International Baccalaureate Diploma Programme Subject Brief

Sciences:
Design technology—Standard level
### First assessments 2016 — Last assessments 2022

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

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

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

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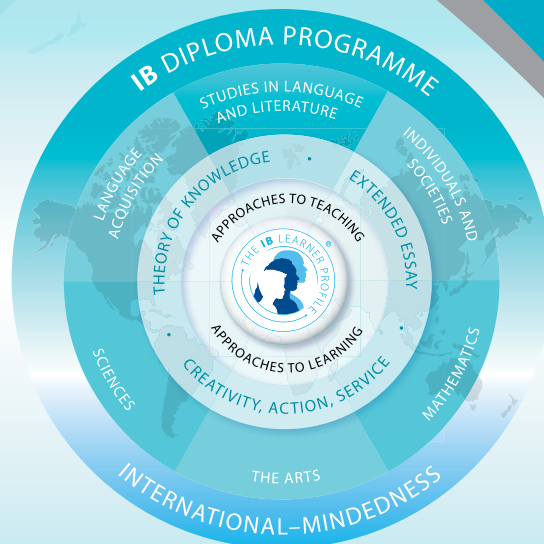
I. Course description and aims

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

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

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

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

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

II. Curriculum model overview

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

The group 4 project

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

III. Assessment model

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

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

Assessment at a glance

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

IV. Sample questions

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

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

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