectively provide evidence that the extended essay has a positive effect on students' confidence and engagement with research. DP students cite a long list of benefits from the extended essay including: confidence in university-level writing, improved study awareness, the ability to gather, organize and evaluate information, time management, and organizational skills.

### Theory of Knowledge

Theory of knowledge (TOK) is a course on critical thinking that develops a coherent approach to learning that unifies the academic disciplines and relates to the nature of knowledge across the curriculum. A 2014 study found that the sample of TOK students in Australia reported greater confidence in their ability to use critical-thinking skills than their peers who had not taken the DP. There were also apparent gains in the use of a wider array of critical-thinking skills between the two successive years of the DP.

### Creativity, Activity, Service

Creativity, activity, service (CAS) involves students in a range of experiential and service learning activities that enhance students' personal and interpersonal development. CAS encourages engagement in the arts, creative thinking, a healthy lifestyle, and a sense of responsibility for both local and global communities. DP students throughout the Americas were found to participate in a wide range of CAS activities, including tutoring, assisting those in need, and fundraising. Students associated CAS with personal growth, developing an ethic of service, improved self-confidence, maturity, becoming more caring, open-minded and reflective, and better understanding one's place in the world. Alumni also reported continued involvement in service activities.





# 10 Reasons

## why the IB Diploma Programme (DP) is ideal preparation for university

1. **It increases academic opportunity**
   Research* shows that DP graduates are much more likely to be enrolled at top higher education institutions than entrants holding other qualifications
2. **IB students care about more than just results**
   Through creativity, action, service (CAS) you learn outside the classroom and develop emotionally and ethically as well as intellectually.
3. **It encourages you to become a confident and independent learner**
   For example, the extended essay requires independent research through an in-depth study.
4. **It's an international qualification**
   The DP is recognized globally by universities and employers.
5. **Graduates are globally minded**
   Language classes encourage an international mindset, key for increasingly globalized societies.
6. **The IB encourages critical thinking**
   Learn how to analyse and evaluate issues, generate ideas and consider new perspectives.
7. **DP students have proven time management skills**
   Take good study habits and strong time management to further education and the working world.
8. **It assesses more than examination techniques**
   Learn to understand, not just memorize facts or topics and prepare for exams.
9. **Subjects are not taught in isolation**
   Theory of knowledge (TOK) classes encourage you to make connections between subjects.
10. **It encourages breadth and depth of learning**
    You are able to choose courses from six subject groups and study subjects at different levels.

Learn from your school or for more information please visit:
www.millenniumschools.edu.pk | www.ibo.org

International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

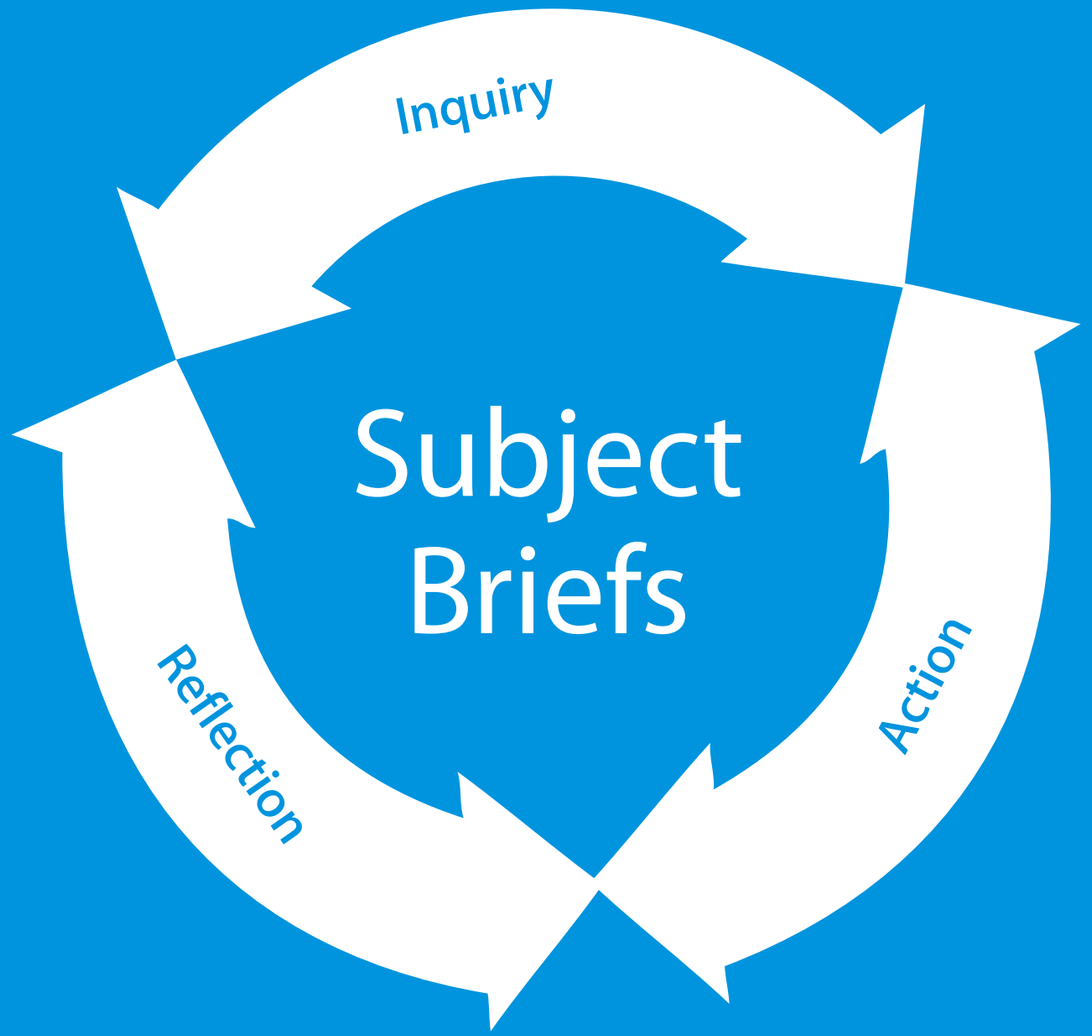
# IB History timeline

- 1968 — Founding of the IB — Geneva - 25 October
- 1968 — English and French — IB official languages
- 1968 — Diploma Programme
- 1970 — First official exams — 11 IB World Schools
- 1977 — Heads Standing Conference
- 1978 — Standing Conference of Governments contributed to the IB
- 1983 — Spanish — IB official language
- 1994 — Middle Years Programme
- 1996 — Mission Statement
- 1997 — Primary Years Programme
- 2000 — 1,000 IB World Schools
- 2004 — DP Online courses
- 2006 — The IB learner profile
- 2006 — 2,000 IB World Schools
- 2007 — 3,000 IB World Schools
- 2009 — 100,000 DP exam candidates
- 2010 — 4,000 IB World Schools
- 2012 — Career-related Programme

1968 69 70 71 72 73 74 75 76 77 78 79 1980 81 82 83 84 85 86 87 88 89 1990 91 92 93 94 95 96 97 98 99 2000 01 02 03 04 05 06 07 08 09 2010 11 12 13 14 15 16 17 18

**Directors General**

| Alec Peterson | Gérard Renaud | Roger Peel | Derek Blackman | George Walker | Jeffrey Beard | Siva Kumari |
|---|---|---|---|---|---|---|



# Subject Briefs
# Standard level and higher level courses

## The nature of HL and SL courses

It is essential for any pre university education to equip students with the depth of discipline-specific knowledge and skills that they will need for their chosen academic and career paths. However, this must be balanced with the breadth needed to develop well-rounded students who can draw connections between the different disciplines.

As such, the philosophy of the IB DP is that students should engage with a range of subjects while being able to explore specific areas of personal interest in greater depth. SL courses ensure students are exposed to a range of disciplines that they might otherwise opt out of, and HL courses allow students to spend more time with subjects they are more interested in by exploring options in addition to the SL core curriculum. In this sense, all DP courses, regardless of whether they are SL or HL, are integral to the programme.

## Curriculum and assessment

Both SL and HL courses are meant to span the two years of the DP. SL courses are recommended to have at least 150 hours of instructional time, and HL courses are recommended to have at least 240 instructional hours.

In most cases both SL and HL courses consist of the same educational aims, core syllabus and curriculum and assessment models. HL courses typically also include a range of additional elements designed to allow students to explore areas of interest within the subject in more depth. In this sense, SL courses are not watered down versions of their HL counterparts. The assessment criteria are equally demanding for both levels, and SL exams are marked and standardized with the same rigour as all IB coursework.

## Comparisons with other programme of study

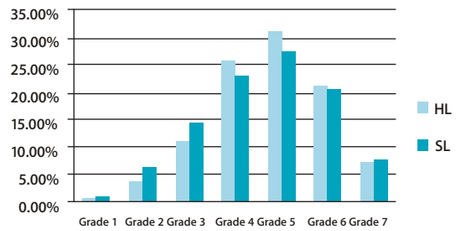
Typically when doing course comparisons, external bodies have compared IB SL courses with the alternative curriculum. Comparisons have been made between SL courses and AP, A level, Australia National Curriculum, Indian boards, Knowledge and Skills for University Success (KSUS) and so on, and in most instances SL courses were found to be as demanding if not more so than the comparative courses.



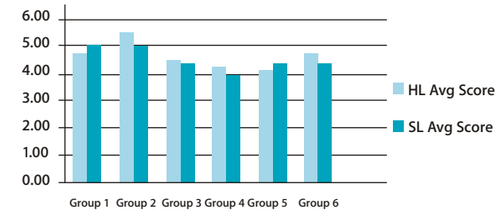


The below figures on DP student exam performance provide some evidence of the equitability of SL and HL assessments.

HL/SL course grade distributions, May 2014




Average HL/SL grades for each subject group, May 2014




The below example of the DP physics course highlights the nature of the difference in curriculum and assessment between HL and SL courses

| DP physics curriculum components | | |
|---|---|---|
| Syllabus component | Recommended teaching hours | |
| | SL | HL |
| Core | 95 | |
| 1. Measurements and uncertainties | 5 | |
| 2. Mechanics | 22 | |
| 3. Thermal physics | 11 | |
| 4. Waves | 15 | |
| 5. Electricity and magnetism | 15 | |
| 6. Circular motion and gravitation | 5 | |
| 7. Atomic, nuclear and particle physics | 14 | |
| 8. Energy production | 8 | |
| Additional higher level | | 60 |
| 9. Wave phenomena | | 17 |
| 10. Fields | | 11 |
| 11. Electromagnetic induction | | 16 |
| 12. Quantum and nuclear physics | | 16 |
| Option (1 of 4) | 15 | 25 |
| A. Relativity | 15 | 25 |
| B. Engineering physics | 15 | 25 |
| C. Imaging | 15 | 25 |
| D. Astrophysics | 15 | 25 |
| Practical scheme of work | 40 | 60 |
| • Practical activities | 20 | 40 |
| • Individual investigation (internal assessment) | 10 | 10 |
| • Group 4 project | 10 | 10 |
| Total teaching hours | 150 | 240 |

| DP physics assessment components | | | | |
|---|---|---|---|---|
| Component | Overall weighting (%) | | Duration (hours) | |
| | SL | HL | SL | HL |
| Paper 1 | 20 | 20 | 0.75 | 1 |
| Paper 2 | 40 | 36 | 1.25 | 2.25 |
| Paper 3 | 20 | 24 | 1 | 1.25 |
| Internal assessment | 20 | 20 | 10 | 10 |

# Studies in language and literature:
## Urdu A: Language and literature - Higher level

### I. Course description and aims

The language A: language and literature course aims to develop skills of textual analysis and the understanding that texts, both literary and non-literary, can relate to culturally determined reading practices. The course also encourages students to question the meaning generated by language and texts. An understanding of the ways in which formal elements are used to create meaning in a text is combined with an ex- ploration of how that meaning is affected by reading practices that are culturally defined and by the circumstances of production and recep- tion. The study of literature in translation from other cultures is especially important to IB DP students because it contributes to a global perspec- tive. Texts are chosen from a variety of sources, genres and media.

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

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

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Part 1: Language in cultural context<br>• effect of audience and purpose on the structure and content of texts<br>• impact of language changes<br>• effect of culture and context on language and meaning | 60 |
| Part 2: Language and mass communication<br>• forms of communication within the media<br>• educational, political or ideological influence of the media<br>• ways in which mass media use language and image to inform, persuade or entertain | 60 |
| Part 3: Literature—texts and contexts<br>• historical, cultural and social contexts in which texts are written and received<br>• relationship between context and formal elements of the text, genre and structure<br>• attitudes and values expressed by literary texts and their impact on readers | 70 |
| Part 4: Literature—critical study<br>• detailed exploration of literary works<br>• elements such as theme and the ethical stance or moral values of literary texts<br>• appropriate use of literary terms | 50 |

### III. Assessment model

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

Knowledge and understanding

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

Application and analysis

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

Synthesis and evaluation

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

### Assessment at a glance

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

### IV. Sample questions

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

# Studies in language and literature:
## Urdu A: Language and literature - Standard level

### I. Course description and aims

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

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

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

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Part 1: Language in cultural context<br>• effect of audience and purpose on the structure and content of texts<br>• impact of language changes<br>• effect of culture and context on language and meaning | 40 |
| Part 2: Language and mass communication<br>• forms of communication within the media<br>• educational, political or ideological influence of the media<br>• ways in which mass media use language and image to inform, persuade or entertain | 40 |
| Part 3: Literature—texts and contexts<br>• historical, cultural and social contexts in which texts are written and received<br>• relationship between context and formal elements of the text, genre and structure<br>• attitudes and values expressed by literary texts and their impact on readers | 40 |
| Part 4: Literature—critical study<br>• detailed exploration of literary works<br>• elements such as theme and the ethical stance or moral values of literary texts<br>• appropriate use of literary terms | 30 |

### III. Assessment model

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

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

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

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

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

### Assessment at a glance

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

### IV. Sample questions

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

# Studies in language and literature:
## English A: literature - Higher level

### Overview of the language A: literature higher level course and curriculum model

### I. Course description and aims

The IB Diploma Programme language A: literature course develops understanding of the techniques involved in literary criticism and promotes the ability to form independent literary judgments. In language A: literature, the formal analysis of texts and wide

coverage of a variety of literature-both in the language of the subject and in translated texts from other cultural domains-is combined with a study of the way literary conventions shape responses to texts.

Students completing this course will have a thorough knowledge of a range of texts and an understanding of other cultural perspectives. They will also have developed skills of analysis and the ability to support an argument in clearly expressed writing, sometimes at significant length. This course will enable them

to succeed in a wide range of university courses, particularly in literature but also in subjects such as philosophy, law and language.

Texts studied are chosen from the prescribed literature in translation (PLT) list and the prescribed list of authors (PLA) or elsewhere. The PLT list is a wide-ranging list of works in translation, from a variety of languages, allowing teachers to select works in a language different from the language of the examination. The PLA lists authors from the language of the examination. The authors on the list are appropriate for students aged 16 to 19.

All group 1 courses are suitable for students experienced in using a language in an academic context. It is also recognized that students have language backgrounds that vary significantly. For one student the target language may be his or her only proficient language; another student may have a complex language profile and competence in more than one language. While students in the group 1 courses will undergo significant development in their ability to use language for a range of purposes, these are not language-acquisition courses. In group 1, it is assumed that students are highly competent in the target language, whether or not it is their mother tongue.

The aims of the language A: literature course at both higher and standard levels are to:

- encourage a personal appreciation of literature and develop an understanding of the techniques involved in literary criticism
- develop the students' powers of expression, both in oral and written communication, and provide the opportunity of practising and developing the skills involved in writing and speaking in a variety of styles and situations
- introduce students to a range of literary works of different periods, genres, styles and contexts
- broaden the students' perspective through the study of works from other cultures and languages
- introduce students to ways of approaching and studying literature, leading to the development of an understanding and appreciation of the relationships between different works
- develop the ability to engage in close, detailed analysis of written text
- promote in students an enjoyment of, and lifelong interest in, literature.





### II. Curriculum model overview

Language A: literature higher level

| Components | | |
|---|---|---|
| Works in translation | Study of three works<br>All works are chosen from the titles in the prescribed literature in translation list. | 65 hours |
| Detailed study | Study of three works<br>All works are chosen from the prescribed list of authors for the language being studied, each from a different genre. | 65 hours |
| Literary genres | Study of four works<br>All works are chosen from the prescribed list of authors for the language being studied, chosen from the same genre. | 65 hours |
| Options | Study of three works<br>Works are freely chosen in any combination. | 45 hours |
| Total teaching hours | | 240 hours |

Assessment for language A: literature 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.
- Students' success in the language A: literature higher el course is measured by combining their grades on
- external and internal assessment.
- Students must demonstrate their ability to provide
- literary commentary about prose and poetry, both in
- written form and orally.

### Assessment at a glance

| Type of assessment | Format of assessment | Time (hours) | Weighting of final grade (%) |
|---|---|---|---|
| External | | | 70 |
| Paper 1 | Literary commentary and analysis of one unseen text | 2 | 20 |
| Paper 2 | Essay on at least two works studied | 2 | 25 |
| Written assignment | Reflective statement and literary essay on one work studied | | 25 |
| Internal | | | 30 |
| Oral work | Formal oral commentary and interview (20 minutes) | | 15 |
| | Individual oral presentation (10-15 minutes) | | 15 |

# Studies in language and literature:
## English A: literature - Standard level

### Overview of the language A: literature standard level course and curriculum model

### I. Course description and aims

The IB Diploma Programme language A: literature course develops understanding of the techniques involved in literary criticism and promotes the ability to form independent literary judgments. In language A: literature, the formal analysis of texts and wide coverage of a variety of literature-both in the language of the subject and in translated texts from other cultural domains—is combined with a study of the way literary conventions shape responses to texts.

Students completing this course will have a thorough knowledge of a range of texts and an understanding of other cultural perspectives. They will also have effectively developed skills of analysis and the ability to support of an argument in clearly expressed writing, sometimes at significant length. The course will enable them to succeed in a wide range of university courses, particularly in literature but also in subjects such as philosophy, law and language.

Texts studied can be chosen from the prescribed literature in translation (PLT) list, prescribed list of authors (PLA) or elsewhere. The PLT list is a wide- ranging list of works in translation, from a variety of languages, allowing teachers to select works in a language different from the language of the examination. The PLA lists authors from the language of the examination. The authors on the list are appropriate for students aged 16 to 19.

All group 1 courses are suitable for students experienced in using a language in an academic context. It is also recognized that students have language backgrounds that vary significantly. For one student the target language may be his or her only proficient language; another student may have a complex language profile and competence in more than one language. While students in the group 1 courses will undergo significant development in their ability to use language for a range of purposes, these are not language-acquisition courses. In group 1, it is assumed that students are highly competent in the target language, whether or not it is their mother tongue. The aims of the language A: literature course at both higher and standard levels are to:

- encourage a personal appreciation of literature and develop an understanding of the techniques involved in literary criticism
- develop the students' powers of expression, both in oral and written communication, and provide the opportunity of practising and developing the skills involved in writing and speaking in a variety of styles and situations
- introduce students to a range of literary works of different periods, genres, styles and contexts
- broaden the students' perspective through the study of works from other cultures and languages
- introduce students to ways of approaching and studying literature, leading to the development of an understanding and appreciation of the relationships between different works
- develop the ability to engage in close, detailed analysis of written text
- promote in students an enjoyment of, and lifelong interest in, literature.





### II. Curriculum model overview

Language A: literature standard level

| Components | | |
|---|---|---|
| Works in translation | Study of two works<br>All works are chosen from the titles in the prescribed literature in translation list. | 40 hours |
| Detailed study | Study of two works<br>All works are chosen from the prescribed list of authors for the language being studied, each from a different genre. | 40 hours |
| Literary genres | Study of three works<br>All works are chosen from the prescribed list of authors for the language being studied, chosen from the same genre. | 40 hours |
| Options | Study of three works<br>Works are freely chosen in any combination. | 30 hours |
| Total teaching hours | | 150 hours |

### Assessment for language A: literature 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.

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

Students must demonstrate their ability to provide literary commentary about prose and poetry, both in written form and orally.

### Assessment at a glance

| Type of assessment | Format of assessment | Time (hours) | Weighting of final grade (%) |
|---|---|---|---|
| External | | | 70 |
| Paper 1 | Literary analysis of one unseen text | 1.5 | 20 |
| Paper 2 | Essay based on two works studied | 1.5 | 25 |
| Written assignment | Reflective statement and literary essay on one work studied | | 25 |
| Internal | | | 30 |
| Oral work | Formal oral commentary and interview | 10 minutes | 15 |
| | Individual oral presentation | 10–15 minutes | 15 |

# Language acquisition:
## English Language B - Higher level

### 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 under- standing of other cultures through the study of language.

Language B is designed for students who possess a degree of knowl- edge and experience in the target language. Those learning a language B at higher level should be able to follow university courses in other dis- ciplines 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 interac- tion, 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 lan- guages 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 |
|---|---|
| Core<br>Instruction on three topics<br>• communication and media<br>• global issues<br>• Social relationships | 240 |
| Options<br>Two options from the following five<br>• cultural diversity<br>• customs and traditions<br>• health<br>• leisure<br>• science and technology | |
| Literature<br>• Read 2 works of literature | |

### 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, demon- strating 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<br><br>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 pro ductive skills<br><br>Creative writing and ration ale based on one literary text read during the course | | 20 |
| Internal | | | 30 |
| Oral work | Individual oral presentation<br><br>Interactive oral activities. | | 20<br><br>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 mag- azine on how your experience at the international school will affect your future job prospects. [based on Option: Cultural diversity]

# Language acquisition:
## English Language B - Standard level

### 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 under- standing of other cultures through the study of language.

Language B is designed for students who possess a degree of knowl- edge and experience in the target language. High performing standard level students should be able to follow university courses in other disci- plines 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 lan- guages 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 |
|---|---|
| Core<br>Instruction on three topics<br>• communication and media<br>• global issues<br>• Social relationships | 150 |
| Options<br>Two options from the following five<br>• cultural diversity<br>• customs and traditions<br>• health<br>• leisure<br>• science and technology | |

### 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 lan- guage of study.

Students will be assessed on their ability to:

- communicate clearly and effectively in a range of situations, demonstrating linguistic competence and intercultural under- standing
- 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]

# Language acquisition:
## German Language B - Higher level

### 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 under- standing of other cultures through the study of language.

Language B is designed for students who possess a degree of knowl- edge 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 interac- tion, 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 lan- guages 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 |
|---|---|
| Core<br>Instruction on three topics<br>• communication and media<br>• global issues<br>• Social relationships | 240 |
| Options<br>Two options from the following five<br>• cultural diversity<br>• customs and traditions<br>• health<br>• leisure<br>• science and technology | |
| Literature<br>• Read 2 works of literature | |

### 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, demon- strating 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<br><br>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 pro ductive skills<br><br>Creative writing and ration ale based on one literary text read during the course | | 20 |
| Internal | | | 30 |
| Oral work | Individual oral presentation<br><br>Interactive oral activities. | | 20<br><br>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 mag- azine on how your experience at the international school will affect your future job prospects. [based on Option: Cultural diversity]

# Language acquisition:
## German Language B - Standard level

### 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 under- standing of other cultures through the study of language.

Language B is designed for students who possess a degree of knowl- edge and experience in the target language. High performing standard level students should be able to follow university courses in other disci- plines 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 lan- guages 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 |
|---|---|
| Core<br>Instruction on three topics<br>• communication and media<br>• global issues<br>• Social relationships | 150 |
| Options<br>Two options from the following five<br>• cultural diversity<br>• customs and traditions<br>• health<br>• leisure<br>• science and technology | |

### 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 lan- guage of study.

Students will be assessed on their ability to:

- communicate clearly and effectively in a range of situations, demonstrating linguistic competence and intercultural under- standing
- 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]

# Individuals and societies:
## Business management - Higher level

### 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, nation- al 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 manage- ment, finance and accounts, marketing and operations management. Links between the topics are central to the course. Through the explo- ration of six underpinning concepts (change, culture, ethics, globaliza- tion, 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 indi- vidual and organizational behaviour
3. promote the importance of exploring business issues from differ- ent cultural perspectives
4. enable the student to appreciate the nature and significance of change in a local, regional and global context
5. promote awareness of the importance of environmental, social and ethical factors in the actions of individuals and organizations
6. develop an understanding of the importance of innovation in a business environment.

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Unit 1: Business organization and environment<br>1.1 Introduction to business management<br>1.2 Types of organizations<br>1.3 Organizational objectives<br>1.4 Stakeholders<br>1.5 External environment<br>1.6 Growth and evolution<br>1.7 Organizational planning tools | 50 |
| Unit 2: Human resource management<br>2.1 Functions and evolution of human resource management<br>2.2 Organizational structure<br>2.3 Leadership and management<br>2.4 Motivation<br>2.5 Organizational (corporate) culture<br>2.6 Industrial/employee relations | 30 |
| Unit 3: Finance and accounts<br>3.1 Sources of finance<br>3.2 Costs and revenues<br>3.3 Break-even analysis<br>3.4 Final accounts<br>3.5 Profitability and liquidity ratio analysis<br>3.6 E ciency ratio analysis<br>3.7 Cash flow<br>3.8 Investment appraisal<br>3.9 Budgets | 50 |
| Unit 4: Marketing<br>4.1 The role of marketing<br>4.2 Marketing planning (including introduc- tion to the four Ps)<br>4.3 Sales forecasting<br>4.4 Market research<br>4.5 The four Ps (product, price, promotion, place)<br>4.6 The extended marketing mix of seven Ps<br>4.7 International marketing<br>4.8 E-commerce | 50 |
| Unit 5: Operations management<br>5.1 The role of operations management<br>5.2 Production methods<br>5.3 Lean production and quality management<br>5.4 Location<br>5.5 Production planning<br>5.6 Research and development<br>5.7 Crisis management and contingency planning | 30 |
| Internal assessment | 30 |

### III. Assessment model

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

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

2. Demonstrate application and analysis of:
- knowledge and skills to a variety of real-world and fictional business situations
- business decisions by explaining the issue(s) at stake, selecting and interpreting data, and applying appropriate tools, techniques, theories and concepts
- the HL extension topics.

3. Demonstrate synthesis and evaluation of:
- business strategies and practices, showing evidence of critical thinking
- business decisions, formulating recommendations
- the HL extension topics.

4. Demonstrate a variety of appropriate skills to:
- produce well-structured written material using business terminology
- select and use quantitative and qualitative business tools, techniques and methods
- select and use business material, from a range of primary and secondary sources.

### Assessment at a glance

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

### IV. Sample questions

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

# Individuals and societies:
## Business management - Standard level

### 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 manage- ment, finance and accounts, marketing and operations management. Through the exploration of six underpinning concepts (change, culture, ethics, globalization, innovation and strategy), the course allows stu- dents to develop a holistic understanding of today's complex and dy- namic 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 indi- vidual and organizational behaviour
3. promote the importance of exploring business issues from differ- ent cultural perspectives
4. enable the student to appreciate the nature and significance of change in a local, regional and global context
5. promote awareness of the importance of environmental, social and ethical factors in the actions of individuals and organizations
6. develop an understanding of the importance of innovation in a business environment.

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Unit 1: Business organization and environment<br>1.1 Introduction to business management<br>1.2 Types of organizations<br>1.3 Organizational objectives<br>1.4 Stakeholders<br>1.5 External environment<br>1.6 Growth and evolution | 40 |
| Unit 2: Human resource management<br>2.1 Functions and evolution of human resource management<br>2.2 Organizational structure<br>2.3 Leadership and management<br>2.4 Motivation | 15 |
| Unit 3: Finance and accounts<br>3.1 Sources of finance<br>3.2 Costs and revenues<br>3.3 Break-even analysis<br>3.4 Final accounts (some HL only)<br>3.5 Profitability and liquidity ratio analysis<br>3.6 Cash flow<br>3.7 Investment appraisal (some HL only) | 35 |
| Unit 4: Marketing<br>4.1 The role of marketing<br>4.2 Marketing planning (including introduction to the four Ps)<br>4.3 Market research<br>4.4 The four Ps (product, price, promotion, place)<br>4.5 E-commerce | 35 |
| Unit 5: Operations management<br>5.1 The role of operations management<br>5.2 Production methods<br>5.3 Location | 10 |
| Internal assessment | 15 |

### III. Assessment model

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

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

2. Demonstrate application and analysis of:
- knowledge and skills to a variety of real-world and fictional business situations
- business decisions by explaining the issue(s) at stake, selecting and interpreting data, and applying appropriate tools, techniques, theories and concepts

3. Demonstrate synthesis and evaluation of:
- business strategies and practices, showing evidence of critical thinking
- business decisions, formulating recommendations

4. Demonstrate a variety of appropriate skills to:
- produce well-structured written material using business terminology
- select and use quantitative and qualitative business tools, techniques and methods
- select and use business material, from a range of primary and secondary sources.

### Assessment at a glance

| Type of assessment | Format of assessment | Time (hours) | Weighting of final grade (%) |
|---|---|---|---|
| External | | 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 docu ments 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.

# Individuals and societies:
## Economics - Higher level

### I. Course description and aims

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

The DP economics course emphasizes the economic theories of mi- croeconomics, which deal with economic variables affecting individu- als, firms and markets, and the economic theories of macroeconomics, which deal with economic variables affecting countries, governments and societies. These economic theories are not studied in a vacuum— rather, they are to be applied to real-world issues. Prominent among these issues are fluctuations in economic activity, international trade, economic development and environmental sustainability.

The economics course encourages students to develop internation- al perspectives, fosters a concern for global issues and raises students' awareness of their own responsibilities at a local, national and interna- tional level. Teachers explicitly teach thinking and research skills such as comprehension, text analysis, transfer, and use of primary sources.

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

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

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Section 1: Microeconomics<br>1.1 Competitive markets: demand and supply<br>1.2 Elasticity<br>1.3 Government intervention<br>1.4 Market failure<br>1.5 Theory of the ? rm and market structures | 95 |
| Section 2: Macroeconomics<br>2.1 The level of overall economic activity<br>2.2 Aggregate demand and aggregate supply<br>2.3 Macroeconomic objectives<br>2.4 Fiscal policy<br>2.5 Monetary policy<br>2.6 Supply-side policies | 50 |
| Section 3: International economics<br>3.1 International trade<br>3.2 Exchange rates<br>3.3 The balance of payments<br>3.4 Economic integration<br>3.5 Terms of trade | 45 |
| Section 4: Development economics<br>4.1. Economic development<br>4.2. Measuring development<br>4.3. The role of domestic factors<br>4.4. The role of international trade<br>4.5. The role of foreign direct investment (FDI)<br>4.6. The roles of foreign aid and multilateral development assistance<br>4.7. The role of international debt<br>4.8. The balance between markets and intervention | 30 |
| Internal assessment<br>Portfolio of three commentaries | 20 |





### III. Assessment model

There are four assessment objectives for the DP economics course.

Having followed the course at higher level (HL), students will be expect- ed to meet the following objectives.

Assessment objective 1: Knowledge and understanding

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

Assessment objective 2: Application and analysis

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

Assessment objective 3: Synthesis and evaluation

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

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

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

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

### IV. Sample questions

Paper 1

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

Paper 2

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

# Individuals and societies:
## Economics - Standard level

### I. Course description and aims

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

The DP economics course emphasizes the economic theories of microeconomics, which deal with economic variables affecting individuals, firms and markets, and the economic theories of macroeconomics, which deal with economic variables affecting countries, governments and societies. These economic theories are not studied in a vacuum-rather, they are to be applied to real-world issues. Prominent among these issues are fluctuations in economic activity, international trade, economic development and environmental sustainability.

The economics course encourages students to develop international perspectives, fosters a concern for global issues and raises students' awareness of their own responsibilities at a local, national and interna- tional level.Teachers explicitly teach thinking and research skills such as comprehension, text analysis, transfer, and use of primary sources.

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

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

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Section 1: Microeconomics<br>1.1 Competitive markets: demand and supply<br>1.2 Elasticity<br>1.3 Government intervention<br>1.4 Market failure | 35 |
| Section 2: Macroeconomics<br>2.1. The level of overall economic activity<br>2.2. Aggregate demand and aggregate supply<br>2.3. Macroeconomic objectives<br>2.4. Fiscal policy<br>2.5. Monetary policy<br>2.6. Supply-side policies | 40 |
| Section 3: International economics<br>3.1. International trade<br>3.2. Exchange rates<br>3.3. The balance of payments<br>3.4. Economic integration | 25 |
| Section 4: Development economics<br>4.1. Economic development<br>4.2. Measuring development<br>4.3. The role of domestic factors<br>4.4. The role of international trade<br>4.5. The role of foreign direct investment (FDI)<br>4.6. The roles of foreign aid and multilateral development assistance<br>4.7. The role of international debt<br>4.8. The balance between markets and intervention | 30 |
| Internal assessment<br>Portfolio of three commentaries | 20 |





### III. Assessment model

There are four assessment objectives for the DP economics course.

Having followed the course at standard level (SL), students will be expected to meet the following objectives.

Assessment objective 1: Knowledge and understanding

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

Assessment objective 2: Application and analysis

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

Assessment objective 3: Synthesis and evaluation

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

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

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

### Assessment at a glance

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

### IV. Sample questions

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

# Individuals and societies:
## Psychology - Higher level

### 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

| | | |
|---|---|---|
| Core | 90 hours of instruction on three topics<br>• The biological level of analysis<br>• The cognitive level of analysis<br>• The sociocultural level of analysis | 90 hours |
| Options | 30 hours of instruction on two additional topics<br>• Abnormal psychology<br>• Developmental psychology<br>• Health psychology<br>• Psychology of human relationships<br>• Sport psychology | 60 hours |
| Additional higher level | Qualitative research in psychology | 50 hours |
| Experimental study | Introduction to experimental research methodology | 40 hours |
| Total teaching hours | | 240 hours |





### III. Assessment model

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 reflectiveskills
- 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:

- knowledge and comprehension of specified content, research methods and 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 presentati on, data analysis and interpretation
- data analysis using an appropriate 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 (%) |
|---|---|---|---|
| External | | | 80 |
| | Question response and an essay | 2 | 35 |
| | Answer 2 of 15 questions in essay form | 2 | 25 |
| | Answer three questions | 1 | 20 |
| Internal | | | 20 |
| | A report of a simple experimental study conducted by the student | | |

# Individuals and societies:
## Psychology - Standard Level

### I. Course description and aims

The IB Diploma Programme standard 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 and environments
- 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 of behaviour; test hypotheses; and interpret complex data and source material
- enable students 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 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 behaviour
- understand and use diverse methods of psychological inquiry

### II. Curriculum model overview

Psychology standard level

| Components | | 90 hours |
|---|---|---|
| Core | 90 hours of standard level instruction on 3 topics<br>• The biological level of analysis<br>• The cognitive level of analysis<br>• The sociocultural level of analysis | 90 hours |
| Options | 30 hours of instruction on one additional topic<br>• Abnormal psychology<br>• Developmental psychology<br>• Health psychology<br>• Psychology of human relationships<br>• Sport psychology | 30 hours |
| Experimental Study | Introduction to experimental research methodology | 30 hours |
| Total teaching hours | | 150 hours |





### 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 (%) |
|---|---|---|---|
| External | | | 75 |
| Paper 1 | Question response and an essay | 2 | 50 |
| Paper 2 | Answer one of 15 questions in essay form | 1 | 25 |
| **Internal** | | | 25 |
| Study Report | A report of a simple experimental study conducted by the student | | |

# Sciences:
## Biology—Higher level

### I. Course description and aims

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

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

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

- 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

| Component | Recommended teaching hours |
|---|---|
| Core | 95 |
| 1. Cell biology | 15 |
| 2. Molecular biology | 21 |
| 3. Genetics | 15 |
| 4. Ecology | 12 |
| 5. Evolution and biodiversity | 12 |
| 6. Human physiology | 20 |
| Additional higher level | 60 |
| 7. Nucleic acids | 9 |
| 8. Metabolism, cell respiration and photosynthesis | 14 |
| 9. Plant biology | 13 |
| 10. Genetics and evolution | 8 |
| 11. Animal physiology | 16 |
| Option (Choice of one out of four) | 25 |
| A. Neurobiology and behaviour | 25 |
| B. Biotechnology and bioinformatics | 25 |
| C. Ecology and conservation | 25 |
| D. Human physiology | 25 |
| Practical scheme of work | 60 |
| Prescribed and other practical activities | 40 |
| Individual investigation | 10 |
| Group 4 project | 10 |



### III. Assessment model

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

1. Demonstrate knowledge and understanding of: facts, concepts, and terminology methodologies and techniques communicating scientifc information.

2. Apply: facts, concepts, and terminology methodologies and techniques methods of communicating scientifc information.

3. Formulate, analyse and evaluate: hypotheses, research questions and predictions methodologies and techniques primary and secondary data scientifc explanations.

4. Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations.

### Assessment at a glance

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

### IV. Sample questions

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

The species is the basis for naming and classifying organism. o Explain how new species can emerge by

directional selection
disruptive selection
polyploidy.

- o Outline the advantages to scientists of the binomial system for naming species.
- o Describe the use of dichotomous keys for the identification of specimens. (Paper 2)

Brain death is a clinical diagnosis based on the absence of neuro- logical function, with a known irreversible cause of coma.

- o Explain a named method to assess brain damage.
- o Distinguish between a reflex arc and other responses by the nervous system.
- o Describe the events that occur in the nervous system when something very hot is touched. (Paper 3)

# Sciences:
## Biology—Standard level

### I. Course description and aims

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

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

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

1. appreciate scientific study and creativity within a global context through stimulating and challenging opportunities
2. acquire a body of knowledge, methods and techniques that char- acterize 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 in- formation
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 implica- tions of using science and technology
9. develop an appreciation of the possibilities and limitations of sci- ence and technology
10. develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge.

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Core | 95 |
| 1. Cell biology | 15 |
| 2. Molecular biology | 21 |
| 3. Genetics | 15 |
| 4. Ecology | 12 |
| 5. Evolution and biodiversity | 12 |
| 6. Human physiology | 20 |
| Option (choice of 1 out of 4) | 15 |
| 1. Neurobiology and behaviour | 15 |
| 2. Biotechnology and bioinformatics | 15 |
| 3. Ecology and conservation | 15 |
| 4. Human physiology | 15 |
| Practical scheme of work | 40 |
| Prescribed and other practical activities | 20 |
| Individual investigation | 10 |
| Group 4 project | 10 |





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### III. Assessment model

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

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

### Assessment at a glance

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

### IV. Sample questions

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

Antibiotics can be used to treat bacterial infections in human tis- sues because of differences in cell structure between prokaryotes and eukaryotes.

o Distinguish between the structure of prokaryotes and eukaryotes.

o Evaluate the drug tests that Florey and Chain carried out on penicillin.

o Explain the reasons for the ineffectiveness of antibiotics in the treatment of viral diseases. (Paper 2)

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

# Sciences:
## Chemistry—Higher level

### I. Course description and aims

Chemistry is an experimental science that combines academic study

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

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

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

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

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

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

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Core | 95 |
| 1. Stoichiometric relationships | 13.5 |
| 2. Atomic structure | 6 |
| 3. Periodicity | 6 |
| 4. Chemical bonding and structure | 13.5 |
| 5. Energetics/thermochemistry | 9 |
| 6. Chemical kinetics | 7 |
| 7. Equilibrium | 4.5 |
| 8. Acids and bases | 6.5 |
| 9. Redox processes | 8 |
| 10. Organic chemistry | 11 |
| 11. Measurement and data processing | 10 |
| ***Additional higher level (AHL)*** | |
| 12.Atomic structure | 2 |
| 13. The periodic tablethe transition metals | 4 |
| 14. Chemical bonding and structure | 7 |
| 15.Energetics/thermochemistry | 7 |
| 16.Chemical kinetics | 6 |
| 17.Equilibrium | 4 |
| 18. Acids and bases | 10 |
| 19.Redox processes | 6 |
| 20.Organic chemistry | 12 |
| 21. Measurement and analysis | 2 |
| ***Option (Choice of one out of four)*** | |
| A. Materials | 25 |
| B. Biochemistry | 25 |
| C. Energy | 25 |
| D. Medicinal chemistry | 25 |
| ***Practical scheme of work*** | |
| 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

### III. Assessment model

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

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

### Assessment at a glance

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

### IV. Sample questions

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

NH (g) + O (g) N (g) + H O (g)

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

The two isomers of [Pt(NH3)2Cl2] are crystalline. One of the isomers is widely used in the treatment of cancer.

i. Draw both isomers of the complex,
ii. Explain the polarity of each isomer using a diagram of each isomer to support your answer,
iii. State a suitable method (other than looking at dipole moments) to distinguish between the two isomers
iv. Compare and contrast the bonding types formed by nitrogen in [Pt(NH3)2Cl2] (Paper 2)

# Sciences:
## Chemistry—Standrad level

### I. Course description and aims

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

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

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

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

1. appreciate scientific study and creativity within a global context through stimulating and challenging opportunities
2. acquire a body of knowledge, methods and techniques that char- acterize 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 in- formation
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 implica- tions of using science and technology
9. develop an appreciation of the possibilities and limitations of sci- ence and technology
10. develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge.

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Core | 95 |
| 1. Stoichiometric relationships | 13.5 |
| 2. Atomic structure | 6 |
| 3. Periodicity | 6 |
| 4. Chemical bonding and structure | 13.5 |
| 5. Energetics/thermochemistry | 9 |
| 6. Chemical kinetics | 7 |
| 7. Equilibrium | 4.5 |
| 8. Acids and bases | 6.5 |
| 9. Redox processes | 8 |
| 10.Organic chemistry | 11 |
| 11. Measurement and data processing | 10 |
| Option (choice of one out of four) | 15 |
| A. Materials | 15 |
| B. Biochemistry | 15 |
| C. Energy | 15 |
| D. Medicinal chemistry | 15 |
| Practical scheme of work | 40 |
| Prescribed and other practical activities | 20 |
| Individual investigation (internally assessed) | 10 |
| Group 4 project | 10 |

### The group 4 project

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

### III. Assessment model

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

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

### Assessment at a glance

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

What is the total number of atoms in 0.50 mol of 1,4-diaminobenzene, H2NC6H4NH2?

A. 16.0 x 1023
B. 48.0 x 1023
C. 96.0 x 1023
D. 192.0 x 1023

(Avogadro's constant (L or NA) = 6.0 × 1023 mol–1.) (Paper 1)

Many automobile manufacturers are developing vehicles that use hydrogen as a fuel.

1. Suggest why such vehicles are considered to cause less harm to the environment than those with internal combustion engines.
2. Hydrogen can be produced from the reaction of coke with steam: $C(s)+2H_2O(g) \rightarrow 2H_2(g)+CO_2(g)$

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

# Sciences:
## Physics—Higher level

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

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Core | 95 |
| 1. Measurements and uncertainties | 5 |
| 2. Mechanics | 22 |
| 3. Thermal physics | 11 |
| 4. Waves | 15 |
| 5. Electricity and magnetism | 15 |
| 6. Circular motion and gravitation | 5 |
| 7. Atomic, nuclear and particle physics | 14 |
| 8. Energy production | 8 |
| Additional higher level | 60 |
| 9. Wave phenomena | 17 |
| 10. Fields | 11 |
| 11. Electromagnetic induction | 16 |
| 12. Quantum and nuclear physics | 16 |
| Option (Choice of one out of four) | 25 |
| A. Relativity | 25 |
| B. Engineering physics | 25 |
| C. Imaging | 25 |
| D. Astrophysics | 25 |
| Practical scheme of work | 60 |
| Prescribed and other practical activities | 40 |
| Individual investigation (internally assessed) | 10 |
| Group 4 project | 10 |

The group 4 project

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

### III. Assessment model

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

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

### Assessment at a glance

| Type of assessment | Format of assessment | Time (hours) | |
|---|---|---|---|
| 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 questions on the option | 1.25 | 24 |
| Internal | | 10 | 20 |
| Individual investigation | Investigation and write-up of 6 to 12 pages | 10 | 20 |

### IV. Sample questions

Why is wave-particle duality used in describing the properties of light?

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

o 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)

o 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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# Sciences:
## Physics—Standrad level

### 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.

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

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Core | 95 |
| 1. Measurements and uncertainties | 5 |
| 2. Mechanics | 22 |
| 3. Thermal physics | 11 |
| 4. Waves | 15 |
| 5. Electricity and magnetism | 15 |
| 6. Circular motion and gravitation | 5 |
| 7. Atomic, nuclear and particle physics | 14 |
| 8. Energy production | 8 |
| Option (Choice of one out of four) | 15 |
| A. Relativity | 15 |
| B. Engineering physics | 15 |
| C. Imaging | 15 |
| D. Astrophysics | 15 |
| Practical scheme of work | 40 |
| Prescribed and other practical activities | 20 |
| Individual investigation (internally assessed) | 10 |
| Group 4 project | 10 |

### The group 4 project

The group 4 project is a collaborative activity where students from different group 4 subjects, within or between schools, work together. It al- lows 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:
   - o facts, concepts, and terminology
   - o methodologies and techniques
   - o communicating scientific information.
2. Apply:
   - o facts, concepts, and terminology
   - o methodologies and techniques
   - o methods of communicating scientific information.
3. Formulate, analyse and evaluate:
   - o hypotheses, research questions and predictions
   - o methodologies and techniques
   - o primary and secondary data
   - o scientific explanations.
4. Demonstrate the appropriate research, experimental, and person- al skills necessary to carry out insightful and ethical investigations.

### Assessment at a glance

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

### IV. Sample questions

An object falls freely from rest through a vertical distance of 44.0m in a time of 3.0s. What value should be quoted for the acceleration of free-fall? (Paper 1)

A. 9.778m s-2
B. 9.780m s-2
C. 9.78m s-2
D. 9.8m s-2

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

In an experiment to measure the specific heat capacity of a metal, a piece of metal is placed inside a container of boiling water at 100°C. The metal is then transferred into a calorimeter containing water at a temperature of 10°C. The final equilibrium temperature of the water was measured. One source of error in this experiment is that the small mass of boiling water will be transferred to the calorimeter along with the metal.

(a) Suggest the effect of the error on the measured value of the specific heat capacity of the metal

(b) State one other source of error for this experiment (Paper 3)

# Sciences:
## Computer Science—Higher level

### 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, under- pinned 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 con- text that will stimulate and challenge students developing the skills necessary for independent and lifelong learning
- provide a body of knowledge, methods and techniques that char- acterize 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 identi- fy 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, inves- tigative 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 environ- mental implications of using
- science and technology
- develop an appreciation of the possibilities and limitations associated with continued developments in IT systems and computer science
- encourage an understanding of the relationships between scientific disciplines and the overarching nature of the scientific method.

### II. Curriculum model overview

| Component | Recommended teaching hours |
|---|---|
| Core syllabus content<br>SL/HL core<br>Topic 1: System fundamentals<br>Topic 2: Computer organization<br>Topic 3: Networks<br>Topic 4: Computational thinking, problem-solving and programming<br>HL extension<br>Topic 5: Abstract data structures<br>Topic 6: Resource management<br>Topic 7: Control<br>Case study<br>Additional subject content introduced by the annually issued case study | 80<br><br><br><br><br>45<br><br><br>30 |
| Option<br>SL/HL core<br>HL extension<br>Students study one of the following options:<br>Option A: Databases<br>Option B: Modelling and simulation<br>Option C: Web science<br>Option D: Object-oriented programming (OOP) | 30<br>15 |
| Internal assessment<br>Solution<br>Practical application of skills through the development of a product and associated documentation | 30 |
| Group 4 project | 10 |

### III. Assessment model

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

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

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

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

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

### Assessment at a glance

| Type of assessment | Format of assessment | Time (hours) | Weighting of fnal grade (%) |
|---|---|---|---|
| External | | | 80 |
| Paper 1 | • Section A consists of several compulsory short answer questions.<br>• Section B consists of fve compulsory struc- tured questions. | 2 hours, 10 min. | 40 |
| Paper 2 | An examination paper of between three and seven compulsory question; linked to the option studied. | 1 hour, 20 min. | 20 |
| Paper 3 | An examination paper consisting of four compul sory questions based on a pre-seen case study. | 1 hour | 20 |
| Internal | | | 20 |
| Written commentary | A report of The develop ment of a computational solution. Students must produce:<br>• a cover page that follows the prescribed format<br>• a product<br>• supporting docu- mentation (word limit 2,000 words). | 30 hours | 25 |
| Group 4 project | | 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.

# Sciences:
## Computer Science—Standard level

### I. Course description and aims

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

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

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

provide opportunities for study and creativity within a global con- text that will stimulate and challenge students developing the skills necessary for independent and lifelong learning
provide a body of knowledge, methods and techniques that char- acterize 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 identi- fy 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, inves- tigative and problem-solving skills
develop and apply the students' information and communication technology skills in the study of computer science to communi- cate information confidently and effectively
raise awareness of the moral, ethical, social, economic and environ- mental implications of using science and technology
develop an appreciation of the possibilities and limitations asso- ciated with continued developments in IT systems and computer science
encourage an understanding of the relationships between scientif- ic disciplines and the overarching nature of the scientific method.



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

### III. Assessment model

Having followed the computer science standard 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, de- signs 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 develop- ing a specified product.

### Assessment at a glance

| Type of assessment | Format of assessment | Time (hours) | Weighting of fnal |
|---|---|---|---|
| External | | | 80 |
| Paper 1 | • Section A consists of several compulsory short answer questions.<br>• Section B consists of fve compulsory struc- tured questions. | 2 hours, 10 min. | 40 |
| Paper 2 | An examination paper of between three and seven compulsory question; linked | 1 hour, 20 min. | 20 |
| Paper 3 | An examination paper consisting of four compul sory questions based on a pre-seen case study. | 1 hour | 20 |
| Internal | | | 20 |
| Written commentary | A report of The develop ment of a computational solution. Students must produce:<br>• a cover page that follows the prescribed format<br>• a product<br>• supporting docu- mentation (word limit 2,000 words). | 30 hours | 25 |
| Group 4 | | 10 hours | |

### IV. Sample questions

The colour of a pixel can be stored as a 16-bit integer.
(a) State how many different colours can be represented in a 16-bit integerfield.
(b) State whether this storage system for colour values is digital or analog.
(c) Outline one advantage and one disadvantage of using 32-bits per-pixel to store colours instead of 16- bits per-pixel.
- State the output of the following code fragment:
double n= 1234.5678;
double p = math.floor((n*100)/100); output (p);
Recall that math.floor(3.7) produces the integer result 3.

# Mathematics:
## Mathematics—Higher level

### I. Course description and aims

The IB DP higher level mathematics course focuses on developing im- portant 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 dif- ferent 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 inde- pendence 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 de- velop 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 |
|---|---|
| Topic 1<br>Algebra | 30 |
| Topic 2<br>Functions and equations | 22 |
| Topic 3<br>Circular functions and trigonometry | 22 |
| Topic 4<br>Vectors | 24 |
| Topic 5<br>Statistics and probability | 36 |
| Topic 6<br>Calculus | 48 |
| Option syllabus content<br>Students must study one of the following options.<br>Topic 7<br>Statistics and probability<br>Topic 8<br>Sets, relations and groups<br>Topic 9<br>Calculus<br>Topic 10<br>Discrete mathematics | 48 |
| Mathematical exploration<br>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 fa- miliar and unfamiliar contexts.
- Problem-solving: recall, select and use their knowledge of mathe- matical 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 pa- per and using technology; record methods, solutions and conclu- sions using standardized notation.
- Technology: use technology, accurately, appropriately and effi- ciently both to explore new ideas and to solve problems.
- Reasoning: construct mathematical arguments through use of pre- cise statements, logical deduction and inference, and by the ma- nipulation 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

| | Format of assessment | Time (hours) | Weighting of fnal grade (%) |
|---|---|---|---|
| External | | 5 | 80 |
| Paper 1 (non-calcu- lator) | Section A: Compulsory short-response questions based on the core syllabus. Section B: Compulsory ex tended-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 ex tended-response questions based on the core syllabus. | 2 | 30 |
| Paper 3 (graphical display calculator required) | Compulsory extended-re sponse 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×b=b×c=c×a.
- Consider the following system of equations:

  $x+y+z=1$
  $2x+3y+z=3$
  $x+3y \quad z=$

where R.

A. Show that this system does not have a unique solution for any value of .

B. I. Determine the value of for which the system is consistent.
ii. For this value of, find the general solution of the system.




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# Mathematics:
## Mathematics —Standard level

### I. Course description and aims

The IB DP mathematics standard level (SL) course focuses on introducing important mathematical concepts through the development of mathe- matical 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 ac- quired 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 ac- tivities and to explore different mathematical ideas. The exploration also allows students to work without the time constraints of a written exam- ination and to develop the skills they need for communicating mathe- matical 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 |
|---|---|
| Topic 1<br>Algebra | 9 |
| Topic 2<br>Functions and equations | 24 |
| Topic 3<br>Circular functions and trigonometry | 16 |
| Topic 4<br>Vectors | 16 |
| Topic 5<br>Statistics and probability | 35 |
| Topic 6<br>Calculus | 40 |
| Mathematical exploration<br>Internal assessment in mathematics SL is an- indi vidual 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 pa- per and using technology; record methods, solutions and conclu- sions using standardized notation.
- Technology: use technology, accurately, appropriately and effi- ciently both to explore new ideas and to solve problems.
- Reasoning: construct mathematical arguments through use of pre- cise statements, logical deduction and inference, and by the ma- nipulation 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 fnal grade (%) |
|---|---|---|---|
| External | | 3 | 80 |
| Paper 1 (non-calcu- lator) | Section A: Compulsory short-response questions based on the whole syllabus. Section B: Compulsory ex tended-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 ex tended-response questions based on the whole syllabus. | 1.5 | 40 |
| Internal | | | 20 |
| Mathematical exploration | Internal assessment in math ematics 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.
  A) Each value in the data set has 10 added to it. Write down the value of
  i. the new mean;
  ii. the new standard deviation.
  B) Each value in the original data set is multiplied by 10. i. Write down the value of the new mean.
  ii. Find the value of the new variance.

- Given that f(x) = 1/x, answer the following. A) Find the first four derivatives of f (x).
  B) Write an expression for f(n)in terms of x and n.



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# Diploma Programme Core:
## Creativity, activity, service

### 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 ser- vice 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 com- munity 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 ex- tended 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 expe- riences. All are valuable and may lead to personal development. How- ever, 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 re- sources 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 col- lection of evidence that showcases CAS experiences and student reflec- tions; 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 out- come at least once through their CAS programme.

| Learning outcome | Descriptor |
|---|---|
| Identify own strengths and develop areas for growth. | Students are able to see themselves as individuals with various abilities and skills, of which some are more developed than others. |
| Demonstrate that challenges have been undertaken, develop - ing new skills in the process. | A new challenge may be an unfamiliar experience or an extension of an existing one. The newly acquired or developed skills may be shown through new experi ences or through increased expertise in an established area. |
| Demonstrate how to initiate and plan a CAS experience. | Students can articulate the stages from conceiving an idea to executing a plan for individual or collaborative CAS experienc es. Students may show their knowledge and awareness by building on a previous experience or by launching a new idea or process. |
| Show commitment to, and perseverance in, CAS experiences. | Students demonstrate regular involve ment and active engagement in CAS. |
| Demonstrate the skills and recognize the benefts of working collaboratively. | Students are able to identify, demonstrate and critically discuss the benefits and challenges of |
| Demonstrate engagement with issues of global signifcance. | Students are able to identify and demon strate their understanding of global issues, make responsible decisions and take appropriate action in response to the issue either locally, nationally or internationally. |
| Recognize and consider the ethics of choices and actions. | Students show awareness of the conse quences of choices and actions in plan ning 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 plant- ing 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.

# Diploma Programme Core:
## Extended essay, including the world studies option

### I. Course description and aims

The extended essay is an in-depth study of a focused topic chosen from the list of approved DP subjects normally one of the student's six chosen subjects, or in World Studies. World Studies provides students the opportunity to carry out an in-depth interdisciplinary study of an issue of contemporary global significance, utilizing two IB disciplines. Both are intended to promote high-level research and writing skills, intellectual discovery and creativity, engaging students in personal research in a topic of their own choice, under the guidance of a supervisor (a teacher in the school). This leads to a major piece of formally presented, struc- tured writing, in which ideas and findings are communicated in a rea- soned, coherent and appropriate manner.

The extended essay, including the world studies option, is a compul- sory, externally assessed piece of independent research/investigation. Presented as a formal piece of scholarship containing no more than
4,000 words, it is the result of approximately 40 hours of student work, and concluded with a short interview, or viva voce, with the supervising teacher (recommended).

The aims of the extended essay, including the World Studies option, are to provide students with the opportunity to:

- pursue independent research on a focused topic
- develop research and communication skills
- develop creativity and critical thinking
- engage in a systematic process of research
- experience the excitement of intellectual discovery. 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 |
|---|
| The research process<br>1. Choose the approved DP subject*.<br>2. Choose a topic.<br>3. Formulate a well-focused research question.<br>4. Plan the investigation and writing process.<br>5. Plan a structure (outline headings) for the essay. This may change as the investigation develops.<br>6. Undertake some preparatory reading.<br>7. Carry out the investigation.<br>*for the World Studies option, students choose a topic which must address both an issue of global signifcance, and invite an interdisciplinary approach |
| Writing and formal presentation<br>• The required elements of the fnal work to be submitted are:<br>• Title page<br>• Abstract<br>• Contents page<br>• Introduction<br>• Body (development/methods/results)<br>• Conclusion<br>• References and bibliography<br>• Appendices.<br>The upper limit of 4,000 words includes the introduction, body, con clusion and any quotations. |





| |
|---|
| The viva voce (concluding interview)<br>The viva voce is a short interview (10-15 minutes) between the student and the supervisor, and a recommended conclusion to the process. The viva voce serves as:<br>• A check on plagiarism and malpractice in general<br>• An opportunity to refect on successes and difculties<br>• An opportunity to refect on what has been learned<br>• An aid to the supervisor's report. |

### III. Assessment model

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

- plan and pursue a research project with intellectual initiative and insight
- formulate a precise research question
- gather and interpret material from appropriate sources
- structure a reasoned evidence-based argument in response to the research question
- present their work in an appropriate format, acknowledging sourc- es in an established academic way
- use the appropriate terminology and language with skill and un- derstanding
- apply appropriate analytical and evaluative skills , with an under- standing of the implications and context of their research.

### Assessment at a glance

| Assessment criteria | Description |
|---|---|
| Research question | The purpose of the essay is specifed. |
| Introduction | Makes clear how the research question relates to existing knowledge on the topic and explains how the topic chosen is signifcant and worthy of investigation. |
| Investigation | A planned and an appropriate range of sources have been consulted, or data has been gathered, relevant to the research question. |
| Knowledge and understanding of the topic | The knowledge and understanding of the topic studied, as well as the ability to locate the aca demic context for the investigation. |
| Reasoned argument | The essay uses the material collected to present ideas in a logical and coherent manner, and develops a reasoned argument in relation to the research question. |
| Application of appropriate analytical and evaluative skills | The essay demonstrates appropriate analytical and evaluative skills. |
| Use of appropriate language | The language used communicates clearly the ideas and arguments presented, and whether terminology appropriate to the subject is used accurately. |
| Conclusion | The essay incorporates a conclusion that is rele vant to the research question and is consistent with the evidence presented in the essay. |
| Formal presentation | The layout, organization, appearance and formal elements of the essay consistently follow a standard format. |
| Abstract | Clearly states the research question, how the investigation was undertaken and the conclu sion(s) of the essay. |
| Holistic judgment | The qualities that distinguish an essay from the average, such as intellectual initiative, depth of understanding and insight. While these qualities will be clearly present in the best work, less successful essays may also show some evidence of them. |

### IV. Sample extended essay topics chosen by students

- To what extent did General Zia Ul-Haq disrupt the progress of women's rights in Pakistan?
- How useful is the concept of totalitarianism in explaining Nazi
- Germany and Stalinist Russia?
- How do photographers of violence and suffering make a fair, accu- rate and visually compelling case for human rights? (World Studies).

# Diploma Programme Core:
## Theory of knowledge

### 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<br>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<br>While there are arguably many ways of knowing (WOKs), TOK identifes eight specifc 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<br>Areas of knowledge are specifc branches of knowledge, each of which can be seen to have a distinct nature and diferent 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. |





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### 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.

### Assessment at a glance

| Type of assessment | Format of assessment | Weighting of fnal grade (%) |
|---|---|---|
| External | | |
| Part I:<br>Essay on a prescribed title | One essay on a title chosen from a list of six prescribed titles. | 67 |
| Internal | | |
| Part 2:<br>Presentation | One presentation to the class by an individual or a group (max of three persons); approximately 10 minutes per student.<br>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.

### 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?

# Are you completing your IB assignments honestly?

IB expects Diploma Programme candidates to exercise academic honesty in all of their work, which includes acknowledging any sources used within an assignment.

The IB General Regulations: Diploma Programme defines malpractice as behaviour that results in, or may result in, the candidate or any other candidate gaining an unfair advantage in one or more assessment components.

## ASK FOR ADVICE

As a Diploma Programme candidate you are responsible for ensuring that all of the work you submit is authentic and that any sources used are appropriately acknowledged. If you have any doubts please ask for advice.

## EXAMPLES OF MALPRACTICE

- Plagiarism - the representation of the ideas or work of another person as your own.
- Collusion - supporting malpractice by another candidate, as in allowing your work to be copied or submitted for assessment by another candidate.
- Duplication of work - the presentation of the same work for different assessment components and/or IB diploma requirements.
- Misconduct during an examination, including the possession of unauthorized material.
- Disclosing information to another candidate, or receiving information from another candidate, about the content of an examination paper within 24 hours after the examination.

## HOW TO AVOID PLAGIARISM

- Credit all the sources you use, even if you have paraphrased or summarized.
- Clearly distinguish between your work and the source being used (using quotation marks, indentation or a similar method).
- Use a style of referencing that is appropriate for the subject.

## THINGS TO REMEMBER

- IB students are principled and act with integrity and honesty.
- IB students should be content creators not content imitators.
- If you engage in any form of malpractice you may not be eligible for a grade in the subject concerned.
- Do it right, remember to cite! Credit where credit is due!

International Baccalaureate®
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**The IB takes academic honesty very seriously!**



# Assessment in the Diploma Programme

## International and intercultural dimensions

The school will assess the students according to IB diploma standards of assessment. Both internal and external examinations will be used to assess their basic skills e.g. understanding the key concepts, retaining knowledge, applying standards as well as the advanced academic skill e.g. analytical, evaluation, compare and contrast, presentation skills and problem-solving skills. In addition to the academic skills, the students will be encouraged to develop their intercultural skills and international mindedness through various assessments.

### External and Internal assessment

As per IB requirements both internal and external assessment will be used to assess the students in diploma programme.

IB teachers use a range of formative and summative assessments to facilitate student learning. IB assessment is criterion-referenced. This means that student work is marked in relation to a range of skills, knowledge, understanding, and competencies which are clearly stated in course outlines, unit plans and assessment tasks. These in turn are related to the core components and concepts of the IB Diploma programme such as the Learner Profile, International Mindedness, Critical Thinking and Approaches to Learning.

### External assessment

IB external assessments are assessments that are completed by final examination. These normally take place at the end of the 2-year course although in certain circumstances a student may sit an examination at the end of Year One if the subject criteria have all been met.

Examinations will be held throughout May and normally comprise about 75% of the final mark. Results are published at the beginning of July. Students at Roots Millenium Schools will receive ongoing guidance in examination, study and revision skills, essay writing, and understanding and interpreting examination rubrics. These will be both generic and subject specific. Mock examinations will be held at the end of Year 1 and about halfway through Year 2.

Examinations form the basis of the assessment for most courses.

They include:

- essays
- structured problems
- short-response questions
- data-response questions
- text-response questions
- case-study questions
- multiple-choice questions - though these are rarely used.

### Internal assessment

IB internal assessments take place throughout the 2 years of the course and are normally marked by the teachers but subject to moderation by IB appointed examiners. Examples include English individual oral commentary, language presentations, Business research projects, historical investigations, laboratory reports, and projects

in several subjects including Mathematics, Dance and Theater.

IB internal assessments are graded on a scale of 1 (low) to 7 (high). Individual planning and self-organization are important and to assist the students, the IBDP coordinator will distribute an assessment calendar to mark the dates for completion of deadlines and the steps to prepare for these. In core components such as TOK and the Extended Essay, students will receive additional guidance on how to best plan their time. Internal assessments account for approximately 25% of the final mark although this will very a little between subjects.

This includes:

- oral work in languages
- fieldwork in geography
- laboratory work in the sciences
- investigations in mathematics
- artistic performances.

## DP Types of Assessment

- Homework is given twice a week by each subject marked to IB criterion. Furthermore, reading of topics covered is expected from all students throughout the week to reinforce knowledge.
- Oral presentations are an important part of confidence building and an essential part of students' assessment in the IB programme. The TOK course specifically asks for an Oral Presentation so it is important students have plenty of practice for this in all their lessons. Twice a term students will research and present a topic, this will be marked according to IB criteria.
- Projects In the IB, another vital component of the Extended Essay course which must be assessed throughout in their individual subjects. Mini projects are set throughout the year to reinforce research and collaborative skills.
- Essays All students are expected to complete an essay style question once a term in each of their subjects. This is marked to IB criteria.
- Quizzes/tests End of topic tests will be given but based on IB criteria. These will be from a past examination paper. In this way teachers will mark the tests according to the IB criteria.
- Internal moderation of students work is done by teachers throughout the year as they assess their own marking and feedback skills.
- Reports are twice a year and give the opportunity for the teacher to give targets on each student so they know how they can improve. The grade that goes on the assessment and reports is in most cases an average of the formally assessed pieces of work that are set throughout the term. Each department will have different numbers of formally assessed work but the average of these will go into the report grade for that period.





# Academic Honesty Policy

All DP students are required to sign an Academic Honesty contract stating that they understand the Academic Honesty policy and pledging that they will remain academically honest throughout the duration of the DP. They also sign that they understand the implications of a failure to follow the Academic Honesty Policy. Should a transfer or new student arrive after this date, they will be required to sign this at the earliest opportunity. DP teachers are expected to set internal deadlines in advance of the official due dates, to ensure that there is sufficient time to authenticate student work and resolve any errors in referencing. As per IB guidelines, both teachers and students are required to sign a coversheet for all externally assessed components (except examination scripts) and all internal assessment to confirm that the work is authentic and to confirm that the work being submitted for assessment constitutes the final version of the work.

## DP Assessments and Academic Honesty for EE (Extended Essay) and Internal Assesssment

Students and supervisors are encouraged to include a discussion of sources during the meetings. Both the rough draft and the final draft are submitted to Turnitin for authentication. Students then review the Turnitin reports as needed if there are errors or concerns. Deadlines are provided to ensure this is done in advance of final submission to examiners. Students and supervisors must sign the coversheet attesting to the originality of the EE.

## Presentation/ Oral Work

Students are reminded that a presentation requires a list of works cited e.g. a slide at the end of a Powerpoint or an uploaded document of sources. Students are encouraged in particular to acknowledge the use of others' ideas (students/teachers), either orally or in the works cited section.

## In the TOK presentation

All students are equally responsible in the group for ensuring that they acknowledge their sources appropriately: this includes citing images in the presentation, providing a slide documenting works referenced and acknowledging the input of others' ideas, either students or teachers. All students in the group now receive the same grade; this means that they are all responsible for the consequences of a failure to acknowledge sources appropriately. This places extra emphasis on the importance of authentic work and collaboration.

## Exams (both internal and IB)

For all examinations requiring calculators, memory is cleared and calculators are checked to ensure compliance with IB Regulations.

All grade 12 students will be briefed about the conduct of examinations and the consequences of not complying before the IB examinations. Exam literature will be emailed to all the students and will be linked to the school website.

## Malpractice in the Diploma Programme

### Internal Assessment

All diploma students are assessed internally. All subject teachers will complete an incident report to the Diploma coordinator and principal in case of following circumstances. A separate meeting will be held with the teacher, student and parent to explain the possible future consequences:

- In case if Turnitin (plagiarism software) detects that a student has plagiarized
- If two students have submitted an identical work for an internally assessed assignment (e.g. lab report)
- A student copies from another during an internal exam or brings in unauthorized material to the exam (notes, phone, flashcards etc.)

The Rights of Students. Any student suspected of academic malpractice will have the right to explain his/her actions and/or to dispute the charges against them. The nature of this will be based on the severity of the situation.

In the case of suspected malpractice in an IB Exam or externally moderated or assessed work, the student has the following rights and expectations of the process (from Diploma Programme: Academic Honesty; p11):

- to be informed that they are under suspicion
- an interview with a relative or friend present as an adviser, witness or observer. a transcript of this may be taken and submitted as additional evidence, with the candidate's approval.
- to be shown all the evidence and allowed to present an explanation or defence.
- to provide their own written statement

An IB Committee will have the final say on the results of such an investigation. Students have the right to appeal this result.

## The Importance of Referencing and Citing:

Students need to be regularly educated about the importance of referencing their work and citing sources. Regular counseling sessions shall be provided by the school librarian to ensure every student understands:

## How to use referencing:

Students must be trained to use various technologies and software for online referencing in addition to using it for handwritten assignments. Consistent in-school trainings shall be provided to all students to make them apt at using maximum referencing tools and Apps.

## Why to use referencing:

The students must realize the prime purpose of referencing is to give due credit to the original owner of the information and to maintain dignity and honesty of one's own piece of work. They must learn to develop themselves as principled learners, who settle for nothing less than original.

Moreover, the students should also ensure that they use authentic referencing to save themselves from any disciplinary action of serious punishments which could even be expulsion from the school.

Referencing and citing the work gives students an opportunity to authenticate their work as original and credible, being their own intellectual property.





## Where to use referencing:

Every student must know that referencing is unavoidable at all such points in a task where someone else's work or words are quoted. Any kind of secondary research needs to be referenced.

## Guidelines on Referencing

### Citations

Students include a citation in the text to acknowledge that the material (including written oral and electronic products) they are using, whether a direct quote, paraphrase or summary, is "borrowed" from the work of someone else.

There are three main types of intext citations:

I. Author: Uses introductory or parenthetical citation giving the last name of the author and (if applicable) the page numbers from which the quote or paraphrase is taken.

ii. Authordate: Uses introductory or parenthetical citation giving the last name of the author, the year of publication and (if applicable) the page numbers from which the quote or paraphrase is taken.

iii. Numbered footnote: Uses superscript numbers after the referenced passage, with corresponding footnotes placed at the bottom of the page. Footnotes contain all the reference details from which the quotation, paraphrase or summary is taken. If a source is used more than once, shorter footnotes are sufficient.

Each citation must then be given a reference.

## References

A reference gives the full details of the source of the words/work cited in a student's work, enabling the reader to trace the exact material used. Each reference must follow the conventions set out in latest MLA Style Guide and be arranged in alphabetical order by author and then title. Reference lists are found at the end of a document or presentation. Each reference included should relate to a citation in the text. Sources that have been consulted but not mentioned or cited need not be included. If all materials consulted, even where not mentioned or cited, are included, the list becomes a bibliography.

# Award of the International Baccalaureate Diploma

The IBO uses criterion-referenced assessments (both internal and external) to confer points leading to an IB Diploma.

Each of six examined subjects is graded on a scale of 1 (Lowest) to 7 (Highest) points.

The maximum diploma point is 45.

6X7 = 42 points for 6 subjects

3 points for Theory of knowledge and

Extended essay.

CAS (Creativity, Activity and Service) log book has to be maintained.

The minimum diploma point is 24

The IBO uses criterion-referenced assessments to confer points leading to an IB Diploma. Each of six examined subjects is graded on a scale of 1 to 7 points. A student who scores a minimum of 24 points on 3 Higher Level and 3 Standard Level (or 4 HL and 2 SL) subjects, completes both the Theory of Knowledge class and the extended essay with at least a D grade, and accomplishes CAS (Creativity, Action and Service) hours can be awarded an IB Diploma provided none of the following failing conditions exist:

- A grade of 2 in any HL subject
- Each grade 3 in an HL subject not compensated by a grade 5 or above in another HL subject
- A grade 1 in any SL subject
- Two or more grade 2 in SL subjects
- Two or more grade 3 in HL with a grade of 2 at SL
- Four or more grade 3 subjects

Excellent performance in the 6 subject areas results in a grade 7 for each, or a total of 42 points. The maximum diploma point score is 45. Theory of Knowledge and the extended essay contribute to the overall score through a matrix system, which awards up to 3 bonus points based on the candidate's combined performance.

Those students who do not satisfy the entire set of requirements for an IB Diploma or who elect to take fewer than six subjects are awarded a certificate for examinations completed.

## Generic IB Attainment Grade Descriptors

Grade 7 A consistent and thorough understanding of the required knowledge and skills, and the ability to apply them almost faultlessly in a wide variety of situations. There is consistent evidence of analysis, synthesis and evaluation where appropriate. The student consistently demonstrates originality and insight and always produces work of high quality.

Grade 6 A consistent and thorough understanding of the required knowledge and skills, and the ability to apply them in a wide variety of situations. There is consistent evidence of analysis, synthesis and evaluation where appropriate. The student generally demonstrates originality and insight.

Grade 5 A consistent and thorough understanding of the required knowledge and skills, and the ability to apply them in a variety of situations. The student generally shows evidence of analysis, synthesis and evaluation where appropriate and occasionally demonstrates originality and insight.

Grade 4 A good general understanding of the required knowledge and skills, and the ability to apply them effectively in normal situations. There is occasional evidence of the skills of analysis, synthesis and evaluation.

Grade 3 Limited achievement against most of the objectives, or clear difficulties in some areas. The student demonstrates a limited understanding of the required knowledge and skills and is only able to apply them fully in normal situations with support.

Grade 2 Very limited achievement against all the objectives. The student has difficulty in understanding the required knowledge and skills, and is unable to apply them fully in normal situations, even with support.

Grade 1 Minimal achievement in terms of the objectives.

# Conversion of IB Diploma into Higher Secondary School Certificate in Pakistan

According to Inter Board Committee of Chairman of Pakistan, International Baccalaureate Diploma with minimum of five required subjects from external examining body Geneva, Switzerland is equivalent to Higher Secondary School Certificate of Pakistan.

1. Pre- Medical. Five subjects of IB including English, Physics, Chemistry, Biology and one overall best academic subject.
2. Pre-Engineering. Five subjects of IB including English, Physics, Chemistry, Mathematics and one overall best academic subject.
3. Humanities/General Group. Five subjects including English and four elective subjects.

IBCC conversion formula for grades of International Baccalaureate Diploma awarded by Geneva, Switzerland.

| Grades | Pak Equivalent Marks (For External Exams) |
|---|---|
| 7 | 90 |
| 6 | 80 |
| 5 | 70 |
| 4 | 60 |
| 3 | 50 |
| 2 | Zero |
| 1 | Zero |





# Benefits of IB Diploma Programme

# What Makes IB  Programmes Unique ?

## International

IB commitment to international education starts with a belief that the only way to appreciate someone else's culture is first to be confident in your own. The international-mindedness that permeates IB programmes is about more than simply learning a second language. For example, in biology, students might learn about the typhoid bacteria but also its impact on life expectancy in a developing country. Students learning about the history of their town or region might look at the broader context, of history and the effects of certain global events, and how these impact on their local environment.

## Independent

The IB and its programmes are unique in many ways. IB is a not-for-profit organization, which means that there are no shareholders and any surplus income is reinvested in our work. IB is independent of political and commercial interests and operates in 143 countries, frequently working alongside national educational systems. Most schools, for example, offer the DP alongside other courses whereas the PYP and MYP are flexible enough to incorporate national curriculum requirements.

## Research-based

Like the world it seeks to improve through education, the IB never stands still. IB programmes and curricula evolve and undergo regular review to ensure they are delivering the best possible education for IB students. IB vision is constantly sharpened by Its own research, and that of other respected academic bodies. Innovative and creative educators from many different cultures play a critical role in the development of each programme. The programmes represent good practice from around the world, and the curriculum review process involves practising teachers, examiners and education experts. They are flexible enough to be able to respond to new research and pedagogical studies and engage with expert analysis where appropriate. For example, the IB Career-related Programme, our newest qualification, is designed to provide a flexible learning framework to meet the needs of students and the local community as well as the world beyond.

## Widely recognized

IB programmes are challenging. Universities and future employers recognize the depth and breadth of the rigorous work undertaken by IB students. As a result there are many literate scientists, numerate artists, and sociologists able to communicate in more than one language among IB graduates. In spite of this breadth, the depth of subject study is not sacrificed. Universities also welcome the creativity, activity and service (CAS) requirement, alongside the 4,000 word extended essay component in the DP that demands research, analysis and in-depth study to prepare students for work at university level. Research by and with universities in Australia, Canada, the United Kingdom and the United States has demonstrated that IB students are well prepared for university. Almost 2,000 of the best universities around the world list their IB admission policies on our web site at http:// www.ibo.org. Of course results are important, and we are proud of our programmes and of our students, but the IB experience is much more than that: it's not just a way to learn, it's a way of life.



# Benefits for Students

Students at International Baccalaureate® (IB) World Schools are given a unique education.

The students will;

- be encouraged to think independently and drive their own learning
- take part in programmes of education that can lead them to some of the highest ranking universities around the world
- become more culturally aware, through the development of a second language
- be able to engage with people in an increasingly globalized, rapidly changing world.

# Admission at RMS IB Diploma Programme

# How do I get into the RMS IB Diploma Programme?

Roots Millennium schools will provide students with a smooth transition into the Diploma Programme.

All admissions to DP courses are subject to students' interests, strengths and needs, timetabling constraints and a total number of students taking particular courses. DP subject teachers and guidance counselors advise each DP student as to his or her suitability for a particular course.

The following steps will be undertaken during the admission process:

## Inquiry - Meeting with Parents and students:

IB diploma coordinator will brief Parents and students about the syllabus and assessment details of all the subjects. They will be provided the subject guides for comprehensive understanding of all the subjects.

In addition to subject-specific knowledge and skills, students will be briefed about a number of linguistic and transdisciplinary competencies, skills, strategies and attitudes that are consistent with the learner profile in order to be successful. Additionally, an informational booth will set up at Parent - teacher conference to provide relevant information and addressed queries for all grade parents.

## Submission of application

An application package including all necessary forms will be provided by the DP coordinator. Interested students and their parents/ guardians will submit the required application documents for the IB Diploma Programme. The application package will include:

- An application form which includes student demographic information and a set of student self-assessment questions
- A provisional course selection form for IB Diploma Programme
- Three teacher recommendation forms (from homeroom and/ or different subject teachers)
- A signed academic honesty agreement .

## Student interviews

DP coordinator along with the admission director will conduct an interview with all the potential students to brief them about IBDP knowledge and the skills required for the successful completion of this programme.

## Assessment

New students will be required to pass an admission test in English and Mathematics.

## Acceptance and Registration

DP coordinator will email the letter of acceptance into the IB Diploma Program. Students will be admitted the place in the Diploma Programme and the student's records will be passed on to the IB Office.

## Equal Opportunity Policy

We acknowledge that members of the school come from diverse cultural, racial and socio-economic backgrounds and we endeavour to foster an atmosphere of mutual respect in order to help to promote our school and a society in which there is social, religious and racial harmony. As a school, we accept that there are gender inequalities in our society which impose limits,

particularly on girls' expectations and behaviour, so we constantly examine our curriculum, procedures and materials for gender bias or inequality.

Equal Opportunity Policy of Roots Millennium Schools aims to:

- Offer equal opportunities regardless of race, culture, gender orientation, academic ability, physical ability or class.
- Provide an environment free from social or cultural prejudice for all members of our school community.
- Achieve an environment in which members of the school community is respected as individuals and in which the varied experiences of the community enriches the life of the school.
- RMS Equal Opportunities is the responsibility of the whole school community and is reflected throughout the organization of the school.
- All staff, governors, parents/guardians and pupils are involved in developing, implementing and monitoring the equal opportunities policy and practice.
- All staff, governors, parents/guardians and pupils regardless of race, ethnicity, disability, gender and socio-economic background, are welcome and is encouraged to participate in the life of the school.
- Statements of equality dimensions and opportunity are printed in all relevant school documentation e.g. school prospectus, vision statement, policies and in the staff handbook.
- All governors, staff and pupils receive training in relevant aspects of equal opportunities to ensure their ability to actively support this policy.

On acceptance to the school all parents receives information detailing the School's Behavior Code. This information will be available in languages other than English as appropriate to the school community.

The school makes reasonable effort to ensure that meetings are accessible and convenient for all and take into account particular needs and requirements, e.g. physical access, child care and interpreter support.

The school includes in its annual report to parents, information concerning the arrangements made for the admission of Special pupils; the steps taken to prevent disabled pupils from being treated less favourably than other pupils; the facilities provided to assist access to the school by disabled pupils. Progress in this area is documented in the School's Action Plan.

The school recognises its need to celebrate the diversity that exists within its community and ensures that all have the opportunity to respond to the expectations and challenges of the curriculum.

It is our school policy to incorporate a balanced view of the world through a multi-cultural approach, to recognise that our pupils are world citizens who will meet a wide variety of cultures throughout their lives, to evaluate our practice to ensure that it is not at the expense of indigenous cultures and to allow children equal access to opportunities which will equip them for adult life and to achieve challenging expectations.





# Admission Policy
# Special educational needs students

## Application process

Based on our equal opportunity policy our school offers admission to students with special educational needs.

- Application. The admission committee reviews the application of each student with special educational needs.
- Important documents Parents should submit essential documents e.g current educational psychology report, current speech and language therapy report, current physiotherapy report or occupational therapy etc.
- Resources The admission committee look at the resources required in terms of human, financial, material and space resources based on the reports provided by the parents.
- Meeting The school leadership will plan a meeting with the Parents, Guidance Counselor and Diploma Program Coordinator before accepting a student with special educational needs as a candidate for the IB Diploma program. A decision will be made whether suitable arrangements for both teaching and assessment can be made to accommodate the student. If a student with special educational needs is accepted into the IB program, careful consideration must be given to the candidate's choice of subjects. Once the decision to admit a student to the school has been taken, it is our duty to provide all possible support within the limits set by the resources at the school's disposal.

## Inclusion in an IB context

IB programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right. (www.ibo.org)

In the publication Learning diversity in the International Baccalaureate programmes (2010), the IB states, "Inclusion is an ongoing process that aims to increase access and engagement in learning for all students by identifying and removing barriers. This can only be successfully achieved in a culture of collaboration, mutual respect, support and problem solving. Inclusion is the learner profile in action, an outcome of dynamic learning communities." IB Programme standards and practices documents the practices required by schools to demonstrate their support for learning diversity.

As an IB-candidate school, Roots Millennium Schools invite all kinds of learners to join in. The school assesses all students with Special Education Needs and identifies the extent of learning difficulty each student faces. Special provisions are then arranged to accommodate the learner and to ease out the difficulty he/she faces.

A strict code of conduct is followed for students with Special Education Needs, which greatly emphasizes on inclusion of such students in all kinds of curricular and co-curricular activities and to refrain from any kind of discrimination that would affect the learners psychologically, socially or intellectually. Similarly, strict action is taken against candidates who involve in bullying such students or disturb the environment.

Conclusively, the school believes in education for all, regardless of any emotional, psychological, social or personal barriers.

RMS caters special education needs and has designed specific programmes for students with special needs. RMS special education program is customized to address each individual student's unique needs.

## Responsibilities of the School:

The Roots Millennium School will develop a Special Education Needs (SEN) committee comprising of members from the top of the educational hierarchy, who will continually review and revise the policy whenever and wherever required. The committee will be responsible for:

1. Physical Assessment

A complete yet comprehensive medical assessment of the student will be carried out to identify and authenticate the presence of any disability in the candidate and to investigate its nature and complexity. It will be the duty of the school to share valid and authentic results with the administration, the teachers and the parents of the respective student and collaboratively agree on provision of supportive measures.

2. Academic Assessment

Students who are identified as academically challenged will be assessed accordingly. Aids may include question papers with larger texts, students recording their answers on a tape recorder, a helper writing answers for the student as he/she dictates the answer, lesser difficult assessments, specially designed assessments, extra coaching classes, counseling/mentoring sessions and much more.

3. Provision of Support

Once a student has been assessed for a specific kind of disability and the parents, along with the teaching faculty, have been taken on board, it will be the sole responsibility of the school to make all possible arrangements to overcome the disability/challenge as much as possible.

4. Monitoring/Gauging Recovery:

Once a relevant action plan has been laid out to help a particular student overcome a disability or challenge, it will be the school's (SEN Committee's) responsibility to gauge the impact of the aids on the student. If the measures have a relatively negative impact on the student, changes will be made immediately.

Likewise, if the impact is gauged to be relatively positive and steady, the same course will be followed with improvisations. The SEN Committee will design a specific criterion against which every SEN student's progress will be gauges. The criteria should be framed around the following objectives:

a. Abridging learning gaps

b. Overcoming potential barriers obstructing the learning and developmental process

c. Rebuilding confidence and trust in the student.

## Responsibilities of the DP coordinator

The DP coordinator will be responsible to:

- Raise staff awareness of the needs of students identified as Students with Special Education needs;
- Provide staff training to successfully implement and support the SEN and differentiated instruction;
- Provide resources for the implementation of the policy.
- Work collaboratively with faculty to support students with special needs;
- Provide the Individual Education Plan for students with special educational needs
- Maintain records;
- At enrollment, advise parents of the rigorous program requirements to ensure appropriate placement.
- Educate teachers with the special assessment needs policy by IB.





## Procedures to communicate with IB by DP coordinator

DP coordinator on behalf of the candidate will submit the request for inclusive assessments arrangements to IB 6 months before the written examinations using the online request form.

The following supporting documentation will be submitted (uploaded) with the online Request for inclusive assessment arrangements:

- medical/psychological/psycho-educational documentation (translated into English, French or Spanish where necessary)
- at least one piece of educational evidence.
- Examples of educational evidence include:
- anecdotal observations from the school such as records or correspondence from a class teacher, a learning support/inclusion coordinator or school counsellor
- an individualized educational plan (IEP).Handbook of procedures for the Diploma Programme
- samples of the candidate's work (for example, showing unsuccessful work owing to lack of access or successful work owing to access given); the work submitted, which needs only be in one subject, must be work that has been written in English, French or Spanish.
- evidence of correspondence or records from a previous school where the candidate was enrolled and whether the assessment arrangement was used.

## Responsibilities of the Parent:

Parents of children with Special Education Needs play a vital role in the assessment, development and improvement of the child. They will be expected to take an equally active part in the child's disability assessment as the school does, and to extend cooperation whenever and wherever required.

The parent/guardian is expected to portray a clear and true picture of the child's disabilities along with authentic facts and details which later assist the school in deciding what provisions need to be made.

The SEN Committee will ensure inclusion and implementation of "Differentiated Learning" in the school curricula and will regular monitor its effectiveness and efficacy.

All SEN students enrolled in the school will have the opportunity to learn through personalized lessons, catering their individual needs and demands. Moreover, the school not will introduce differentiation in assessments but will also employ assistive technology using screen readers, visual screens, voice recorders and much more to facilitate SEN students in learning.

## Responsibilities of Admission and Review Committee

The school has a well-defined Admission and Review Committee that is responsible for ARP (Admission and Review Process) to ensure every SEN student is thoroughly assessed in order to provide provisions that address all SEN needs holistically. The panel consists of academically and professionally diverse personnel including the academic director, the director for outreach and programmes, a doctor, a psychologist and seasoned teachers.

Although the school addresses maximum SEN needs, if a student is identified with any unusual or exceptional Special education need, the committee puts him/her on the waiting list, ensuring confirmed admittance to school once the provisions are ready.

## Required documentation for admission:

The ARP Committee ensures every student is assessed through a variety of assessment tools to identify and investigate the legitimacy of the Special Education Need and the degree of urgency to which provisions are

required. Assessment tools include written tests, oral tests, interviews, physical examination by a practicing GP (General Practitioner), games, group tasks and a lot more depending on the student's aptitude and intellect.

If a student fails to pass in the first attempt, the school gives sufficient time to the parents, along with ample support, to re-prepare the student for a second interview/second assessment. Should the child fail in the second assessment, he/she is with refused admission or admitted to a grade level most suitable to his/her learning needs.

The parent/guardian of a student with Special Education Needs must provide the school with valid and recent medical/educational records of the candidate, attested by reliable authorities, which legitimately prove that the candidate requires special education provisions. A character certificate from the last school attended, along with report cards/annual results of the last class attended must be submitted by every parent in addition to the medical reports.





# The Successful IB Diploma Programme

# Expectations of IB Diploma Students

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

IB students are expected to:

- Engage their natural curiosity through inquiry and critical thinking skills
- Acquire indepth knowledge that explores connections across content areas and communities
- Apply critical thinking skills to a wide range of issues through reasoned and ethical decisions
- Communicate ideas and information through collaboration with others and presentation of work to various audiences
- Act with a sense of integrity, honesty and respect through accepting responsibility for one's actions
- Expand one's understanding and appreciation of varied perspectives, cultures and histories
- Demonstrate a personal commitment to make a positive impact on our local, national and global communities;
- Exhibit courage and independence through searching out new ideas and experiences;
- Attend to personal wellbeing through seeking intellectual, physical and emotional balance
- Reflect on one's educational experiences and progress through acknowledgment of strengths and areas for improvement to support one's educational and personal growth.



# Expectations of IB Diploma Teachers

IB teachers at Roots Millennium Schools are expected to:

- Model inquiry, research and independent thinking skills through lifelong learning;
- Demonstrate indepth content knowledge and skills that develops connections across multiple content areas within our school, local, national and global communities;
- Apply critical and creative thinking skills to curriculum development and instruction of content that informs reasoned and ethical decisions;
- Communicate ideas and information to students, families and colleagues while collaborating with all members of our learning community to enhance student educational experience and achievement;
- Demonstrate integrity, honesty and respect by accepting responsibility for one's content standards and practices as well as the educational philosophy of the IB programme;
- Incorporate an understanding and appreciation of many, varied perspectives, cultures, traditions and histories to assist students in evaluating a varying points of view.;
- Show empathy and respect for students, families, colleagues and community members while making a positive impact on our local, national and global communities;
- Exhibit courage and independence while embedding new ideas and experiences into the educational experience for students;
- Attend to personal wellbeing through seeking intellectual, physical and emotional balance;
- Reflect on one's professional practice and engage in professional development to meet the needs of our students.

# University acceptance of IB Diploma students

## How do colleges and universities view the Diploma Programme?

The DP is internationally recognized as representing one of the highest standards in university preparatory education. More than 1,000 colleges and universities in North America have recognition policies on how they weigh it in admissions, advanced standing, college credit and scholarships.

A list of colleges and universities that grant credit, scholarships and/or advanced standing for DP diplomas and certificates is available at www.ibo.org.

## Benefits of IB Education

- It increases academic opportunity
- IB students care about more than results
- It encourages you to become confident and independent learner
- Its an international qualification
- Graduates are globally minded
- The IB encourages critical thinking
- DP students have proven time management skills
- It assesses more than examination techniques
- Subjects are not taught in isolation
- It encourages breadth and depth of learning.

By studying in the IB, students develop core skills for success at university. Through our programmes, students develop:

- an understanding of and appreciation for research
- presentation and communication skills
- critical thinking skills
- report writing skills
- a sense of international mindedness and cultural understanding
- time management skills.





Diploma Programme

# Facts & Figures:

## The Diploma Programme

# Around the World

**1.3 million*** DP graduates

**140+** countries

*as of May 2015

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

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

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

**95%** of DP cohort — enrollment at four-year institutions (public and private)

60% national cohort

**79%** of DP cohort — average graduation rate at four-year institutions (public and private)

39% national cohort