Design at Alto
Middle Years Program / IB Diploma Program

Introduction

Inquiry and problem-solving are at the heart of design. The course requires the use of the design cycle as a tool, which provides: the methodology to structure the inquiry and analyse problems; the development of feasible solutions; the creation of solutions; and the testing and evaluation of the solution. In MYP design, a solution can be a model, prototype, product or system independently created and developed by students. Design at Alto enables students to develop not only practical skills but also strategies for creative and critical thinking.

Projects are devised so that students can build creative confidence and develop their skills in design thinking, problem-solving, and prototyping. Students use the holistic approach of the design cycle to solve problems in a range of disciplines including product design, multimedia, and graphic design. The curriculum exposes students to an array of different types of technology and tools, and uses MYP/DP assessment criteria to structure work expectations. Linking projects with global contexts supports student understanding of how designers move from concept to creation through an iterative process.

Middle Years Program

Grade 6

Major Unit	Statement of Inquiry	Topics / Content
Sustainability | Design your sustainable dream house	Environmental design is key for the future of our civilization.	• Explore perspective drawing, orthographic and isometric projection • Use SketchUp for modelling a sustainable house • Create a design portfolio
Passion Projects | Problem solving using the design cycle	Solving problems through inquiry and exploration enables us to understand the bigger picture and justify our choices.	• Link a design problem to a global context • Create a final product that follows the strands of the design cycle by addressing each criterion

Grade 7

Major Unit	Statement of Inquiry	Topics / Content
Scratch coding | Design an interactive game	Designers adapt the form in which information is communicated in order to make it accessible to the end-user.	• From conceptual design to coding an interactive digital game • Create game controllers adapted for Grade 5 students
Empathic Design | Minibots	Systems that are designed to meet an individual's ergonomic requirements can increase their ability to function within the world.	• Inspired tinkering • Identify a real issue and develop a prototype to provide a solution

Grade 8

Major Unit	Statement of Inquiry	Topics / Content
Mechanisms | The world of automatons	The principle of causation permits us to visualize the design process in a systematic way.	• Inquiry into mechanisms: cranks, cams, gears, pulleys and levers • Conceptual design of an automaton. • Creation of an automaton.
Passion Projects | Problem-solving using the design cycle	Solving problems through inquiry and exploration enables us to understand the bigger picture and justify our choices.	• Link a design problem to a global context. • Create a final product that follows the strands of the design cycle by addressing each criterion.

Grade 9

Major Unit	Statement of Inquiry	Topics / Content
Tinker. Think. Make.	Play is the highest form of research.	• Combine old and new technologies to produce a functioning prototype. • Create an experiential, step-by-step tutorial.
Biomimicry in design	Nature-based solutions can provide answers to human-based problems.	• Explore how nature's designs inspire human solutions. • Challenge the principle "form follows function". A new principle in the making?

Grade 10

Major Unit	Statement of Inquiry	Topics / Content
Logo design and digital representation	Creative expression through symbolic form provides opportunities to share our feelings, beliefs and values.	• Introduction into logo design and digital representation. • Development of a logo, exploration through stencils and graphic design.
Activism through media design	Designers adapt the form in which information is communicated in order to make it accessible to the end-user.	• Inquiry into an issue that addresses a global context. • Analysis of existing awareness campaigns. • Create awareness campaign through media design.

IB Diploma Program

Students select either higher level (HL) or standard level (SL) design technology at Alto. SL students study six topics and have two examination papers and an internal assessment design project. HL students study ten topics and have three examination papers and an internal assessment design project.

Grade 11 - Design Technology

Major Unit	**HL/SL**	**Topics / Content**
Human factors and ergonomics	SL/HL	• Anthropometrics, psychological factors, physiological factors
Resource management & sustainable development	SL/HL	• Resources and reserves • Waste mitigation strategies • Energy utilization, storage and distribution • Clean technology • Green design • Eco-design
Modelling	SL/HL	• Conceptual modelling • Graphical modelling

		• Physical modelling • Computer-aided design (CAD) • Rapid prototyping
Raw materials to final production	HL	• Properties of materials • Metals and metallic alloys • Timber • Glass • Plastics • Textiles • Composites • Scales of production • Manufacturing processes • Production systems • Robots in automated production
Innovation and design	HL	• Invention • Innovation • Strategies for innovation • Stakeholders in invention and innovation • Product life cycle • Rogers' characteristics of innovation and consumers • Innovation, design and marketing specifications
Classic design	HL	• Characteristics of classic design • Classic design, function and form

Grade 12 - Design Technology

Major Unit	**HL/SL**	**Topics / Content**
Raw materials to final production	SL	• Properties of materials • Metals and metallic alloys • Timber • Glass • Plastics • Textiles • Composites • Scales of production • Manufacturing processes • Production systems • Robots in automated production
Innovation and design	SL	• Invention • Innovation • Strategies for innovation • Stakeholders in invention and innovation • Product life cycle • Rogers' characteristics of innovation and consumers • Innovation, design and marketing specifications
Classic design	SL	• Characteristics of classic design • Classic design, function and form
Innovation and UCD	HL	• User-centred design (UCD) • Usability • Strategies for user research • Strategies for UCD • Beyond usability—designing for pleasure and emotion
Sustainability	HL	• Sustainable development • Sustainable consumption • Sustainable design • Sustainable innovation

Innovation and markets	HL	• Corporate strategies • Market sectors and segments • Marketing mix • Market research • Branding
Commercial production	HL	• Just in time (JIT) and just in case (JIC) • Lean production • Computer-integrated manufacturing (CIM) • Quality management • Economic viability
Internal assessment	SL/HL	• Design project that follows design process and incorporates investigative, analytical, design thinking, design development, prototyping, testing and evaluation skills

The full IB Diploma syllabus can be found here.

Detailed scope and sequences for each grade might vary. Alto teachers are encouraged to incorporate current events into the curriculum and adapt their statement of inquiry based on classroom discussions.