



CAMBRIDGE

International Education

Syllabus

Cambridge O Level

Design & Technology 6043

for centres in Mauritius

Use this syllabus for exams in 2027.

Exams are available in the November series.



Version 1

For the purposes of screen readers, any mention in this document of Cambridge IGCSE refers to Cambridge International General Certificate of Secondary Education.

Why choose Cambridge?

We work with schools worldwide to build an education that shapes knowledge, understanding and skills. Together, we give learners the confidence they need to thrive and make a positive impact in a changing world.

As part of the University of Cambridge, we offer a globally trusted and flexible framework for education from age 3 to 19, informed by research, experience, and listening to educators.

With recognised qualifications, high-quality resources, comprehensive support and valuable insights, we help schools prepare every student for the opportunities and challenges ahead.

Qualifications that are recognised and valued worldwide

From the world's top-ranked universities to local higher education institutions, Cambridge qualifications open doors to a world of opportunities.

Setting a global standard

With over 160 years of experience in delivering fair, valid and reliable assessments to students worldwide, we offer a global, recognised performance standard for international education.

Your path, your way

Schools can adapt our curriculum, high-quality teaching and learning resources and flexible assessments to their local context. Our aligned offer helps Cambridge schools support every learner to reach their potential and thrive.

Learning with lasting impact

Cambridge learners build subject knowledge and conceptual understanding, and develop a broad range of skills, learning habits and attributes to help make them ready for the world.

Improving learning outcomes through data-led insight and action

Our trusted baseline and diagnostic assessments, together with our insights and evaluation service, help schools turn data into knowledge and actionable insights, to inform teaching decisions and improve learner outcomes.

Bringing together a community of experts

We bring together the collective knowledge of experts and our diverse community of educators worldwide, supporting them to learn from one another and share ideas and information.

Tackling the climate crisis together

We believe that education is key to tackling the climate crisis. Together with Cambridge schools, we can empower young people with the skills and knowledge to take action on climate change, helping them be ready for the world.

School feedback: 'We think the Cambridge curriculum is superb preparation for university.'

Feedback from: Christoph Guttentag, Dean of Undergraduate Admissions, Duke University, USA

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Important: Changes to this syllabus

The latest syllabus is version 1, published September 2024. There are no significant changes which affect teaching.

Any textbooks endorsed to support the syllabus for examination from 2020 are still suitable for use with this syllabus.

1 Why choose this syllabus?

Key benefits

Cambridge O Level is typically for 14 to 16 year olds and is an internationally recognised qualification. It has been designed especially for an international market and is sensitive to the needs of different countries. Cambridge O Level is designed for learners whose first language may not be English, and this is acknowledged throughout the examination process.

Our programmes promote a thorough knowledge and understanding of a subject and help to develop the skills learners need for their next steps in education or employment.

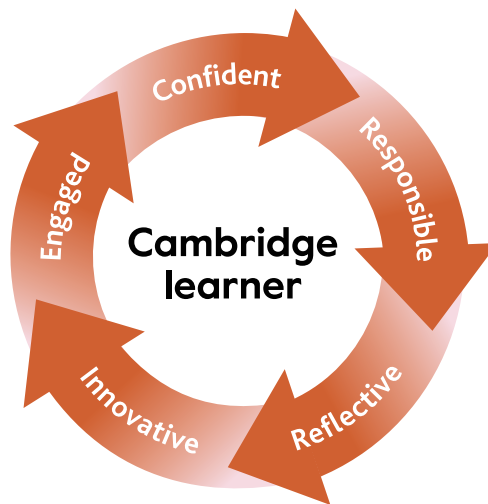
Cambridge O Level Design & Technology enables learners to identify, consider and solve problems through creative thinking, planning and design, and by working with different media, materials and tools to produce a made product.

Learners gain technical and design awareness and develop skills such as initiative, resourcefulness, enquiry and ingenuity. They also develop the communication skills central to the design process.

Cambridge O Level Design & Technology provides an ideal basis for further study and equips learners with technical knowledge and practical designing and making skills for the world of work.

The syllabus is designed to accommodate a wide range of interests, materials and resources, and allows the different skills of the teaching staff to be fully exploited.

Our programmes balance a thorough knowledge and understanding of a subject and help to develop the skills learners need for their next steps in education or employment.



School feedback: ‘Cambridge O Level has helped me develop thinking and analytical skills which will go a long way in helping me with advanced studies.’

Feedback from: Kamal Khan Virk, former student at Beaconhouse Garden Town Secondary School, Pakistan, who went on to study Actuarial Science at the London School of Economics

Qualifications that are recognised and valued worldwide

Cambridge qualifications prepare and equip learners with the skills they need to thrive at university and beyond. The world's best higher education institutions recognise our qualifications and value the critical thinking skills, independent research abilities and deep subject knowledge that Cambridge learners bring.

We continually work with universities and colleges in every part of the world to ensure that they understand and accept our qualifications. Cambridge O Level provides a springboard to the Cambridge Advanced stage, as well as other post-16 routes. The combination of knowledge and skills in Cambridge O Level Design & Technology gives learners a solid foundation for further study. Candidates who achieve grades A* to C are well prepared to follow a wide range of courses including Cambridge International AS & A Level Design & Technology.

Many universities require a combination of Cambridge International AS & A Levels and Cambridge O Levels or equivalent to meet their entry requirements.

Learn more at www.cambridgeinternational.org/recognition

Supporting teachers

Support materials

We provide a wide range of resources so that you can give your students the best possible preparation for Cambridge O Level.

Find out more at Mauritius School Support www.cambridgeinternational.org/mauritius

A range of additional support materials is available online from the School Support Hub. This O Level syllabus shares content with other Design and Technology syllabuses. Go to www.cambridgeinternational.org/support (username and password required) for IGCSE™/O Level Design and Technology. If you do not have access, speak to the School Support coordinator at your school.

[PM please delete Endorsed resources if there are no endorsed resources suitable for use with your syllabus.]

Endorsed resources

We work with a range of publishers to provide a choice of high-quality resources to help teachers plan and deliver Cambridge programmes and qualifications. All Cambridge endorsed resources have been through a detailed quality assurance process to make sure they closely reflect the syllabus and provide a high level of support for teachers and learners. Textbooks endorsed to support IGCSE Design & Technology are suitable for use with this syllabus.

Training

We offer a range of support activities for teachers to ensure they have the relevant knowledge and skills to deliver our qualifications.

2 Syllabus overview

Aims

The aims describe the purposes of a course based on this syllabus.

The aims are to enable students to:

- develop creative thinking in areas relevant to design and technology
- apply problem-solving skills to practical and technological problems
- develop the communication skills central to design, realisation and evaluation
- gain knowledge and understanding of design and technology
- develop skills in research and investigation
- design and make products, taking into consideration sustainability and the wider impact on society
- develop the ability to make aesthetic, economic, ethical and technical value judgements.

We are an education organisation and politically neutral. The contents of this syllabus, examination papers and associated materials do not endorse any political view. We endeavour to treat all aspects of the exam process neutrally.



Content overview

Common content – study all topics

| | | | | | | | |
|---------------------------|---|-------------------------------|--|--------------------------------|------------------------------|--------------------------------|---------|
| Observe need/ requirement | Design brief/ specification | Identification/ research | Generation of possible ideas | Selection/ organisation | Evaluation | Implementation and realisation | |
| Health and safety | Initiation and development of ideas, and recording data | Communication of design ideas | Use of technology in design and making | Design & technology in society | Practical design application | Environment and sustainability | Control |

Specialist option content – study topics from **one** specialist option

| | | | | | | | |
|------------------------------------|-------------------------------|-------------------------------------|--|-------------------------|-------------------------------|---------------------------------|--|
| Resistant Materials OR | Types of material | Preparation of materials | Setting, measuring, marking out, testing | Shaping | Joining and assembly | Finishing | |
| Systems & Control OR | Systems & Control Key content | Structures | Mechanisms | Electronics | | | |
| Graphic Products | Formal drawing techniques | Projections, views and developments | Presenting and communicating information | Materials and modelling | Use of instruments and/or ICT | Manufacture of graphic products | |



This O Level syllabus shares content with other Design & Technology syllabuses. For further support see the School Support Hub for IGCSE Design & Technology (0445). Textbooks endorsed to support IGCSE Design & Technology (0445) are suitable for use with this syllabus.

Assessment overview

All candidates take three components. Candidates will be eligible for grades A* to E.

All candidates take three components: Paper 1 Product Design, Component 2 Project and Paper 3: Resistant Materials.

All candidates take:

Paper 1 1 hour 15 minutes
Product Design 25%
50 marks
Questions will be based on the Product Design content.
Answer **one** question.
Written/drawing paper.
Externally assessed

and:

Paper 3 1 hour
Resistant Materials 25%
50 marks
Questions will be based on the Resistant Materials content and the Product Design content.
Section A: answer **all** questions.
Section B: answer **one** question.
Written paper.
Externally assessed

and:

Component 2
Project 50%
100 marks
School-based assessment.
Internally assessed and externally moderated

Information on availability is in the **Before you start** section.

Assessment objectives

The assessment objectives (AOs) are:

AO1 Knowledge and understanding

Recall, select and communicate knowledge and demonstrate understanding in design & technology, including its wider effects.

AO2 Application

Apply knowledge, understanding and skills in a variety of contexts and in designing and making products.

AO3 Analysis and evaluation

Analyse and evaluate products, including their design and production.

Weighting for assessment objectives

The approximate weightings allocated to each of the assessment objectives (AOs) are summarised below.

Assessment objectives as a percentage of the qualification

| Assessment objective | Weighting in IGCSE % |
|---------------------------------|----------------------|
| AO1 Knowledge and understanding | 30 |
| AO2 Application | 50 |
| AO3 Analysis and evaluation | 20 |
| Total | 100 |

Assessment objectives as a percentage of each component

| Assessment objective | Weighting in components % | | |
|---------------------------------|---------------------------|-------------|---------|
| | Paper 1 | Component 2 | Paper 3 |
| AO1 Knowledge and understanding | 20 | 20 | 60 |
| AO2 Application | 60 | 60 | 20 |
| AO3 Analysis and evaluation | 20 | 20 | 20 |
| Total | 100 | 100 | 100 |

3 Subject content

This syllabus gives you the flexibility to design a course that will interest, challenge and engage your learners. Where appropriate you are responsible for selecting resources and examples, topics and subject contexts to support your learners' study. These should be appropriate for the learners' age, cultural background and learning context as well as complying with your school policies and local legal requirements.

All candidates must study the Design & Technology Common content below. This content provides foundation knowledge and skills for design & technology which are important to all areas of the subject. You may wish to integrate this content with the Resistant Materials content throughout your teaching.

Teachers and candidates are encouraged to use CAD/CAM (computer-aided design / computer-aided manufacturing) throughout the curriculum if they have access to the facilities.

1 Paper 1: Product Design

Candidates should be able to:

Observe need/requirement

- identify and describe needs and opportunities for design and technological improvements

Design brief/specification

- analyse and produce design specifications for problems which they, or others, have identified

Identification/research

- identify the constraints imposed by knowledge, resource availability and/or external sources which may influence proposed solutions
- gather, order and assess information relevant to the solution of practical/technological problems
- produce and/or interpret data (e.g. diagrams, flow charts, graphs, experimental and test results)

Generation of possible ideas

- generate and record ideas as potential solutions to problems using a range of techniques
- identify what resources they need for solving practical/technological problems
- use a variety of media and equipment to produce models and mock-ups as a means of exploring a problem and as a means of testing the feasibility of a solution
- recognise the need for continuous appraisal of their own progress, thinking and decision-making, in order to provide themselves with opportunities for review
- relate self-appraisal judgements to the purpose of their study, in particular the specification which they set themselves

1 Paper 1: Product Design *continued*

Selection/organisation

- select and develop a solution after consideration of time, cost, skill and resources
- organise and plan in detail the production of the selected solution

Evaluation

- evaluate existing products/systems, the work of others and their own work
- test the performance of the product/solution against the original specification
- use different methods and sources to assess the effectiveness of a product (e.g. sampling, questionnaires, interviews)
- suggest any possible modification and improvements (consideration to include functional, safety, aesthetic, ergonomic and economic factors)

Implementation and realisation

- show an awareness of correct procedures for the preparation of materials
- show an awareness of the correct and accurate methods of drawing, marking out and testing
- select appropriate processes for shaping, forming, cutting, joining, fitting, assembling and finishing a variety of materials

Health and safety

- show an awareness of the correct use of hand and machine tools and equipment
- understand the need to take all mandatory and necessary safety precautions when using a variety of tools, machines, materials and other resources
- understand the responsibilities of designers to ensure that products are safe to use
- understand the importance of personal safety and the safety of others when designing and making products
- recognise basic safety symbols used in the workshop

Initiation and development of ideas, and recording of data

- extract relevant information from sources, and interpret and record information and data

Communication of design ideas

- use technical vocabulary, number skills, colour, shading and other media to produce sketches, models, diagrams, drawings and written materials, which communicate their ideas with precision and clarity

1 Paper 1: Product Design *continued*

Use of technology in design and making

- research existing products (for example by using the internet)
- understand the benefits of CAD/CAM when designing and manufacturing one-off or batch production
- understand how CAD can be used to generate 2D and 3D images
- understand how CAD/CAM is used in industry
- be aware of a variety of machines that can be controlled by computer, including CNC machines: miller/router/engraver, lathe, laser cutter
- have an awareness and understanding of how computers can enhance stock control and quality control

Design & technology in society

- show awareness of the effect of design & technology activity on social, environmental and economic issues
- demonstrate awareness of the role of designers, artisans and technologists in industry and society
- take a range of human needs into account

Practical design application

- consider how existing products meet the needs of the users
- consider production manufacturing as: one-off, batch and mass production
- generate design proposals:
 - identify the resources needed
 - plan the stages of manufacture
 - evaluate proposals against a specification
 - understand the relevance of function and aesthetics (in terms of the appreciation of the use of line, shape, form, proportion, space, colour and texture) as appropriate to their designed solutions and the work of others
 - understand the importance of anthropometrics and ergonomics
 - use modelling to test proposals

1 Paper 1: Product Design *continued*

Environment and sustainability

- recognise that different forms of energy sources exist, namely, fossil fuels, nuclear, renewable
- understand the difference between the finite and almost infinite nature of energy sources and how design can help to conserve all energy sources
- use energy sources effectively and efficiently
- be aware of the responsibilities of designers towards sustainability of materials and other resources
- select materials based on environmental and sustainable considerations
- understand the need for recycling
- identify materials that can be recycled and those that cannot, including the use of recycling symbols on products
- understand the importance of disassembly of products and the reuse of parts
- understand that products may be designed with a limited lifetime

Control

- identify the features of a control system in terms of input devices, processing elements, output devices, feedback

2 Component 2: Preparing your candidates for the project

This guidance shows what you should encourage all candidates to do when they work on Component 2 Project. The project involves the Common content. Candidates may use knowledge and skills gained in their chosen specialist option.

Candidates should be able to:

Identification of a need or opportunity with a brief analysis leading to a design brief

- explore several possible design needs or design opportunities
- identify and explore the needs of intended user/s
- develop one potential design need/opportunity
- present a full and clear design brief

Research into the design brief resulting in a specification

- complete research into aspects of the design brief
- consider needs of user/s
- analyse data/information generated
- produce a detailed and justified specification

Generation and exploration of design ideas

- identify and sketch a wide range of imaginative solutions which are conceptually different
- develop and clarify each solution with reference to the specification, using annotations
- explore technical aspects of each idea/part idea, e.g. possible materials and constructions
- evaluate ideas/part ideas regarding each specification point

Development of proposed solution

- clarify main features/aspects of proposed solution
- use modelling and trialling where appropriate to test aspects of the proposed solution
- specify details of form, materials and construction/production methods
- evaluate the proposed solutions regarding the specification points

Planning for production

- produce high-quality working drawings which include full details for manufacture
- produce a production plan which includes the stages of manufacture
- specify fittings and finishes, and provide a material list

Product realisation

- produce a product which demonstrates an ability to manipulate materials sensitively and use technologies successfully
- complete and finish the product to a high standard

2 Component 2: Preparing your candidates for the project *continued*

Testing and evaluation

- test the product (in the intended environment, where possible)
- make justified comments about the performance of the product regarding the expectation of the specification points
- identify strengths and weaknesses of the product
- evaluate the project overall, making concluding comments about the successes and limitations of the product
- identify proposals for further development of the product

Freehand or computer-generated sketches, drawings or illustrations should be clear and well presented.

3 Paper 3: Resistant Materials

Resistant Materials aims to develop the skills which designers use within the context of materials and their processing. Candidates need sufficient practical experience so they can get a broad understanding of materials, processes and technology, in order to become competent in using resistant materials.

This practical experience should include:

- the general physical and working properties of common construction materials (plastics, woods and metals) in relation to specific designing and making tasks
- simple comparative testing leading to the reasoned selection of materials and processes for specific design and making tasks.

It is a good idea to teach the following content in a practical way, wherever possible, and to integrate it with the Common content.

Candidates should be able to:

Types of material

- understand the physical and working properties of plastics, woods and metals and their applications

Smart and modern materials

- develop an awareness and understanding of 'smart' and modern materials, including: thermochromic materials; polymorph; shape memory alloy (SMA); shape memory polymer (acrylic)

Plastics

- show a working knowledge of the following:
 - thermoplastics (nylon, low and high density polyethylene [LDPE and HDPE], polyethylene terephthalate [PET], polyvinyl chloride [PVC], acrylic [PMMA], polystyrene [PS], polypropylene [PP], acrylonitrile-butadiene-styrene [ABS])
 - thermosetting plastics (polyester resin including GRP, melamine formaldehyde [MF], urea formaldehyde [UF], phenol formaldehyde [PF] and epoxy resin)

Woods

- demonstrate a working knowledge of natural timbers and understand their classification, properties and uses
- understand why timber is seasoned and how to care for timber during storage and construction
- understand steaming and bending of timbers and have knowledge of adhesives' curing times and strengths
- demonstrate a working knowledge of the following manufactured boards: plywood, blockboard, chipboard, hardboard and MDF
- understand the advantages and disadvantages of working with manufactured boards compared with solid wood

3 Paper 3: Resistant Materials *continued*

Metals

- demonstrate a working knowledge of the following metals:
 - ferrous metals (cast iron, mild steel, stainless steel, high speed steel [HSS] and carbon steels)
 - non-ferrous metals (aluminium, duralumin and other common casting alloys, copper and its alloys, zinc, lead and tin)
- understand how the following processes can change the molecular structure of a material making it more or less suitable for the task it has to perform:
 - work hardening
 - annealing all metals
 - case hardening of mild steel
 - hardening and tempering tool steel (HCS)

Composites

- show an understanding of the term *composite* and be aware of the practical applications for each of the following composite materials:
 - Kevlar®
 - carbon fibre reinforced plastic (CFRP)
 - glass reinforced plastic (GRP)

Preparation of materials

- show knowledge of available market forms, types and sizes.
- understand methods of cutting by use of hacksaw, guillotine, tenon saw, cross-cut saw, panel saw and portable power tools
- understand the use of datum surfaces/lines/edges and be able to produce them by planing or filing
- explain the preparation for machine processes and safe methods of securing materials to work surfaces, work tables, faceplates, lathe chucks and between centres on a lathe.

Setting, measuring, marking out, testing

- measure and/or mark out using rule, pencil, marking knife, marker pen, scriber, try square, bevel, mitre square, centre square, dot/centre punch, dividers, inside/outside/odd-leg calipers, template, marking/cutting/mortise gauge
- produce datum lines by surface plate and scribing block or calipers
- measure using a micrometer, vernier gauge and/or digital caliper

3 Paper 3: Resistant Materials *continued*

Shaping

- (a) Deforming/reforming
- understand the following processes: bending, sand casting, die casting, lamination, vacuum forming, blow moulding, injection moulding, extrusion, press forming
- (b) Wastage/addition
- select and perform the following forms of cutting and removal of material, and joining and adding to a material to produce the required shape, form or contour:
 - use hand snips, saws, files, basic planes and abrasive cutters
 - simple hole boring by hand or machine including pilot, clearance, tapping, countersunk and counterbored holes
 - use taps and dies for screw cutting by hand
 - use planes, chisels, gouges and rasps
 - use abrasive mops, discs and belts
 - use a centre lathe and wood turning lathe
 - use portable power tools

Joining and assembly

- use various methods of fabrication and fitting to join parts of products, permanently or temporarily
- understand the processes of soldering, brazing, welding, riveting/pop riveting
- understand methods of carcass, stool and frame construction using permanent and temporary joints
- use holding devices, formers and jigs (for sawing, drilling and bending) to assist joining and assembly
- understand the use of knock-down (KD) fittings for use with manufactured boards such as chipboard, including one-piece and two-piece corner blocks, scan fittings, cam lock and leg fastenings
- understand where to use a wide range of pre-manufactured components, including screws, nails, nuts, bolts, hinges and catches
- understand how sizes of screws, nails, nuts and bolts are specified
- be aware of a range of different adhesives to join a variety of materials and any special considerations related to preparation, application, drying times and health and safety

Finishing

- understand the preparation for and application of surface treatments
- be aware of a range of different finishes including oils, paints, lacquers, stains, satin polishes, dipcoating
- be aware of surface finishes available for both interior and exterior use
- be aware of the special finishes available that will prevent corrosion or stains, or withstand heat or liquids
- understand the term *self-finishing* and the processes by which some materials are self-finished
- understand the process of electroplating and anodising

Faculty feedback: ‘Understanding how and why our climate is changing and providing the knowledge and skills to explore the challenges plays a key role in every student’s education.’

Feedback from: Dr Amy Munro-Faure, Head of Education and Student Engagement of Cambridge Zero

4 Details of the assessment

Candidates take three components: Paper 1 Product Design and Component 2 Project plus one specialist option, Paper 3, Paper 4 or Paper 5.

All papers assess the Common content for Design & Technology. Papers 3, 4 and 5 also assess the content for the selected specialist option.

Paper 1 Product Design

Written/drawing paper, externally assessed, 1 hour 15 minutes, 50 marks.

Paper 1 tests the Product Design content. However, candidates also need to make use of their knowledge of the Resistant Materials content they have chosen.

Candidates answer one compulsory question which assess their design understanding and abilities.

Candidates answer Paper 1 on pre-printed A3 insert sheets which set out specific space for each part of the question.

Candidates may use a calculator in the examination.

Drawing equipment

All candidates taking this paper should have access to the required drawing equipment in the examination:

Optional equipment:

- A3 drawing board and tee square (or parallel drafting device)
- 30°/60° and 45° set squares
- 180° protractor
- pencil compass

Required equipment:

- 300mm rule
- drafting pencils
- coloured pencils
- eraser

Component 2 Project

School-based assessment, internally assessed, externally moderated, 100 marks.

Component 2 Project forms a significant part of the teaching and assessment requirements of this syllabus. Candidates usually work on their project over the final two terms of the course.

Guidance on preparing your candidates for their project is given in section 3 Subject content, under Component 2: Preparing your candidates for the Project.

You must mark your candidates' project work and submit all marks and a sample of the marked folders for moderation. The mark scheme is given in 'Project assessment for Component 2 Project' at the end of this section.

Each candidate must complete an individual project. Candidates should produce a folder of work and a made product. The made product itself is **not** to be submitted. All relevant work should be presented in hard copy as an A3-size folder.

The project area is decided by the candidate with advice, as appropriate, from you as their teacher. Cambridge does not prescribe or recommend project areas. The project could make use of the candidate's Resistant Materials study; this approach will allow candidates to further their experience, knowledge and skills in this area. The open nature of design & technology means that a candidate might want to pursue a focus which will involve knowledge, materials and skills from other areas of design and technology.

Candidates are encouraged to make full use of the wide range of ICT available in schools for design work. Freehand sketches and hand drawn technical drawings and computer-aided design (CAD) generated drawings are acceptable in the A3 submission folder.

It is important that candidates have the opportunity to access the facilities needed to realise their products. Although many schools will have access to traditional workshop facilities, ICT has increasingly developed to bring computer-aided manufacturing (CAM) into the school workshop. Candidates are encouraged to make full use of this type of equipment, where available, which may include laser cutters, 3-dimensional (3D) printers, and other computer controlled machines and programs. It is important to balance ICT controlled production with hand crafting techniques so that candidates gain experience across all methods of production.

Models are not appropriate as made products in Resistant Materials. For example, it is inappropriate to produce paper/card models as the final outcome for products that should be manufactured using resistant materials. Candidates must create a product that can be properly tested and evaluated in the environment it is intended for.

All folders must include sufficient photographs of the made product, showing an overall view together with detailed views of evidence which support the award of marks for project assessment criterion 6 'Product realisation'.

Further guidance for teachers on this component is available in the *Coursework Handbook* for this syllabus, and in our online Coursework Training Programme. Please see our School Support Hub at www.cambridgeinternational.org/support

Supervising coursework

Coursework must be a candidate's own, unaided work. The teacher must be able to authenticate the work is the candidate's own.

A general discussion on the progress of coursework is a natural part of the teacher–candidate relationship, as it is for other parts of the course.

Teachers should not correct or edit draft coursework. Advice should be kept at a general level so that the candidate leads the discussion and makes the suggestions for any amendments.

For further information about supervising coursework, see the *Cambridge Handbook* for the relevant year of assessment at www.cambridgeinternational.org/eoguide

Authenticity

It is the centre's responsibility to make sure all assessed work is the candidate's original work. Candidates must not submit someone else's work as their own, or use material produced by someone else without citing and referencing it properly. You should make candidates aware of the academic conventions governing quotation and reference to the work of others, and teach candidates how to use them.

A candidate taking someone else's work or ideas and passing them off as their own is an example of plagiarism. It is your responsibility as a teacher to prevent plagiarism from happening and to detect it if it does happen. For more information, search for 'Preventing plagiarism – guidance for teachers' on our website at www.cambridgeinternational.org/teachingandassessment. Cambridge International has robust systems in place to detect, investigate and address plagiarism once work has been submitted.

Cambridge International has a policy on the use of generative AI by candidates in coursework. The inappropriate use of AI should be treated as a form of plagiarism. The policy includes guidance on how to detect use of AI in coursework and what action teachers should take. It can be found at: www.cambridgeinternational.org/generative-ai-in-coursework

Paper 3: Resistant Materials

Written paper, externally assessed, 1 hour, 50 marks.

Paper 3 assesses the Resistant Materials content as well as the Product Design content.

Section A contains 10 compulsory questions, worth 25 marks. In Section B candidates choose **one** out of three questions, each worth 25 marks. Resistant Materials content and Product Design content may be assessed in either section of the examination paper.

Candidates may use a calculator in the examination.

Project assessment for Component 2 Project

Marking the project

Marking of work should be positive, rewarding achievement where possible, but clearly differentiating across the whole range of marks, where appropriate.

The marker should look at the work and then make a judgement about which level statement is the best fit. In practice, work does not always match one level statement precisely so a judgement may need to be made between two or more level statements.

Once a best-fit level statement has been identified, use the following guidance to decide on a specific mark:

- If the candidate's work **convincingly** meets the level statement, award the highest mark.
- If the candidate's work **adequately** meets the level statement, award the most appropriate mark in the middle of the range (where middle marks are available).
- If the candidate's work **just** meets the level statement, award the lowest mark.

Using the samples database

The samples database refers you to key information about administering coursework, speaking tests and examined coursework for each syllabus.

Use the database to find out:

- when and how to submit your marks for moderated coursework and non-coursework tests
- when and how to submit your candidates' work
- which forms to complete and return with your candidates' work.

The samples database at www.cambridgeinternational.org/samples will ask you for:

- your country/territory
- the syllabus code (i.e. 6043 for this syllabus).

The database will then take you to the information you need, including dates and methods of submission of candidates' marks and work, as well as any forms you may need to complete.

Recording and submitting candidates' marks and folders

Please refer to the samples database at www.cambridgeinternational.org/samples for information, dates and methods of submission of candidates' marks and work. You should follow the instructions for Component 2 on the samples database.

You should record marks on the required form(s) which you should download each year from the samples database at www.cambridgeinternational.org/samples. Follow the instructions on the form to complete it. The marks on these forms must be identical to the marks you submit to Cambridge International.

Project mark scheme

All three assessment objectives are tested in each of the seven marking criteria.

Criterion 1: Identification of a need or opportunity with an analysis leading to a design brief

| Level | Description | Marks |
|---------|--|-------|
| Level 3 | Comprehensive investigation and full analysis of the design need, the identification of the intended user/s and a clear and full design brief. | 4–5 |
| Level 2 | Relevant investigation with appropriate analysis of the design need, the identification of the intended user/s and a functional design brief. | 2–3 |
| Level 1 | Limited investigation with an attempt at some analysis of the design need which results in a simple and unqualified design brief. | 1 |
| Level 0 | No creditable response. | 0 |

Criterion 2: Research into the design brief resulting in a specification

| Level | Description | Marks |
|---------|---|-------|
| Level 3 | Full and objective research into the design brief and intended user/s with thorough analysis of the data/information leading to a detailed and justified specification for the product. | 7–10 |
| Level 2 | Relevant research into the design brief and intended user/s with appropriate analysis of the data/information leading to a clear and partly justified specification for the product. | 4–6 |
| Level 1 | Minimal examination and research into the design brief and intended user/s resulting in a limited specification for the product. | 1–3 |
| Level 0 | No creditable response. | 0 |

Criterion 3: Generation and exploration of design ideas

| Level | Description | Marks |
|---------|--|-------|
| Level 4 | A wide range of imaginative solutions which are conceptually different. Ideas are developed and clarified with reference to the specification. Appropriate drawing techniques are used and are clear and well presented. Detailed and concise annotations explore technical aspects of each idea including consideration of possible materials and constructions. Ideas are evaluated with clear reference to each specification point. | 16–20 |
| Level 3 | A range of imaginative solutions which are conceptually different. Main ideas are developed and clarified with reference to the specification. Appropriate drawing techniques used with annotations to explore most of the technical aspects including consideration of possible materials and constructions. Ideas are evaluated with some reference to the specification points. | 11–15 |

continued

Criterion 3: Generation and exploration of design ideas continued

| | | |
|---------|--|------|
| Level 2 | A limited range of solutions. Some ideas are clarified with reference to the specification. Use of appropriate drawing techniques with limited annotations to explore some aspects of each idea. Main ideas are evaluated with some reference to the specification points. | 6–10 |
| Level 1 | A narrow range of ideas with a tendency to focus on one or two ideas with little or no reference to the specification. Basic sketching skills used. Little or no reference to the evaluation of ideas. | 1–5 |
| Level 0 | No creditable response. | 0 |

Criterion 4: Development of proposed solution

| Level | Description | Marks |
|---------|--|-------|
| Level 3 | Comprehensive evidence of modelling and trialling to assist decisions about form, materials, fixings and construction/production methods. Excellent use of appropriate drawing methods which assist the clarification of the technical specification of the item to be manufactured. Evidence of evaluative comments or references to the specification where appropriate. | 11–15 |
| Level 2 | Adequate evidence of modelling and trialling or sketches with annotations to assist decisions about form, materials, fixings and construction/production methods. Good use of appropriate drawing methods which assist the clarification of the technical specification of the item to be manufactured. Evidence of some evaluative comments or references to the specification. | 6–10 |
| Level 1 | Some evidence of development towards a single solution. Superficial or limited information on decisions about form, materials, fixings and construction/production methods. Basic use of various drawing methods which assist the clarification of the technical specification of the item to be manufactured. Limited or no reference to the specification. | 1–5 |
| Level 0 | No creditable response. | 0 |

Criterion 5: Planning for production

| Level | Description | Marks |
|---------|---|-------|
| Level 3 | High-quality working drawings which include full details for manufacture. Clear and detailed evidence of production planning leading to a logical, clearly communicated, sequence of the stages of manufacture including material lists, fittings and finishes. | 7–10 |
| Level 2 | Working drawings which include most details for manufacture, e.g. overall layout and major dimensions. Adequate evidence of production planning leading to a logical sequence of the stages of manufacture including most of the details required for material lists, fittings and finishes. | 4–6 |
| Level 1 | Basic working drawings which may include some details for manufacture, e.g. overall layout and major dimensions. Limited evidence of production planning. Some of the details required for material lists, fittings and finishes. | 1–3 |
| Level 0 | No creditable response. | 0 |

Criterion 6: Product realisation

| Level | Description | Marks |
|---------|--|-------|
| Level 6 | The product will be complete and finished to a very high standard. The overall outcome will be made with precision and accuracy, and will function well. The product will fully meet all the requirements of the specification. | 26–30 |
| Level 5 | The product will be complete and finished to a high standard. The overall outcome will be well made, and will function well, but may have some parts with minor inaccuracies and blemishes. The product will meet most of the requirements of the specification. | 21–25 |
| Level 4 | The product will be complete and finished to a good standard. The overall outcome will be well made, and will function well, but may contain some inaccuracies and blemishes. The product will meet many of the requirements of the specification. | 16–20 |
| Level 3 | The product will be mainly complete and finished to a fair standard. The overall outcome will be adequately made, and will partially function, but may contain significant inaccuracies and blemishes. The product will meet some of the requirements of the specification. | 11–15 |
| Level 2 | The product may not be complete. The overall outcome will be adequately made and will partially function, but may contain significant mistakes, inaccuracies and/or blemishes. The product will meet a few of the requirements of the specification. | 6–10 |

continued

Criterion 6: Product realisation continued

| | | |
|---------|--|-----|
| Level 1 | The product will not be complete with parts at a poor level of finish. The overall outcome will be basic and it may not function as intended. The work will contain significant mistakes, inaccuracies and blemishes. The product will meet few or none of the requirements of the specification. | 1–5 |
| Level 0 | No creditable response. | 0 |

Criterion 7: Testing and evaluation

| Level | Description | Marks |
|---------|--|-------|
| Level 3 | Objective testing and evaluation of the product with systematic reference to its performance, the specification and user. Where appropriate, testing will be carried out in the environment for which the product was intended. Clear identification and analysis of strengths and weaknesses of the product leading to detailed and meaningful conclusions with proposals for further development. | 7–10 |
| Level 2 | Adequate testing and evaluation of the product with some reference to its performance, the specification and user. Identification of simple strengths and weaknesses of the product leading to some conclusions with proposals for further development. | 4–6 |
| Level 1 | Little or no evidence of the testing and evaluation of the product with general reference to its performance. Little or no reference to the specification and user. Superficial identification of a limited number of strengths and weaknesses of the product leading to limited proposals for further development. | 1–3 |
| Level 0 | No creditable response. | 0 |

Internal moderation for centres in Mauritius

If more than one teacher in your centre is marking internal assessments, you must make arrangements to moderate or standardise your teachers' marking so that all candidates are assessed to a common standard. (If only one teacher is marking internal assessments, no internal moderation is necessary.) You can find further information on the process of internal moderation in the *Cambridge Handbook* and on the samples database for the relevant year of assessment.

You should record the internally moderated marks for all candidates on the Coursework Assessment Summary Form and submit these marks to the Mauritius Examinations Syndicate (MES).

External moderation for centres in Mauritius

Moderators appointed by MES will moderate all marking by centres on behalf of Cambridge International.

You must submit the marks of all candidates to MES on the required forms listed on the samples database at **www.cambridgeinternational.org/samples**

You must also submit the marked work of a sample of candidates to MES.

You should also submit the Individual Candidate Record Cards of candidates selected for the sample.

After moderation in Mauritius, MES will send a representative sample to Cambridge International. External moderators should produce a short report for each centre with feedback on your marking and administration of the assessment.

Command words

Command words and their meanings help candidates know what is expected from them in the exams. The table below includes command words used in the assessment for this syllabus. The use of the command word will relate to the subject context.

| Command word | What it means |
|------------------|--|
| Analyse | examine in detail to show meaning, identify elements and the relationship between them |
| Calculate | work out from given facts, figures or information |
| Compare | identify/comment on similarities and/or differences |
| Contrast | identify/comment on differences |
| Define | give precise meaning |
| Describe | state the points of a topic / give characteristics and main features |
| Develop | take forward to a more advanced stage or build upon given information |
| Discuss | write about issue(s) or topic(s) in depth in a structured way |
| Evaluate | judge or calculate the quality, importance, amount, or value of something |
| Explain | set out purposes or reasons / make the relationships between things clear / say why and/or how and support with relevant evidence |
| Give | produce an answer from a given source or recall/memory |
| Identify | name/select/recognise |
| Justify | support a case with evidence/argument |
| Outline | set out the main points |
| Sketch | make a simple freehand drawing showing the key features, taking care over proportions |
| State | express in clear terms |
| Suggest | apply knowledge and understanding to situations where there are a range of valid responses in order to make proposals / put forward considerations |

5 What else you need to know

This section is an overview of other information you need to know about this syllabus. It will help to share the administrative information with your exams officer so they know when you will need their support.

Before you start

Previous study

We recommend that learners starting this course should have studied a broad curriculum such as the Cambridge Lower Secondary programme or equivalent national educational framework.

We do not expect learners starting this course to have previously studied design & technology.

Guided learning hours

We design Cambridge O Level syllabuses to require about 130 guided learning hours for each subject. This is for guidance only. The number of hours a learner needs to achieve the qualification may vary according to each school and the learners' previous experience of the subject.

Availability and timetables

You can enter candidates in the November exam series.

Check you are using the syllabus for the year the candidate is taking the exam.

Private candidates cannot enter for this syllabus. For more information, please refer to the *Cambridge Guide to Making Entries*.

Combining with other syllabuses

Candidates can take this syllabus alongside other Cambridge International syllabuses in a single exam series. The only exceptions are:

- Cambridge IGCSE Design & Technology (0445)
- Cambridge IGCSE (9–1) Design & Technology (0979)
- Cambridge O Level CDT: Design & Communication (7048)
- syllabuses with the same title at the same level.

Cambridge O Level, Cambridge IGCSE and Cambridge IGCSE (9–1) syllabuses are at the same level.

Making entries

Exam administration

To keep our exams secure, we produce question papers for different areas of the world, known as administrative zones. We allocate all Cambridge schools to an administrative zone determined by their location. Each zone has a specific timetable.

Some of our syllabuses offer candidates different assessment options. An entry option code is used to identify the components the candidate will take relevant to the administrative zone and the available assessment options. Please refer to the *Cambridge Guide to Making Entries* for the relevant series for the correct entry option code.

Retakes and carrying forward marks

Candidates can retake the whole qualification as many times as they want to. Information on retake entries is at www.cambridgeinternational.org/retakes

Candidates cannot resubmit, in whole or in part, coursework from a previous series for remarking. For information, refer to the *Cambridge Handbook* for the relevant year of assessment at www.cambridgeinternational.org/eoguide

Marks achieved in Component 2 Project can be carried forward to future series, subject to the requirements set out in the *Cambridge Handbook* for the relevant year of assessment and the *Carry-forward regulations supplement* at www.cambridgeinternational.org/eoguide

To confirm what entry options are available for this syllabus, refer to the *Cambridge Guide to Making Entries* for the relevant series. Regulations for carrying forward component marks can be found in the *Cambridge Handbook* for the relevant year of assessment at www.cambridgeinternational.org/eoguide

Language

This syllabus and the related assessment materials are available in English only.

Accessibility and equality

Syllabus and assessment design

At Cambridge we recognise that our candidates have highly diverse socio-economic, cultural and linguistic backgrounds, and may also have a variety of protected characteristics. Protected characteristics include special educational needs and disability (SEND), religion and belief, and characteristics related to gender and identity.

We follow accessible design principles to make our syllabuses and assessment materials as accessible and inclusive as possible. We review language accessibility, visual resources, question layout and the contexts used in questions. Using this approach means that we give all candidates the fairest possible opportunity to demonstrate their knowledge, skills and understanding.

Access arrangements

Our design principles aim to make sure our assessment materials are accessible for all candidates. To further minimise barriers faced by candidates with SEND, illness or injury, we offer a range of access arrangements and modified papers. This is the principal way in which we comply with our duty to make 'reasonable adjustments', as guided by the UK Equality Act 2010.

Important:

Requested access arrangements should be based on evidence of the candidate's barrier to taking an assessment and should also reflect their normal way of working. This is explained in section 1.3 of the *Cambridge Handbook* www.cambridgeinternational.org/eoguide

- For Cambridge to approve an access arrangement, we need to agree that it constitutes a reasonable adjustment and does not affect the security or integrity of the assessment.
- Details of our standard access arrangements and modified question papers are available in section 1.3 of the *Cambridge Handbook* www.cambridgeinternational.org/eoguide
- Centres are expected to check the availability of access arrangements and modified question papers at the start of the course. All applications should be made by the deadlines published in section 1.3 of the *Cambridge Handbook* www.cambridgeinternational.org/eoguide
- Contact us at the start of the course to find out if we can approve an access arrangement that is not included in the list of standard access arrangements.
- Candidates who cannot access parts of the assessment may be able to receive an award based on the parts they have completed.

After the exam

Grading and reporting

Grades A*, A, B, C, D or E indicate the standard a candidate achieved at Cambridge O Level.

A* is the highest and E is the lowest. 'Ungraded' means that the candidate's performance did not meet the standard required for grade E. 'Ungraded' is reported on the statement of results but not on the certificate.

In specific circumstances your candidates may see one of the following letters on their statement of results:

- Q (PENDING)
- X (NO RESULT).

These letters do not appear on the certificate.

On the statement of results, Cambridge O Level is shown as GENERAL CERTIFICATE OF EDUCATION ORDINARY LEVEL.

On certificates, Cambridge O Level is shown as General Certificate of Education.

How students and teachers can use the grades

Assessment at Cambridge O Level has two purposes:

- 1 to measure learning and achievement
The assessment confirms achievement and performance in relation to the knowledge, understanding and skills specified in the syllabus.
- 2 to show likely future success
The outcomes help predict which students are well prepared for or likely to be successful in a particular course or career.
The outcomes help students choose the most suitable course or career.

Changes to this syllabus for 2027

The syllabus has been updated. This is version 1, published September 2024.

You must read the whole syllabus before planning your teaching programme. We review our syllabuses regularly to make sure they continue to meet the needs of our schools. In updating this syllabus, we have made it easier for teachers and students to understand, keeping the familiar features that teachers and schools value.

There are no significant changes which affect teaching.

Any textbooks endorsed to support the syllabus for examination from 2020 are still suitable for use with this syllabus.



Syllabuses and specimen materials represent the final authority on the content and structure of all of our assessments.

Quality management

We are committed to providing exceptional quality. In line with this commitment, our quality management system for the provision of international education programmes and qualifications for students aged 5 to 19 is independently certified as meeting the internationally recognised standard, ISO 9001:2015. Learn more at www.cambridgeinternational.org/about-us/our-standards/



We are committed to making our documents accessible in accordance with the WCAG 2.1 Standard. We are always looking to improve the accessibility of our documents. If you find any problems or you think we are not meeting accessibility requirements, contact us at **info@cambridgeinternational.org** with the subject heading: Digital accessibility. If you need this document in a different format, contact us and supply your name, email address and requirements and we will respond within 15 working days.

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