

Technology - Years 7-9 (MYP Years 1-3)

Standards & links to MYP objectives	Benchmarks – Students will be taught how to:
1. Developing, planning and communicating ideas (Linked to Technology objectives: A – Investigate, B – Design and C – Plan)	1.1 Identify relevant sources of information, using a range of resources including ICT 1.2 Respond to design briefs and produce their own design specifications for products 1.3 Identify appropriate problems which can be solved using technological design [e.g., identify a specific need, consider its various aspects] 1.4 Develop criteria for their designs to guide their thinking and to form a basis for evaluation 1.5 Generate design proposals that match the criteria, taking into account needs and constraints 1.6 Consider aesthetics and other issues that influence their planning [for example, the needs and values of intended users, function, hygiene, safety, reliability, properties of materials] 1.7 Suggest outline plans for designing and making, and change them if necessary 1.8 Prioritise actions and reconcile decisions as a project develops, taking into account the use of time and costs when selecting materials, components, tools, equipment and production methods 1.9 Use graphic techniques and ICT, including computer-aided design (CAD), to explore, develop, model and communicate design proposals [for example, using CAD software or clip-art libraries, CD-ROM and internet-based resources, or scanners and digital cameras]
2. Working with tools, equipment, materials and components to produce quality products. (Linked to Technology objectives: C – Plan and D – Create)	2.1 Implement a proposed design [e.g., organize materials and other resources, plan work, make use of group collaboration when appropriate, choose suitable tools and techniques, work with appropriate measurement methods to ensure accuracy] 2.2 Select and use tools, equipment and processes, including computer-aided design and manufacture, to shape and form materials safely and accurately and finish them appropriately [for example, using CAM software linked to a cutter/plotter, milling machine or sewing machine] 2.3 Take account of the working characteristics and properties of materials and components when deciding how and when to use them 2.4 Join and combine materials and ready-made components accurately to achieve functional results

	2.5	Make products using a range of techniques, including CAD/CAM to ensure consistency and accuracy
3. Evaluating processes and products. (Linked to Technology objectives: B – Design and E – Evaluate)	3.1 3.2 3.3	3.1 Evaluate design ideas as these develop, and modify proposals to ensure that their products meets the design specification 3.2 Test how well products work, evaluate them and suggest improvements 3.3 Identify and use criteria to judge the quality of products, including the extent to which they meet a clear need, their fitness for purpose, whether resources have been used appropriately, and their impact beyond the purpose for which they were designed [for example, the global, environmental impact of products and assessment for sustainability]
4. Knowledge and understanding of materials and components (Linked to Technology objectives: B – Design, C – Plan and D – Create)	4.1 4.2 4.3 4.4	4.1 Consider physical properties and working characteristics of a range of common and modern materials 4.2 Classify materials and components according to their properties and working characteristics 4.3 Combine, process and finish materials and components to create more useful properties and particular aesthetic effects [for example, combining different ingredients to create products with different sensory characteristics] 4.4 Create multiple copies of the same product
5. Knowledge and understanding of systems (Linked to Technology objectives: B – Design, C – Plan and D – Create)	5.1 5.2 5.3 5.4 5.5	5.1 Recognise components, inputs, processes and outputs in systems 5.2 Break complex systems down into sub-systems to make it easier to analyse them, and that each sub-system also has inputs, processes and outputs 5.3 Understand that part of a system can provide feedback when its output [in the form of material, energy, or information] becomes input for another part of the system 5.4 Understand that systems are usually linked to other systems and sub-systems, both internally and externally, to achieve a particular function 5.5 Understand that an open-loop system [e.g., a microwave as a heating system] has no feedback and requires human intervention, where a closed-loop system [e.g., a household heating system with a thermostat] has feedback.
6. Knowledge and understanding of structures (Linked to Technology objectives: B – Design, C – Plan and D – Create)	6.1 6.2 6.3	6.1 Recognise and use structures and how to support and reinforce them 6.2 Perform simple tests and appropriate calculations to work out the effect of loads 6.3 Understand that forces of compression, tension, torsion and shear produce different effects



<p>7. Knowledge and understanding of technology and society (Linked to Technology objectives: A – Investigate and E - Evaluate)</p>	<p>7.1 Understand the ways in which technology has influenced the course of history [e.g., revolutions in agriculture, manufacturing, sanitation, medicine, warfare, transportation, information processing, communication]</p> <p>7.2 Understand the ways in which technology and society influence one another [e.g., new products and processes for society are developed through technology; technological changes are often accompanied by social, political, and economic changes; technology is influenced by social needs, attitudes, values, and limitations, and cultural backgrounds and beliefs]</p>
<p>8. Knowledge and understanding of design process systems (Linked to Technology objectives: A – Investigate, B – Design, C – Plan, D – Create and E – Evaluate)</p>	<p>8.1 Understand that the design process is a slow, methodical process of test and refinement</p> <p>8.2 Understand that the design process relies on different strategies: creative brainstorming to establish many design solutions, evaluating the feasibility of various solutions in order to choose a design, and troubleshooting the selected design</p> <p>8.3 Understand that nonphysical objects [e.g., software] and physical objects [e.g., a telephone] are both subject to the design process</p> <p>8.4 Understand that most technological systems require an input of energy, which is an important consideration both in designing an object or a system and in conserving energy [e.g., so many things require energy that alternative sources to fossil fuels should be used when possible]</p> <p>8.5 Understand that invention is the process of creating a new system or object out of an idea while innovation is the process of modifying an existing system or object to improve it</p>
<p>9. Breadth of study (Linked to Technology objectives: A – Investigate, B – Design, C – Plan, D – Create and E – Evaluate)</p>	<p>9.1 Perform product analysis</p> <p>9.2 Perform focused practical tasks that develop a range of techniques, skills, processes and knowledge</p> <p>9.3 Design and make assignments in different contexts. The assignments should include using a range of contrasting materials, including resistant materials, compliant materials and/or food</p>

Technology - Years 10 & 11 (MYP Years 4 & 5)

Standards & links to MYP (interim) objectives	Benchmarks. Students should be taught to:
1. Developing, planning and communicating ideas (Linked to Technology objectives: A – Investigate, B – Design, C – Plan and D – Create)	1.1 Develop and use design briefs, detailed specifications and criteria for testing 1.2 Consider issues that affect their planning [for example, the needs and values of a range of users; moral, economic, social, cultural and environmental considerations; product maintenance; safety; the degree of accuracy needed in production] 1.3 Design for manufacturing 1.4 Produce and use detailed working schedules, setting realistic deadlines and identifying critical points 1.5 Match materials and components with tools, equipment and processes, taking account of critical dimensions and tolerances when deciding how to manufacture a product 1.6 Be flexible and adaptable in responding to changing circumstances and new opportunities 1.7 Use graphic techniques and computer-aided design (CAD), to generate, develop, model and communicate design proposals [for example, using CAD software to generate accurate drawings and part drawings to help with manufacturing]
2. Working with tools, equipment, materials and components to produce quality products (Linked to Technology objectives: D – Create)	2.1 Select and use tools, equipment and processes effectively and safely to make products that meet the specification(s) 2.2 Manufacture products applying quality assurance techniques 2.3 Use computer-aided manufacture (CAM) [for example, using vinyl cutters, embroiderers, knitting machines, engravers, milling machines]
3. Evaluating processes and products (Linked to Technology objectives: A – Investigate, B – Design and E – Evaluate)	3.1 Check design proposals against design criteria, and review and modify them if necessary as they develop their product 3.2 Devise and apply tests to check the quality of their work at critical points during development 3.3 Ensure that their products are of a suitable quality for intended users [for example, how well products meet a range of considerations such as moral, cultural and environmental] and suggest modifications that would improve their performance 3.4 Recognise the difference between quality of design and quality of manufacture, and use criteria to judge the quality of other people's products 3.5 Combine and process materials to create more useful properties,

		and how these changed materials are used in industry
4. Knowledge and understanding of materials and components (Linked to Technology objectives: B – Design and D – Create)	4.1	Cut, shape and form materials to specified tolerances
	4.2	Use prepared materials for manufacture and how pre-manufactured standard components are used
	4.3	Use a variety of finishing processes, and why they are important for aesthetic and functional reasons
	4.4	To achieve the optimum use of materials and components, by taking into account the relationships between material, form and intended manufacturing processes.
5. Knowledge and understanding of systems (Linked to Technology objectives: B – Design and D – Create)	5.1	Understand that power systems [for example, systems which convert energy from one form to another] have a source of energy, a process, loads, and some have a feedback system
	5.2	Understand that there are different types of manufacturing systems [customized, batch, and continuous production] and manufacturing results in two different types of goods, durable and non-durable
6. Knowledge and understanding of technology and society (Linked to Technology objectives: A – Investigate and E - Evaluate)	6.1	Understand the ways in which social and economic forces influence which technologies will be developed and used [for example, cultural and personal values, consumer acceptance, patent laws, local and national regulations, media attention, competition]
	6.2	Understand that alternatives, risks, costs, and benefits must be considered when developing new technologies [for example, Who benefits and who suffers? What are the financial and social costs and who bears them? How serious are the risks? What resources will be needed and where will they come from?]
	6.3	Understand that the rate of technological development and diffusion is increasing rapidly
	6.4	Understand that technology can benefit the environment by providing scientific information, providing new solutions to older problems, and reducing the negative consequences of existing technology [for example, monitoring a habitat or measuring greenhouse gases, improving renewable energy sources, and creating scrubbers to improve coal-burning facilities]
	6.5	Understand that mathematics, creativity, logic, and originality are all needed to improve technology
7. Knowledge and understanding of design process (Linked to Technology objectives: A – Investigate, B – Design, C – Plan, D – Create and E –	7.1	Understand that an optimal solution to a design problem is more likely to be found when the process followed is systematic and repetitive
	7.2	Propose designs and use models, simulations, and other tests to choose an optimal solution
	7.3	Implement a proposed solution [construct artifacts for intended users]
	7.4	Evaluate a designed solution and its consequences based on the

Evaluate)	<p>needs or criteria the solution was designed to meet</p> <p>7.5 Accept that trade-offs of one criterion for another often occur to find an optimized solution</p> <p>7.6 Accept that a design involves different design factors [ergonomics, maintenance and repair, environmental concerns] and design principles [flexibility, proportion, function]</p>
8. Breadth of study (Linked to Technology objectives: A – Investigate, B – Design, C – Plan, D – Create and E – Evaluate)	<p>During the course, students should be taught knowledge, skills and understanding through:</p> <p>8.1 Product analysis</p> <p>8.2 Focused practical tasks that develop a range of techniques, skills, processes and knowledge</p> <p>8.3 Design and make assignments</p>