MYP Grade Overview: Design Technology UWC Thailand 2020-2021

All units taught in grades 6 to 10 are **continuously** being developed and improved to best meet the needs of the students at UWCT. Therefore, the following overview is only a reflection of current plans for the course. Some changes to these course overviews may occur as a result of planning done throughout the academic year.

Gr	Unit Number and Title	Key and Related Concepts	Global Context	Statement of Inquiry	Inquiry Questions	Approaches To learning skills taught / learnt / developed in this unit	Content (topics / knowledge/ subject specific skills)
6	Communication and digital literacy	KC: Connections RC: Form Function Sustainability	Scientific and Technical Innovation Models Digital Life	Smartphones can be influenced by advancements in technology, which enhance their form and function while improving global communication.	**Factual:** What is form? What is function? **Conceptual:** How does technology connect people globally? **Debatable:** Smartphones are making our lives better.	Communication Skills Research Skills	**Rapid Prototyping -** Introduction to Paper Prototyping **Semiotics: Visual Communication.** • Conflict minerals • Ethical production • Supply chain • Sustainable design • Prototyping • Iteration • Form/Function • Mobile devices
6	Resistant materials & prototyping	KC: Form RC: Design Ergonomics Resources	Personal and cultural expression Artistry & craft Products Entrepreneurship	Understanding properties and available resources of resistant materials, allows the designer to aptly manipulate materials for artistry, craft and entrepreneurship.	**Factual:** What are resistant materials? **Conceptual:** How do properties and alloying make a material more durable? **Debatable:** Does mass production in developing countries help or hinder the local economy and community?	Design Thinking	**Working with resistant materials** • Foam • Wood • Wood Glue • Model making techniques • Engineering and building basics • Building to scale • Working from a blueprint
6	Graphic Design and Photoshop	KC: Aesthetics RC: Form Perspective Resources	Personal and cultural expression *Explorations to develop:* Artistry, craft, creation, beauty Entrepreneurship, practice and competency	The aesthetics of a design involve the creation, meaning perception, of beauty and taste, which are not always subjective.	**Factual:** What is brand recognition and brand identity? **Conceptual:** How does price and perception influence a luxury brand? **Debatable:** Is it the company or the consumer who defines a brand ?	Communication Self-management	**Graphic Design** **Introduction to Photoshop** • Understanding the layout • Opening Windows • Using the tool pallet • The Type tool • Shape tools • File saving procedures • Fundamentals of design I • Filters • Innovative design
6	Sustainable Development	KC: Development RC: Sustainability Function	Globalization and Sustainability Human impact on the environment Conservation	The shape of a product or object should primarily relate to its intended function or purpose.	**Factual:** What classification of species does bamboo belong to and how does it differ from coniferous and deciduous trees? **Conceptual:** What is the difference between a circular and linear design process? **Debatable:** All products should be designed so that they are green and environmentally friendly.	Design Communication	**Product design:** · Safety · Manufacturing techniques · Engineering · Material properties · Hand tools · Power tools · Testing and evaluating

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7	Communication and digital literacy	KC: Connections RC: Form Function Sustainability	Globalization and Sustainability Markets Consumption Natural resources and public goods	Excessive smartphone use is a key contributor in the rise of digital dementia and the decline of peer-to-peer engagement.	**Factual:** What is digital communication? **Conceptual:** What is artificial intelligence? **Debatable:** Smartphones are making us dumber?	Thinking skills Communication Skills Research Skills -Explain and Justify the need for a solution to a problem -Present the main findings of relevant research -Create a prototype which outlines a tangible solution	**Communication Technology** ● Consumption ● Commodities ● Commercialization ● Markets and trends ● Sustainable design ● Prototyping ● Iteration ● Digital literacy
7	Resistant materials & prototyping	KC: Form RC: Design Ergonomics Resources	Personal and cultural expression Artistry & craft Products Entrepreneurship	Understanding the properties of resistant material allows the designer to aptly manipulate said materials into a tangible solution.	**Factual:** What are resistant materials and where do they come from? **Conceptual:** How do external environmental factors impact design decisions regarding the materials they are made from? **Debatable:** Does mass production in developing countries help or hinder the local economy and community?	Design Research Skills Self-Management -Present the chosen design -Demonstrate excellent technical skills when making the solution -Follow the plan to create the solution	**Working with resistant materials** ● Foam ● Wood ● Glue ● Model making ● Popsicle sticks ● Adhesive techniques ● Engineering for strength ● Orthographic projection ● Building to scale
7	Graphic Design and Photoshop	KC: Aesthetics RC: Form Perspective Resources	Identities and relationships Attitudes Identity formation Lifestyle choices	Communication through compelling and engaging digital design can shift consumer attitudes and behaviours globally.	**Factual:** What is the difference between analogue and digital? **Conceptual:** How can the fundamental principles of design enhance the intended message? **Debatable:** Does digital manipulation, filters and plugins used to enhance the aesthetics, create more harm than good?	Communication Skills Design -Present feasible design ideas which can be interpreted by others -Outline how the solution could be improved -Outline the impact of the solution on the client/target market. -Justify and give valid reason(s) or evidence to support an idea or conclusion.	**Digital Design and Branding** ● Shooting techniques ● Composition ● Rule of Thirds ● Post-Production ● Editing using Alpha Layers ● Graphic resolution ● File management ● Introduction to Animation
7	Product design and Innovation	KC: Creativity RC: Sustainability Innovation	Fairness and Development Power and privilege Politics Inequality	The shape of a product or object should primarily relate to its intended function or purpose	**Factual:** What is planned obsolescence and what impact does this have on consumerism? **Conceptual:** How does form following function dictate the usefulness of a product. **Debatable:** Modern design suggests that form and function are not mutually exclusive.	Self-management Communication Skills -Exchanging thoughts, messages and information -Interpret and use effective modes of non-verbal communication -Organization: Managing time and tasks effectively -Share ideas	**Product design:** · Safety · Manufacturing techniques · Engineering · Material properties · Hand tools · Power tools · Testing and evaluating

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8	Communication and digital literacy	KC: Connections RC: Form Function Sustainability	Globalization and Sustainability	The exchange or transfer of signals, facts, ideas or or symbols using digital devices content is transforming the ways in which we interact with people.	**Factual:** What is planned obsolescence? **Conceptual:** Is consumerism impacting humankind and the environment? **Debatable:** Is creative expression a requirement for innovative design?	Thinking skills Communication Skills Research Skills -Explain and Justify the need for a solution to a problem -Present the main findings of relevant research -Create a prototype which outlines a tangible solution	**Communication Technology** ● Environmental impact ● Conservation ● Natural resources ● Infrastructure ● Sustainable design ● Prototyping ● Iteration ● Globalization ● Obsolescence
8	Resistant materials & prototyping	KC: Form RC: Design Ergonomics Resources	Personal and cultural expression Artistry & craft Products Entrepreneurship	The process of iteration is used to test and determine the most suitable materials and their properties in order to create and design the most effective solution.	**Factual:** What is the difference between deciduous and coniferous? **Conceptual:** What properties make a material more durable? **Debatable:** Does mass production in developing countries help or hinder the local economy and community?	Design Research Skills Self-Management -Present the chosen design -Demonstrate excellent technical skills when making the solution -Follow the plan to create the solution	**Working with resistant materials** ● Foam ● Wood Glue vs Hot Glue ● Model making vs Prototyping ● Popsicle sticks and wood bending ● Adhesive techniques ● Engineering for strength ● Orthographic projection ● Building to scale
8	Graphic Design and Photoshop	KC: Aesthetics RC: Form Perspective Resources	Identities and relationships Attitudes Identity formation	Consumer engagement in the digital age requires compelling communication in order to shift consumer attitudes and behaviours globally.	**Factual:** What is the difference between a mat and a mask!? **Conceptual:** How can digital manipulation alter the intended message? **Debatable:** Does digital art lack authenticity when filters and plugins are used?	Communication Skills Design -Present feasible design ideas which can be interpreted by others -Outline how the solution could be improved -Outline the impact of the solution on the client/target market. -Justify and give valid reason(s) or evidence to support an idea or conclusion.	**Digital Design and Branding** ● Classic design theory ● Composition and natural light ● Adjustment layers ● Adjusting levels ● Editing using layer masks ● Graphic resolution ● File management ● Introduction to Animation
8	Product design and Innovation	KC: Creativity RC: Sustainability Innovation	Personal and cultural expression	Quality manufactured products require quality materials and rigorous testing to in order to eliminate cradle to grave consumerism.	**Factual:** A product that cannot successfully perform its intended function is not viable. **Conceptual:** How does form following function dictate the usefulness of a product. **Debatable:** Modern design suggests that form and function are not mutually exclusive.	Self-management Communication Skills -Exchanging thoughts, messages and information -Interpret and use effective modes of non-verbal communication -Organization: Managing time and tasks effectively -Share ideas	**Product design:** ● Manufacturing techniques ● Printing type ● Plotter and CnC ● Engineering ● Material properties ● Hand tools ● Power tools ● Testing and evaluating
8	Digital Media Production	KC: Communication RC: Markets and Trends	Science and Technical Innovation	Markets and trends are shaped by innovative content creators using digital media to communicate to a mass audience.	**Factual:** Social media platforms use different codecs and aspect ratios for hosting digital content. **Conceptual:** Content is king and the medium is the message. **Debatable:** Influencers are the individuals in our society who are the drivers of markets and trends.	Communication Skills -Exchanging thoughts, messages and information -Reading, writing and using language to gather and communicate information	**How-To Video** ● Shot composition ● Rule of thirds and framing ● Shooting techniques ● Audio recording and Narration ● Visual Effects ● Titles and Graphics ● Output formats ● Editing techniques ● Premier Pro Proficiency

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9	Communication and digital literacy	KC: Connections RC: Form Function Sustainability	Globalization and Sustainability	Innovation can diffuse into a global market by understanding the target audience and using authenticl and targeted communication	**Factual:** What is electronic waste? **Conceptual:** How does the supply chain impact sustainability? **Debatable:** All designs should be sustainable?	Thinking skills Communication Skills Research Skills -Explain and Justify the need for a solution to a problem -Present the main findings of relevant research -Create a prototype which outlines a tangible solution	**Communication Technology** ● Conflict resolution ● Demography ● Global perspectives ● Technological advances ● Sustainable design ● Prototyping ● Iteration
9	Resistant materials & prototyping	KC: Form RC: Design Ergonomics Resources	Personal and cultural expression Artistry & craft Products Entrepreneurship	Human factors and ergonomic considerations are an integral parts of the design cycle in order to increase efficiency, reduce stress and strain, improve safety and functionality.	**Factual:** What is the difference static and dynamic anthropometric data? **Conceptual:** How do data sets help to inform a design? **Debatable:** Does mass production in developing countries help or hinder the local economy and community?	Design Research Skills Self-Management -Present the chosen design -Demonstrate excellent technical skills when making the solution -Follow the plan to create the solution	**Working with resistant materials** ● Foam ● Wood Glue vs Hot Glue ● Model making vs Prototyping ● Popsicle sticks and wood bending ● Adhesive techniques ● Engineering for strength ● Orthographic projection ● Building to scale
9	Graphic Design and Photoshop	KC: Aesthetics RC: Form Perspective Resources	Identities and relationships Attitudes Identity formation	Digital tools can be used to enhance the aesthetics only when a fundamental underasting of the universal principles of design exist.	**Factual:** What is the difference between analogue and digital? **Conceptual:** How can the fundamental principles of design enhance the intended message? **Debatable:** Does digital manipulation, filters and plugins used to enhance the aesthetics, create more harm than good?	Communication Skills Design -Present feasible design ideas which can be interpreted by others -Outline how the solution could be improved -Outline the impact of the solution on the client/target market. -Justify and give valid reason(s) or evidence to support an idea or conclusion.	**Digital Design and Branding** ● Interior design color theory ● Composition and natural light ● Adjustment layers ● Understanding angles and perspective ● Adjusting levels ● Editing using layer masks ● Graphic resolution ● File management ● Introduction to Animation ● Vector vs. Raster
9	Product design and Innovation	KC: Creativity RC: Sustainability Innovation	Personal and cultural expression	Products that have been designed for the dump are having a negative impact on the environment, innovation and consumerism.	**Factual:** A product that is designed to break, (such as the lightbulb) is not a sustainable. **Conceptual:** How does form following function dictate the usefulness of a product. **Debatable:** All products should be designed so that they are green and environmentally friendly.	Self-management Communication Skills -Exchanging thoughts, messages and information -Interpret and use effective modes of non-verbal communication -Organization: Managing time and tasks effectively -Share ideas	**Product design:** ● Safety ● Manufacturing techniques ● Engineering ● Material properties ● Hand tools ● Power tools ● Testing and evaluating ● Sustainable design

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10	Communication and digital literacy	KC: Connections RC: Form Function Sustainability	Globalization and Sustainability	*Sustainable Design meets the needs of the present without compromising the ability of future generations to meet their own needs.*	**Factual:** What is the triple bottom line of sustainability? **Conceptual:** What are the opportunities and tensions provided by world-interconnectedness? **Debatable:** Is climate change is a result of consumerism?	Thinking skills Communication Skills Research Skills -Explain and Justify the need for a solution to a problem -Present the main findings of relevant research -Create a prototype which outlines a tangible solution	**Rapid Prototyping:** ● Working with corrugated cardstock ● Pepakura folding software ● Balsa Wood scale models ● Material properties ● Joints and joinery ● Adhesive methods CAD Drawing: ● Autodesk Fusion 360 Software ● Preparing models for 3D printing.
10	Resistant materials & prototyping	KC: Form RC: Design Ergonomics Resources	Personal and cultural expression Artistry & craft Products Entrepreneurship	Understanding the properties of resistant material allows the designer to aptly manipulate said materials into a tangible solution.	**Factual:** What are the properties of coniferous trees? **Conceptual:** How can you make a natural material stronger and more durable? **Debatable:** Engineered materials and composites are better because of their resistant properties and unique characteristics.	Design Research Skills Self-Management -Present the chosen design -Demonstrate excellent technical skills when making the solution -Follow the plan to create the solution	**Working with resistant materials** ● Wood - Native Thai Hardwood ● Introduction to the Bandsaw ● Model making vs Prototyping ● Shaping and abrading ● Adhesive techniques ● Engineering for strength ● Finishing techniques. ● Building to scale
10	Graphic Design and Photoshop	KC: Aesthetics RC: Form Perspective Resources	Identities and relationships Attitudes Identity formation	A strong brand identity is both ubiquitous and omnipresent and has the ability to transcend cultures and languages	**Factual:** What is the difference between Pixel and Vector? **Conceptual:** How has social media impact branding? **Debatable:** A strong brand identity can only be achieved over a long period of time.	Communication Skills Design -Present feasible design ideas which can be interpreted by others -Outline how the solution could be improved -Outline the impact of the solution on the client/target market. -Justify and give valid reason(s) or evidence to support an idea or conclusion.	**Digital Design and Branding** . ● Isometric explosion ● Line weight ● Color consistency ● Shading, highlights and shadows ● Adjustment layers ● Understanding angles and perspective ● Adjusting levels ● Editing using layer masks ● Graphic resolution ● File management
10	Product design and Innovation	KC: Creativity RC: Sustainability Innovation	Personal and cultural expression	Attractiveness bias states that anthropomorphic forms are more aesthetically pleasing to the eye but are subjective depending on the culture.	**Factual:** A product that cannot successful perform its intended function is not viable. **Conceptual:** How does an anthropomorphic product engage the consumer and subliminally impact consumer choice? **Debatable:** In the advertising and marketing world sex sells	Self-management Communication Skills Design -Exchanging thoughts, messages and information -Interpret and use effective modes of non-verbal communication -Organization: Managing time and tasks effectively -Share ideas	**Product design:** ● Prototyping ● Concept modelling ● Safety ● Manufacturing techniques ● Engineering ● Material properties ● Hand tools ● Power tool Testing and evaluating
10	Packaging and Sustainability	KC: Development RC: Function Sustainability	Fairness and Development	Responsible innovation is the philosophy of designing physical objects, the built environment, and services to comply with the principles of social, economic, and ecological sustainability.	**Factual:** What ecological impact is plastic packaging having on the environment? **Conceptual:** Why should every company consider the triple bottom line of sustainability when designing physical objects and packaging? **Debatable:** There needs to be a complete ban on single use plastic packaging?	Communication Skills Design -Present feasible design ideas which can be interpreted by others -Outline how the solution could be improved -Outline the impact of the solution on the client/target market. -Justify and give valid reason(s) or evidence to support an idea or conclusion.	**Packaing and Sustainability** ● Concept Modelling ● Typography ● Color Theory ● Printing techniques ● Paper Prototype ● Cutting techniques ● Lighting and Photography ● Innovation through design

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