YISHUN SECONDARY SCHOOL
Subject & Code: Design & Technology
Level & Stream: Secondary 1 Express/Normal Academic/Normal Technical

The Curriculum and Approaches to Learning		**Key Programmes / Competitions**
In line with the requirements of the Design and Technology (D&T) Lower Sec 2018 Syllabus, the teaching of D&T at YSS focuses on educating students as persons through the development of cognitive skills and abilities unique in the field of design. D&T education aims to nurture in the students a way of thinking and doing, dispositions that are inherent in design practices: - Embracing uncertainties and complexities - Be cognizant of and resolve real-world, ill-defined problems - Relentless drive to seek out how thing work - Use of doodling and sketching, and 3D manipulation of resistant materials as a language for visualisation, communication and presentation		-
Term	**Learning Experiences (chapter, activity)**	**Learning Outcomes & Assessment**
1 (even week cycle)	**<u>Learning through teacher-facilitated projects</u>** Students will go through teacher-guided projects, where the design brief and design specifications will be given: - fix a metal toy car (hand-eye coordination, rn to follow printed instructions, use a anner to tighten and to loosen bolts and ts) - be aware of safety procedures in the workshop - plan and monitor own progress using a Gantt chart - use lines and curves to generate random apes (a simple creative ideation technique) - critique design ideas and selection of idea table for the intent - understand basics of orthographic drawing	**<u>Learning Outcomes</u>** - Empathy & Safety consciousness - Free-hand sketching skills D sketches, conversion m 2D to 3D drawings lique), idea generation lls] **<u>Weighted Assessment 1</u>** - No theory test - Regular feedback via class work and assignments
2 (even week cycle)	- modify the idea and use a mock-up to test t the idea - be familiar with plastic material (acrylic), the workshop tools, machines and processes	**<u>Learning Outcomes</u>** - Free-hand sketching skills D sketches, conversion m 2D to 3D drawings lique), idea generation lls]

		- Knowledge and understanding of plastic material (acrylic) **<u>Weighted Assessment 2</u>** - Theory test on SLS - Regular feedback via class work and assignments
3 (even week cycle)	- make the final idea on a piece of acrylic	**<u>Learning Outcomes</u>** - 3D manipulation [quick ck-ups and on handling Acrylic material] - Empathy & Safety nsciousness **<u>Weighted Assessment 3</u>** - Skill-based project 1 (phone holder) - Workshop skills assessment - Regular feedback via class work and assignments
4 (even week cycle)	- evaluate and reflect	**<u>Learning Outcomes</u>** - Evaluation of completed artefact against design specifications - Testing of artefact - Reflection of learning process and areas for improvement **<u>Semestral Assessment</u>** - Coursework journal - Skill-based project 2 (toy display) - Regular feedback via class work and assignments

YISHUN SECONDARY SCHOOL
Subject & Code: Design & Technology
Level & Stream: Secondary 2 Express/Normal Academic/Normal Technical

The Curriculum and Approaches to Learning		**Key Programmes / Competitions**
In line with the requirements of the Design and Technology (D&T) Lower Sec 2018 Syllabus, the teaching of D&T at YSS focuses on educating students as persons through the development of cognitive skills and abilities unique in the field of design. D&T education aims to nurture in the students a way of thinking and doing, dispositions that are inherent in design practices: - Embracing uncertainties and complexities - Be cognizant of and resolve real-world, ill-defined problems - Relentless drive to seek out how thing work - Use of doodling and sketching, and 3D manipulation of resistant materials as a language for visualisation, communication and presentation		Design with a purpose / Giving back to the community: - selected artefacts will be ssed to the Art unit for e during a Yishun mmunity event (children l get to paint on the oden artefact and bring ome)
Term	**Learning Experiences (chapter, activity)**	**Learning Outcomes & Assessment**
1 (odd week cycle)	**Learning through teacher-facilitated projects** Students will go through teacher-facilitated projects, where the design brief is given, and the design specifications worked out together: - form various shapes using the snake puzzle (hand-eye coordination, creativity) - be aware of safety procedures in the workshop - plan and monitor own progress using a Gantt chart - conduct simple research and analysis - sketch the various shapes from the snake puzzle activity, and convert to 3D (crating method)	**Learning Outcomes** - Empathy & Safety consciousness - Research and analysis skills - Free-hand sketching skills D sketches, conversion m 2D to 3D drawings olique), idea generation lls] **Weighted Assessment 1** - No theory test - Regular feedback via class work and assignments
2 (odd week cycle)	- convert square forms to organic forms, ensure having suitable space for the tealight, etc (idea development) - critique design ideas using PMI method, and selection of idea suitable for the intent	**Learning Outcomes** - Free-hand sketching skills [2D sketches, conversion from 2D to 3D drawings (isometric), colour rendering, idea generation skills]

		Weighted Assessment 2 - Theory test on SLS - Regular feedback via class work and assignments
3 (odd week cycle)	- modify the idea (if needed) and use a mock-up to test out the idea - present the final idea through rendering - determine dimensions of the holder and its parts - be familiar with wood and metal materials (Jelutong, Meranti, Brass), the workshop tools, machines and processes - make the final idea using Jelutong and Meranti, and a Brass plate for the tealight base	**Learning Outcomes** - 3D manipulation [quick mock-ups and on handling Jelutong, Meranti and Brass materials] - Empathy & Safety nsciousness **Weighted Assessment 3** - Skill-based project 1 (candy tray) - Workshop skills assessment - Regular feedback via class work and assignments
4 (odd week cycle)	- evaluate and reflect	**Learning Outcomes** - Evaluation of completed artefact against design specifications - Testing of artefact - Reflection of learning process and areas for improvement **Semestral Assessment** - Coursework journal - Skill-based project 2 (candle holder) - Regular feedback via class work and assignments

YISHUN SECONDARY SCHOOL
Subject & Code: Design & Technology (7059) / (7055)
Level & Stream: Secondary 3 Express (7059); Secondary 3 Normal Academic (7055)

The Curriculum and Approaches to Learning		**Key Programmes / Competitions**
In line with the requirements of the Design and Technology (D&T) Upper Sec 2019 Syllabus, the teaching of D&T at YSS focuses on educating students as persons through the development of cognitive skills and abilities unique in the field of design. D&T education aims to nurture in the students a way of thinking and doing, dispositions that are inherent in design practices: - Embracing uncertainties and complexities - Be cognizant of and resolve real-world, ill-defined problems - Relentless drive to seek out how thing work - Use of doodling and sketching, and 3D manipulation of resistant materials as a language for visualisation, communication and presentation		**Enrichment** - 3D Pen Training - Google Sketchup Training - Start-up exposure - Design with a purpose / Giving back to the community: selected artefacts will be passed to the Art unit for use during a Yishun community event (children will get to paint on the artefact and bring it home)
Term	**Learning Experiences (chapter, activity)**	**Learning Outcomes & Assessment**
1	**Learning through experiencing (Integrated Learning)** - Seeking Design Opportunities - Research & analysis skills (PIES, PMI, SWOT) - Designers' responsibilities, empathy - Concluding from research using 5W1H - Generating the design brief and design specifications	**Learning Outcomes** - Research and analysis skills - Understanding society eds (empathy) - Resulting in presenting a ughtful design need **Weighted Assessment 1** - Theory paper (an elective) - Skill-based project - Regular feedback via class work and assignments
2	**Idea Conceptualisation and Development** - Brainstorming, SCAMPER, Shape-borrowing, Design elements and principles (creativity skills) - Isometric, oblique, 2-point perspective drawings (using sketches and annotations to communicate thinking) - Form and Function, Material properties and selection, simple construction methods	**Learning Outcomes** - Idea generating, creativity d decision-making skills - Sketching skills - Understanding basic istant materials - Understanding basic hnological areas ructures, mechanisms

	- Applications of Structures (only for Express), Mechanisms and Electronics - Soldering activity - Use of mock-ups to test ideas - Decision making techniques - Anthropometry & Ergonomics	d electronics) - Ergonomics and safety nsciousness - Resulting in developing the - design solution thoroughly and thoughtfully **<u>Weighted Assessment 2</u>** - Theory paper (an elective) - Skill-based project - Regular feedback via class work and assignments
3	**Production Planning / Making** - Applying basic working drawing skills - Applying making skills in any/all of the three resistant materials (wood, metal, plastic) Throughout the coursework duration, students will plan and monitor their own progress through the use of a Gantt Chart and mini reflections/plans.	**<u>Learning Outcomes</u>** - Project planning and nitoring skills - Basic working drawing derstanding (three views, assembly drawing, material list, isometric drawing) - Material handling skills - Resulting in producing a prototype that meets the defined intent **<u>Weighted Assessment 3</u>** - Theory paper (Electronics elective) - Skill-based project - Regular feedback via class work and assignments
4	**Content Revision**	**<u>Learning Outcome</u>** - Students to be prepared for the full written exam (theory paper) **<u>Semestral Assessment</u>** - Paper 1 (theory paper) and Paper 2 (coursework)

YISHUN SECONDARY SCHOOL
Subject & Code: Design & Technology (7059) / (7062) / (7051)
Level & Stream: Secondary 4 Express (7059); Secondary 4 Normal Technical (7062); Secondary 5 Normal Academic (7051)

<table>
<tr><th colspan="2">The Curriculum and Approaches to Learning</th><th>Key Programmes / Competitions</th></tr>
<tr><td colspan="2">At Secondary 4 & 5, the curriculum is mainly application of what students have learned in the past three years, through a design coursework (Paper 2).</td><td><u>Enrichment</u>
- D&T Pupil Seminar

<u>Competitions</u>
- MOE D&T Awards
- Tan Kah Kee Young Inventors Award</td></tr>
<tr><th>Term</th><th>Learning Experiences
(chapter, activity)</th><th>Learning Outcomes & Assessment</th></tr>
<tr><td>1</td><td>Seeking Design Opportunities
- Research skills
- Research analysis skills (using PIES, PMI and empathetic heart)
- Making conclusion from research
- Generating the design brief and design specifications</td><td><u>Learning Outcomes</u>
- Producing a thoughtful sign need based on evant research

<u>Weighted Assessment 1</u>
- Theory paper
- Coursework (via progressive marking and regular feedback)</td></tr>
<tr><td>2</td><td>Idea Conceptualisation and Development
- Creativity skills (use of SCAMPER, Shape borrowing and other techniques)
- Using sketches and annotations to communicate thinking
- Decision making techniques

Note: The design process is iterative and not linear. As such, the time line is only indicative of the general process flow.</td><td><u>Learning Outcomes</u>
- Developing the design solution thoroughly and thoughtfully

<u>Semestral Assessment</u>
- Theory paper
- Coursework (via progressive marking and regular feedback)</td></tr>
<tr><td>3</td><td>Production Planning / Making
- Applying basic working drawing skills
- Applying making skills in any/all of the three resistant materials (wood, metal, plastic)</td><td><u>Learning Outcomes</u>
- Producing a prototype that meets the defined intent

<u>Preliminary Examination</u></td></tr>
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	Throughout the coursework duration, students will plan and monitor their own progress through the use of a Gantt Chart and mini reflections/plans.	- Theory paper - Coursework (summative marking of the whole coursework)
4	**Content Revision** (content revision will also be done once a fortnight throughout the coursework duration through weekend assignment and feedback given at the following lesson)	**<u>Learning Outcomes</u>** - Students to be prepared for full written exam theory paper (Paper 1)