



# The KAUST SCHOOL IB DIPLOMA HANDBOOK 2020 – 2022

IB Diploma Programme Coordinator  
Ms. Susan Rhodes

---



## MISSION STATEMENT

The KAUST School mission is to provide an exceptional International Baccalaureate education that empowers students to be resourceful and responsible global citizens.

## VISION STATEMENT

TKS strives to be a constantly improving learning community that empowers students to pursue their dreams

To realize our vision, we will:

- craft and teach a challenging curriculum that sparks deep thought and inquiry
- provide experiences relevant to students' lives
- offer stories and examples that foster respect
- model meaningful relationships and collaboration
- guide students towards independence and responsibility for their own actions
- kindle reflection as a guide for future acts

## CORE VALUES

Fundamental to our purpose, mission, and vision are our core values and attributes:

- integrity
- passion
- compassion
- diversity
- openness
- inspiration
- achievement
- perseverance

## 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 Organization, 2015*

## INTRODUCTION TO THE IB

The International Baccalaureate (IB) was established in Geneva in the 1968 to provide an internationally recognized curriculum for students around the world. There are currently 3,101 (2017) Diploma authorized IB World schools, both public and private in more than 119 countries. As the IB continues to expand, it is now widely recognized as a step to a post-secondary education. The IB Diploma Program (DP) is a rigorous pre-university course of studies, leading to external examinations that meet the needs of highly motivated secondary students between the ages of 16 and 19 years old.

## THE IB MODEL



## BENEFITS OF THE IB DIPLOMA PROGRAMME

Universities recognize the outstanding qualities of IB Diploma students. Typically, diploma holders are ready to debate real-world issues from an international perspective and to provide leadership and support in the local and global community. They demonstrate a capacity for in-depth study while maintaining a broad perspective of the different subject areas. They are able to ask challenging questions but also know how to research a topic and express their opinion. They have a strong sense of their own culture and identity, as well as the ability to communicate in two or more languages with people who have a different perspective of the world.

## IB LEARNER PROFILE

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

- Knowledgeable
- Thinkers
- Communicators
- Principled
- Open-minded
- Caring
- Risk-takers (Courageous)
- Balanced
- Reflective

## APPROACHES TO LEARNING (ATL)

The development of skills such as thinking skills and communication skills is frequently identified as a crucial element in preparing students effectively for life beyond school.

Developing students' ATL skills is about more than simply developing cognitive skills. It is also about developing affective and metacognitive skills, and about encouraging students to view learning as something that they "do for themselves in a proactive way, rather than as a covert event that happens to them in reaction to teaching" (Zimmerman 2000: 65).

By developing ATL skills and the attributes of the learner profile, DP students can become "self-regulated learners" (Kaplan 1998).

Self-regulated learners have learned how to set learning goals, ask good questions, self-interrogate as they learn, generate motivation and perseverance, try out different learning processes, self-monitor the effectiveness of their learning, reflect on achievement, and make changes to their learning processes where necessary (Zimmerman and Schunk 1989, de Bruin et al. 2011, Wolters 2011).

In the DP, as well as in the Primary Years Programme (PYP) and Middle Years Programme (MYP), these cognitive, metacognitive and affective skills are grouped into the same five ATL categories.

- Thinking Skills
- Communication Skills
- Social Skills
- Self-Management Skills
- Research Skills

## IB CURRICULUM AT THE KAUST SCHOOL (TKS)

The KAUST School opened its doors in the fall of 2009 and by the spring of 2010 TKS was authorized to deliver the IB Diploma Programme. There are two ways in which students can follow the IB curriculum at TKS. They can become IB Diploma candidates and attempt the full IB Diploma Programme or they can choose to study individual subjects and follow IB Diploma Programme courses. All students will graduate with the TKS Diploma, pending certain requirements. When the diploma course exam is not taken the student will take an internal TKS examination/s at the same time as the IB Diploma students. Assessment for all courses in Grade 11 and 12 follow the IB scale ranging from 1-7.

## IB COURSE SELECTIONS

Diploma candidates are required to select one subject from each of the six groups. IB subjects can be studied at two levels, Higher Level and Standard Level. Three of the six subjects are taken at Higher Level and three at Standard Level. It is possible for students to take four Higher Level subjects but this requires a high level of competency in those respective subjects. Each examined subject is graded on a scale of 1 (minimum) to 7 (maximum). The total number of points required for an IB Diploma pass is 24, assuming certain conditions are met. The maximum number of points available is 45. A maximum of 7 points is available for each subject taken, with an additional 3 points available for the Extended Essay (EE) and Theory of Knowledge (TOK). Creativity, Activity, Service (CAS) is also compulsory. The subjects we offer in each of the groups are as follows:

## IB DIPLOMA SUBJECTS

**Some courses may not be offered every year.** According to scheduling restraints not all combinations of subjects and/or levels might be possible

### Studies in Language and Literature

English A Literature HL/SL

English A Language & Literature HL/SL

Arabic A Language & Literature HL/SL

School-supported Self-Taught Language A (Literature) SL only, is possible.

Please check with the IB Coordinator. This is the student's dominant language or the language in which the student works best.

### Language Acquisition

Arabic B HL/SL

French B HL/SL

Arabic ab initio SL only (beginners)

French ab initio SL only (beginners)

Spanish ab initio SL only (beginners)

Prerequisites for Language B: 2-4 years of study of the language.

*\*\*Spanish B SL; Mandarin ab initio SL - Pamoja*

## Individuals and Societies

History HL/SL

Economics HL/SL

\*Environmental Systems and Societies (ESS) SL only

\*\**Psychology HL/SL – Pamoja*

\*\**Business Management HL/SL – Pamoja*

\*\**Information Technology in a Global Society (ITGS) HL/SL – Pamoja*

\*ESS is an inter-disciplinary course which means students can take it for Group 3 and 4. This would then enable students to take Visual Arts and Theatre or take another Science or Individuals & Societies.

\*\*Pamoja online courses have an application process, with specific selection criteria, as these courses demand self-management and drive. One Pamoja course can be taken as part of the IB diploma.

## Sciences

Biology HL/SL

Chemistry HL/SL

Physics HL/SL

Design Technology (DT) HL/SL

\*\*Environmental Systems and Societies SL only

## Mathematics

\*\*\* HL

Mathematics Analysis and Approaches HL/SL

Mathematical Applications and Interpretation HL/SL

\*\*\*The student needs a teacher referral as this course is highly advanced. Minimal achievement of, at least, a 6 in Grade 10. **If students do not achieve this by the end of Grade 10, they are required to undertake a summer workshop.**

## The Arts

Visual Arts HL/SL

Theatre HL/SL

Music HL/SL

\*\**Film SL - Pamoja*

As an alternative to an Arts subject, a student may take another subject from Sciences, Individuals & Societies or Studies in language & Literature. This does depend on subject combinations available in the block schedule.

## THE CORE – CENTRAL PART OF THE IB

The core elements of the Diploma Programme (DP), Theory Of Knowledge (TOK), Extended Essay (EE), and Creativity, Activity, Service (CAS), are available as individually recognized stand-alone offerings. Therefore, IB Diploma course students are now able to take individual courses from the six groups of the DP model **and** benefit from the unique elements at the core of the Programme. The IB decision to allow DP course students to experience these core elements of the Diploma supports the IB's continued dedication to its "access agenda".

## THEORY OF KNOWLEDGE (TOK)

Theory of Knowledge (TOK) is an interdisciplinary requirement unique to the IB and is mandatory for every TKS student. TOK challenges students to question the basis of knowledge, to reflect critically on how they know what they believe to be facts & when they are being manipulated. Students will explore questions of different areas of knowledge (scientific, artistic, mathematical, historical, human sciences) and 2 optional knowledge themes (technology, language, indigenous societies, politics, religion).

The grade for TOK contributes to the overall diploma core through the award of points in conjunction with the Extended Essay. A maximum of three points are awarded according to the candidates' combined performance in both the Theory of Knowledge and the Extended Essay. From May 2018, the new extended essay curriculum will apply. Grading system: A = Excellent, B = Good, C=Satisfactory, D = Mediocre, E= Failing Condition

## THE EXTENDED ESSAY (EE)

Students who are in the full IB Diploma Programme are required to undertake original research and write an extended essay of 4,000 words (maximum). This essay offers the student the opportunity to investigate a topic of special interest and to become acquainted with the kind of independent research and writing skills expected at the university level. It is recommended that the student devote a total of about 40 hours of private study and writing time to the essay. The student works with a teacher who acts as a supervisor during the time taken. The extended essay is mandatory in order for students to be awarded an IB Diploma. The Extended Essay is started in Grade 11 and completed by the end of the first semester of Grade 12.

The grade for the Extended Essay contributes to the overall diploma score through the award of points in conjunction with Theory of Knowledge (TOK). A maximum of three points are awarded according to the candidate's combined performance in both TOK and the Extended Essay. Grading system: A = Excellent, B = Good, C=Satisfactory, D = Mediocre, E= Failing Condition

## CREATIVITY, ACTIVITY AND SERVICE (CAS)

**Creativity, activity, service** requires that students actively learn from the experience of doing real tasks beyond the classroom. Students can combine all three components or do activities related to each one of them separately.

**Creativity:** arts, and other experiences that involve creative thinking

**Activity:** physical exertion contributing to a healthy lifestyle

**Service:** an unpaid and voluntary exchange that has a learning benefit for the student

CAS enables students to demonstrate attributes of the IB learner profile in real and practical ways, to grow as unique individuals and to recognize their role in relation to others. Students develop skills, attitudes and dispositions through a variety of individual and group experiences that provide students with opportunities to explore their interests and express their passions, personalities and perspectives. CAS complements a challenging academic programme in a holistic way, providing opportunities for **self-determination, collaboration, accomplishment** and **enjoyment**.



The CAS programme formally begins at the start of the Diploma Programme and continues regularly, ideally on a weekly basis, for at least **18 months** with a reasonable balance between creativity, activity, and service.

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

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.

Students engage in **CAS experiences** involving one or more of the three CAS strands. A CAS experience can be a single event or may be an extended series of events.

Further, students undertake a **CAS project** of at least one month's duration that challenges students to show initiative, demonstrate perseverance, and develop skills such as collaboration, problem-solving, and decision-making. The CAS project can address any single strand of CAS, or combine two or all three strands.

Students use the **CAS stages** (investigation, preparation, action, reflection and demonstration) as a framework for CAS experiences and the CAS project.

CAS emphasizes **reflection**, which is central to building a deep and rich experience in CAS.

Reflection informs students' learning and growth by allowing students to explore ideas, skills, strengths, limitations and areas for further development and consider how they may use prior learning in new contexts.

**Successful completion of CAS is a requirement for the award of the IB Diploma and KAUST School graduation.**

**For further information about CAS, please see the Secondary School Parent/Student Handbook**

## **IB APPLICATION PROCESS**

During Grade 10 an IB Diploma information evening takes place for the students and their parents who are invited to attend and find out about the subjects offered at TKS.

Following that information evening, students meet the Teachers, the DP coordinator and the University Counselor who can guide them and make recommendations regarding their individual choices. Data from MAP testing, writing assessments and English proficiency tests are used to guide students in their course selections and final decisions.

During the year of Grade 10 students will select their choices for the two year IB DP.

However, there is an option to change subjects during the first 3 weeks of semester 1 in Grade 11. This again takes place in consultation with the IB Diploma Coordinator, the University Counselor, subject Teachers and has to be confirmed by parents in writing.

Students not taking the full IB Diploma have the option to take IB Diploma Programme Courses. All students from Grade 9-12 follow the TKS diploma.

### **External Students**

Due the nature of the IB Diploma Programme, it is very difficult to accommodate the needs of students coming to TKS in Grade 12 especially from a non-IB school. Students who are transferring

from another IB School may be eligible depending on whether TKS offers the same courses as the former school.

### The Full Diploma Programme Course

The full IB Diploma Programme requires students to take 3 subjects at HL and 3 subjects at SL over the two years of study. For entry into the full IB Diploma Programme we look at two areas of criteria for admission. These may include:

The IB Diploma Course involves taking six subjects from groups 1 to 6. Most subjects can be taken at Higher and Standard Level:

All students complete:

- The **Theory of Knowledge (TOK)** course
- **Creativity, Activity and Service (CAS)** activities
- **Extended Essay Course**

Students in the full IB Diploma Programme sit external examinations at the end of Grade 12.

### The IB Diploma Courses

IB Diploma Courses are offered at TKS. These are for students who do not take the full IB Diploma requirements. All the grade 11 & 12 courses at TKS follow the IB DP syllabus and IB diploma courses students can choose to sit from 1-6 subjects and any component of the DP core.

Students in the IB Diploma Programme Courses sit external examinations at the end of Grade 12.

### The TKS Diploma

All students graduate with a TKS Diploma as long as they have met the requirements. The core courses are TOK and CAS, with a research paper (TKS or EE). At the end of Grade 12, students who are taking a TKS Diploma subject sit internal examinations/assessments written and assessed by the teachers.

Students completing any course with at least a pass gain credit (one year course = 1 credit). Students completing the TKS Diploma receive credit for each course they pass. The Parent-student handbook outlines the specific credit requirements for TKS graduation.

### Advice on Choosing Subjects

When deciding which IB Diploma subjects to take there are a number of factors, which should be considered:

- ☑☑ Which subjects do you enjoy?
- ☑☑ Which subjects are you good at?
- ☑☑ What does the course involve?
- ☑☑ What types of careers are you interested in?
- ☑☑ What are the requirements you need for universities?

### Assessment

Students in Grade 11 and Grade 12 are graded on a 1-7 scale using mark bands and mark schemes. Assessment criteria are used when the assessment task is open-ended. Each criterion concentrates on a particular skill that students are expected to demonstrate. An assessment objective describes what students should be able to do and assessment criteria describe how well they should be able

to do it. Using assessment criteria allows discrimination between different answers and encourages a variety of responses.

Each criterion comprises a set of hierarchically ordered level descriptors. Each level descriptor is worth one or more marks. Each criterion is applied independently using a best-fit model. The maximum marks for each criterion may differ according to the criterion's importance. The marks awarded for each criterion are added together to give the total mark for the piece of work.

We have two semesters and reporting is undertaken twice a year in January and June.

Students take end-of-year examinations in Grade 11 and Mid-year examinations in February and Final examinations in May of Grade 12. These examinations provide essential practice for the IB exams students sit in May of Grade 12. At the end of Grade 11, students in the full IB Diploma Programme who are scoring less than a 3 a subject will be given an action plan to work on for credit recovery and to ensure they are ready for registration of the IB Diploma in November of Grade 12.

IB Diploma students receive their IB results in July of Grade 12 by accessing the [candidates.ibo.org](http://candidates.ibo.org) site with a username and password given by the IB Coordinator before the students graduate. Diplomas are sent by IB toward the end of August and students have the option to have it posted or picked up from the school.

Throughout the two years there are a variety of assessments taking place.

## UNIVERSITY RECOGNITION

The IB Diploma is a passport to higher education. Most universities and colleges recommend that students in high school enroll in a rigorous academic program such as the IB Diploma. Some colleges and universities may offer advanced credit to students with strong examination results. IB students routinely gain admission to some of the best-known universities in the world. Most of these institutions have established recognition policies for the IB Diploma. IBO publishes and maintains information about university recognition displayed on their public website [www.ibo.org](http://www.ibo.org). Select from the country information pages and on the searchable University recognition directory for more information. For further information please see the College Counselor. All students will use the online platform of Maialearning for college applications.

## COURSE DESCRIPTIONS *\*Pamoja course*

### Studies in Language and Literature

The course is built on the notion of conceptual learning. Students engage with key concepts of the discipline to become flexible, critical readers. At the heart of the study of all the courses are the disciplines of language and literature, to emphasize that all the courses engage with these areas. The development of skills and the study of language and literature is divided into three areas of exploration

- the interactions between readers, writers and texts,
- texts across space and time,
- and the interconnections between texts.

The three parts of the course offer focuses for investigation while blending together in interesting ways. The parts of the course are also clearly linked to concepts that shape or capture the nature

of the discipline. There are ample opportunities to make connections with theory of knowledge, approaches to teaching and learning and international-mindedness.

The courses will be divided into three parts common to language A: literature, and language A: language and literature. The parts of the course allow students to explore different aspects of language and literature:

- Readers, writers and texts aims to introduce students to the notion and purpose of literature and the ways in which texts can be read, interpreted and responded to.
- Time and space draws attention to the fact that texts are not isolated entities, but are connected to space and time.
- Intertextuality: connecting texts focuses on the connections between and among diverse texts, traditions, creators and ideas.

Each part of the course is accompanied by six questions, linked to the course concepts, that provide a guide to the learning in each part of the course.

Group 1 courses are designed to support future academic study by developing a high social, aesthetic and cultural literacy, as well as effective communication skills. While there is significant difference in the texts presented for study in the two courses, they will clearly overlap somewhat. The main difference lies in the different areas of focus each course takes. In the Language A: Literature course, the focus is directed towards developing an understanding of the techniques involved in literary criticism and promoting the ability to form independent literary judgments. The focus of the Language A: Language and Literature course is directed towards developing and understanding the constructed nature of meanings generated by language and the function of context in this process.

The courses offered at The KAUST School are:

Language A: English Literature

Language A: English Language and Literature

Language A: Arabic Language and Literature

Language A: Literature Self-taught (SL only) – further information from the SSST coordinator and the DP Coordinator

## Language Acquisition

### Language B/Language ab initio

The assessment objectives are:

1. Communicate clearly and effectively in a range of contexts and for a variety of purposes
2. Understand and use language appropriate to a range of interpersonal and/or intercultural contexts and audiences
3. Understand and use language to express and respond to a range of ideas with fluency and accuracy
4. Identify, organise and present ideas on a range of topics
5. Understand, analyse and reflect upon a range of written, audio, visual and audio-visual texts

Language B (Arabic, French, *\*Spanish*) is a foreign language-learning course designed for students with some previous experience of the language. It may be studied at either higher level or standard level. The Language ab initio course (Arabic, French, Spanish *\*Mandarin*) is a language learning course for beginners, designed to be followed over two years by students who have no previous or

very little experience of learning the target language. Language ab initio course is only available at standard level. The basis of language B and language ab initio will be communication: the curriculum model develops the ability to communicate in the target language through the study of language, themes and texts. Communication is evidenced through receptive, productive and interactive skills. Successful communication is dependent upon the conceptual understandings of audience, context, purpose, meaning and variation.

### Individuals and Societies

The aims of all subjects in group 3 are to:

- encourage the systematic and critical study of : human experience and behavior; physical, economic and social environments; and the history and development of social and cultural institutions
- develop in the student the capacity to identify, to analyse critically and to evaluate theories, concepts and arguments about the nature of society and individuals
- enable the student to collect, describe and analyse data used in studies of society, to test hypotheses, and to interpret complex data and source material
- enable the student to recognize that content of the subjects in Group 3 are contestable and that their study requires the toleration of uncertainty.

### History

In addition to the Group 3 aims the aims of the History syllabus at SL and HL are to enable students to:

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

### Economics

This course is designed to introduce students to the vocabulary, theories, and tools of analysis in Economics. This syllabus is designed to develop student understanding of the assumptions of positive and normative elements within analyses in theoretical, historical, and empirical contexts. Students apply economic concepts in empirical analyses of historical and current events and this allows students to see economics in operation from an individual to an international level.

There are nine key concepts in the course (**scarcity, choice, efficiency, equity, economic well-being, sustainability, change, interdependence and intervention**).

The integrated subtopics of Economics of the environment, Economics of inequality and poverty help to bring to light the main global challenges facing the planet today and how these can be addressed using an Economics lens.

By applying and examining methodologies and assumptions of the traditional model, they develop a fuller understanding of the complexities of economics decision-making by individuals, firms and governments. Establishing the basic concepts in microeconomics in the first half of the course allows students to build on ideas in macroeconomics so they can extend their analyses to national and international institutions and the issues surrounding them. Lastly, a focus on the global economy examines the challenge of liberal economics in producing wealth for all through cooperation in economic matters. Students examine the successes and challenges of traditional and new ways of developing sustainable economies in the future. The goal is to develop internationally minded individuals that will take on the challenges of tomorrow.

### Aims

- Develop a critical understanding of a range of economic theories, models, ideas and tools in the areas of microeconomics, macroeconomics and the global economy.
- Apply economic theories, models, ideas and tools and analyse economic data to better understand and engage with real world economic issues and problems facing individuals and societies.
- Develop a conceptual understanding of individuals and societies' choices, interactions and challenges through the lens of economics

### Environmental Systems and Societies

As an interdisciplinary subject, environmental systems and societies is designed to combine the techniques and knowledge associated with group 4 (the experimental sciences) with those associated with group 3 (individuals and societies). By choosing to study an interdisciplinary course students are able to satisfy the requirements for both groups 3 and 4 of the DP model, thus allowing them to choose another subject from any subject group (including another group 3 or 4 subject). Interdisciplinary subjects therefore introduce more flexibility into the IB Diploma Programme. The environmental systems and societies course is offered at SL only.

### Aims

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

## Sciences

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

- appreciate scientific study and creativity within a global context through stimulating and challenging opportunities
- acquire a body of knowledge, methods and techniques that characterize science and technology
- apply and use a body of knowledge, methods and techniques that characterize science and technology
- develop an ability to analyse, evaluate and synthesize scientific information
- develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities
- develop experimental and investigative scientific skills including the use of current technologies
- develop and apply 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.

## Chemistry

The focus of this course is to provide a solid foundation of knowledge and skills for any student that wishes to continue studying chemistry after high school in a science or engineering faculty, or for students that wish to carry this set of knowledge and skills through their life as part of their scientific literacy. The course syllabus covers ten main topics in Chemistry, each with "Core" content studied by both Standard and High Level students, and advanced content studied only by the High Level Students. The HL students pursue more advanced topics such as atomic spectra, ionization energies, and 3-dimensional orbitals.

This course develops and prepares students for independent scientific thinking and analysis. Emphasis is placed on how to think when solving complex problems, over memorization of specific problem-solving sequences.

## Biology

The focus of this course is to provide a solid foundation of knowledge and laboratory skills for any student that wishes to continue studying biology after high school in a science or the health field, or for students that wish to carry this set of knowledge and skills through their life as part of their scientific literacy. The course syllabus covers 6 core Units in Biology studied by all, and 5 units or subunit studied only by the High Level Students. Students will also complete two Option Topics, usually Evolution and Behavior and Neurobiology.

We also have some local field trips to Mangroves, and optionally to snorkel on reefs in the Red Sea.

## Physics

The study of Physics builds a capacity in students to approach problems they do not know how to solve, and through an alchemical synthesis of imagination, experience, confidence and a can-do attitude, solve them regardless. It is also a gateway to a better appreciation of the building blocks of our limited comprehension of the physical universe we find ourselves in. Through this, a deeper and richer understanding of our place in the cosmos may be approached and evolved.

Topics are structured according to the IB syllabus. Where possible, contextualized applications of the concepts are used. Many of these will contexts center around the research and applied science being conducted at KAUST, most notably energy conversion techniques, environmental impact minimization technologies and alternative process designs.

## Design Technology

Designing requires an individual to be imaginative and creative, while having a substantial knowledge base of important factors that will aid or constrain the process.

Both the ideas of design and the process of design can only occur in a human context. Design involves multidisciplinary teams and stakeholders with different backgrounds and traditions. It is important to understand, however, that to design is to be involved in a community of inquiry with certain common beliefs, methodologies, understandings and processes. Design is multidisciplinary and draws from many areas including the natural and social sciences, mathematics and arts.

Diploma Programme design technology focuses on analysis, design development, synthesis and evaluation. The creative tension between theory and practice is what characterizes design technology within the Diploma Programme sciences group.

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

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

## Environmental Systems and Societies

As an interdisciplinary subject, environmental systems and societies is designed to combine the techniques and knowledge associated with group 4 (the experimental sciences) with those associated with group 3 (individuals and societies). By choosing to study an interdisciplinary course students are able to satisfy the requirements for both groups 3 and 4 of the DP model, thus allowing them to choose another subject from any subject group (including another group 3 or 4 subject). Interdisciplinary subjects therefore introduce more flexibility into the IB Diploma Programme. The environmental systems and societies course is offered at SL only.

## Mathematics

Mathematics has been described as the study of structure, order and relation that has evolved from the practices of counting, measuring and describing objects. Mathematics



provides a unique language to describe, explore and communicate the nature of the world we live in as well as being a constantly building body of knowledge and truth in itself that is distinctive in its certainty. These two aspects of mathematics, a discipline that is studied for its intrinsic pleasure and a means to explore and understand the world we live in, are both separate yet closely linked.

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

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

While these two different facets of mathematics may seem separate, they are often deeply connected. When mathematics is developed, history has taught us that a seemingly obscure, abstract mathematical theorem or fact may in time be highly significant. On the other hand, much mathematics is developed in response to the needs of other disciplines.

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

Individual students have different needs, aspirations, interests and abilities. For this reason there are two different subjects in mathematics, each available at SL and HL. These courses are designed for different types of students: those who wish to study mathematics as a subject in its own right or to pursue their interests in areas related to mathematics, and those who wish to gain understanding and competence in how mathematics relates to the real world and to other subjects. Each course is designed to meet the needs of a particular group of students. Mathematics: analysis and approaches and Mathematics: applications and interpretation are both offered at SL and HL. Therefore, great care should be taken to select the course and level that is most appropriate for an individual student.

In making this selection, individual students should be advised to take into account the following factors:

- their own abilities in mathematics and the type of mathematics in which they can be successful
- their own interest in mathematics and those particular areas of the subject that may hold the most interest for them

- their other choices of subjects within the framework of the DP or Career-related Programme (CP)
- their academic plans, in particular the subjects they wish to study in the future
- their choice of career.

Teachers are expected to assist with the selection process and to offer advice to students.

### Aims

The mathematics courses aim to contribute to students' personal attributes, subject understanding and global awareness by enabling them to:

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

### The Arts

#### Aims:

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

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

#### Theatre

The IB Diploma Programme theatre course is a multifaceted theatre-making course of study. It gives students the opportunity to make theatre as creators, designers, directors and performers. It emphasizes the importance of working both individually and collaboratively as part of an

ensemble. It offers the opportunity to engage actively in the creative process, transforming ideas into action as inquisitive and productive artists.

Students experience the course from contrasting artistic perspectives. They learn to apply research and theory to inform and to contextualize their work. The theatre course encourages students to appreciate that through the processes of researching, creating, preparing, presenting and critically reflecting on theatre— as participants and audience members—they gain a richer understanding of themselves, their community and the world.

Through the study of theatre, students become aware of their own personal and cultural perspectives, developing an appreciation of the diversity of theatre practices, their processes and their modes of presentation. It enables students to discover and engage with different forms of theatre across time, place and culture and promotes international-mindedness.

### Aims:

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

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

For HL only:

- understand and appreciate the relationship between theory and practice (theatre in context, theatre processes, presenting theatre).

### Visual Arts

The visual arts are an integral part of everyday life, permeating all levels of human creativity, expression, communication and understanding. They range from traditional forms embedded in local and wider communities, societies and cultures, to the varied and divergent practices associated with new, emerging and contemporary forms of visual language. They may have sociopolitical impact as well as ritual, spiritual, decorative and functional value; they can be persuasive and subversive in some instances, enlightening and uplifting in others. We celebrate the visual arts not only in the way we create images and objects, but also in the way we appreciate, enjoy, respect and respond to the practices of art-making by others from around the world. Theories and practices in visual arts are dynamic and ever-changing, and connect many areas of knowledge and human experience through individual and collaborative exploration, creative production and critical interpretation.

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

## Aims:

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

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

## Music

Music functions as a means of personal and communal identity and expression, and embodies the social and cultural values of individuals and communities. This scenario invites exciting exploration and sensitive study.

Music, and all of its associations, may vary considerably from one musical culture to another: yet music may share similarities. Such richness offers a variety of ways to encounter and engage with a constantly changing world.

A vibrant musical education fosters curiosity and openness to both familiar and unfamiliar musical worlds. Through such a study of music we learn to hear relationships of pitch in sound, pattern in rhythm and unfolding sonic structures. Through participating in the study of music we are able to explore the similarities, differences and links in music from within our own culture and that of others across time. Informed and active musical engagement allows us to explore and discover relationships between lived human experience and specific sound combinations and technologies, thus informing us more fully of the world around us, and the nature of humanity.

The Diploma Programme music course provides an appropriate foundation for further study in music at university level or in music career pathways. It also provides an enriching and valuable course of study for students who may pursue other careers. This course also provides all students with the opportunity to engage in the world of music as lifelong participants.

Both standard level (SL) and higher level (HL) music students are required to study **musical perception**. All students therefore submit a musical links investigation and also respond to a listening examination paper. In the latter, HL students are required to answer one further question. This question requires students to investigate significant musical links through a comparative analysis of two pieces of music prescribed by the IB.

SL students in music are required to choose **one** of three options:

- SL creating (SLC)
- SL solo performing (SLS)
- SL group performing (SLG).

HL students are required to present both creating and solo performing.

## Aim:

The aim of the music course at HL and SL are to enable students to:

- develop their knowledge and potential as musicians, both personally and collaboratively.

## Core

### Theory of Knowledge (TOK)

The Theory of Knowledge (TOK) course, a core element in the Diploma Programme, encourages critical thinking about knowledge itself, to try to help young people make sense of what they encounter. TOK activities and discussions aim to help students discover and express their views on knowledge issues. The course encourages students to share ideas with others and to listen to and learn from what others think. In this process students' thinking and their understanding of knowledge as a human construction are shaped, enriched and deepened. Connections may be made between knowledge encountered in different Diploma Programme subjects, in CAS experience or in extended essay research.

The TOK aims embody many of the attributes needed by a citizen of the world: self-awareness; a reflective, critical approach; interest in other people's points of view; and a sense of responsibility.

The aims of the TOK course are to:

- develop a fascination with the richness of knowledge as a human endeavour, and an understanding of the empowerment that follows from reflecting upon it
- develop an awareness of how knowledge is constructed, critically examined, evaluated and renewed, by communities and individuals
- encourage students to reflect on their experiences as learners, in everyday life and in the Diploma Programme, and to make connections between academic disciplines and between thoughts, feelings and actions
- encourage an interest in the diversity of ways of thinking and ways of living of individuals and communities, and an awareness of personal and ideological assumptions, including participants' own
- encourage consideration of the responsibilities originating from the relationship between knowledge, the community and the individual as citizen of the world.

### Creativity Activity Service

CAS is at the heart of the Diploma Programme. With its holistic approach, CAS is designed to strengthen and extend students' personal and interpersonal learning from the PYP and MYP. CAS is organized around the three strands of creativity, activity and service defined as follows.

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

### 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.

### Extended Essay (required for the Full DP, optional for other students)

#### Aims:

- Pursue independent research on a focused topic
- Develop research and communication skills
- Develop the skills of creative and critical thinking
- Engage in a systematic process of research appropriate to the subject
- Experience the excitement of intellectual discovery

