Name	
Class	

Table of Contents

<table>
<tr><td>Subject</td><td>Additional Mathematics (4051)</td></tr>
<tr><td>Who should take the subject</td><td>The N(A)-Level Additional Mathematics syllabus aims to enable students who have an aptitude and interest in mathematics to:
acquire mathematical concepts and skills for higher studies in mathematics and to support learning in the other subjects, with emphasis in the sciences, but not limited to the sciences;
develop thinking, reasoning, communication, application and metacognitive skills through a mathematical approach to problem solving;
connect ideas within mathematics and between mathematics and the sciences through applications of mathematics; and
appreciate the abstract nature and power of mathematics.</td></tr>
<tr><td>Criteria</td><td>Students whose Sec 2 Overall Math mark ≥ 70.</td></tr>
<tr><td>Topics</td><td>ALGEBRA
A1 Quadratic functions
A2 Equations and inequalities
A3 Surds
A4 Polynomials and partial fractions

GEOMETRY AND TRIGONOMETRY
G1 Trigonometric functions, identities and equations
G2 Coordinate geometry in two dimensions

CALCULUS
C1 Differentiation and integration</td></tr>
<tr><td>Final Assessment</td><td>
<table>
<tr><th>Paper</th><th>Duration</th><th>Description</th><th>Marks</th><th>Weighting</th></tr>
<tr><td>Paper 1</td><td>1 hour
45 minutes</td><td>There will be 13–15 questions of varying marks and lengths.

Candidates are required to answer ALL questions.</td><td>70</td><td>50%</td></tr>
<tr><td>Paper 2</td><td>1 hour
45 minutes</td><td>There will be 8–10 questions of varying marks and lengths.

Candidates are required to answer ALL questions.</td><td>70</td><td>50%</td></tr>
</table>
</td></tr>
<tr><td>Useful links</td><td>4051 ADDITIONAL MATHEMATICS GCE NORMAL (ACADEMIC) LEVEL SYLLABUS (2022) from SEAB:
https://www.seab.gov.sg/docs/default-source/national-examinations/syllabus/nlevel/2022syllabus/4051_y22_sy.pdf</td></tr>
</table>

<table>
<tr><td>Subject</td><td>Art (6125)</td></tr>
<tr><td>Who should take the subject</td><td>The Art syllabus is designed to provide students with the opportunity to give form and meaning to their ideas, thoughts and feelings through visual and tactile forms. The breadth and depth of study cater to a range of abilities and interests.</td></tr>
<tr><td>Criteria</td><td>Students whose Sec 2 Overall Art mark ≥ 50.</td></tr>
<tr><td>Final Assessment</td><td>Paper 1: Coursework
● Exam start period: January of Sec 4 year

Paper 2: Drawing and Painting (3 hours)
<table>
<tr><th>Requirement</th><th>Assessment</th><th>Weighting</th></tr>
<tr><td colspan="3">Paper 1 (Coursework)</td></tr>
<tr><td>Compulsory</td><td>One Coursework unit comprising the finished artwork and not more than five A2 sheets of preparatory studies. Candidates are to include explorations of artists/artworks relevant to the chosen theme/media in their preparatory studies.
The question paper will be issued to the candidates in the month of January of the examination year. Six themes will be issued and candidates are to make response to one of the themes.</td><td>60%</td></tr>
<tr><td colspan="3">Paper 2 (Drawing and Painting)</td></tr>
<tr><td>Compulsory</td><td>3 hours
Paper to be given three weeks before the commencement of the N(A)-Level Examination. Six themes will be issued and candidates are to make response to one of the themes on paper of size A3 or A2. Preparatory studies of three to five A3 sheets of paper must be submitted.</td><td>40%</td></tr>
</table></td></tr>
<tr><td>Useful links</td><td>6125 ART GCE NORMAL (ACADEMIC) LEVEL SYLLABUS (2022) from SEAB:
https://www.seab.gov.sg/docs/default-source/national-examinations/syllabus/nvel/2022syllabus/6125_y22_sy.pdf</td></tr>
</table>

Subject	**Design and Technology (7055)**
Who should take the subject	This Design & Technology (D&T) syllabus is designed to engage students in designing and prototyping ideas through applying technology. The students' learning builds on their experiences in design and technology, and emphasizes understanding everyday activities and creating possibilities to make life better. Through the design process, students cultivate creative, critical and reflective thinking to make sense of their learning and to develop related dispositions and skills using graphical means and technology.
Criteria	Students whose Sec 2 Overall Design and Technology mark $\geq$ 50.

Topics

SECTION 1 DESIGN

Candidates should be able to:		Content
1	plan for a project taking into consideration the stages of work and resources required	Gantt chart, flow chart
2	monitor and, where necessary, make adjustments to the plan to ensure the completion of the project within a given timeframe	
3	produce sub-plans of specific activities for each stage of work	
4	use various sources for gathering relevant data	print materials, internet, interviews, surveys, observations
5	apply analysis techniques using appropriate means like products or visuals/images	product analysis, user analysis, PMI, SWOT analysis
6	construct guiding questions for investigation and exploration	5W1H
7	present data from investigative research	diagrams, flowcharts, graphs, test results
8	interpret data for decision making	
9	consider the range of human needs for decision making	social, culture, economics, sustainability
10	formulate a design brief based on a design opportunity	design brief
11	formulate design specifications based on the considerations and constraints of the design brief	design specifications
12	apply ideation techniques to generate ideas	brainstorming, SCAMPER, shape borrowing
13	apply the principles of ergonomics and anthropometric data	ergonomics, anthropometric data
14	apply appropriate means to ideate and develop ideas	2D and 3D freehand sketches, mock-ups, prototypes
15	refine design ideas through testing and evaluation	
16	test and evaluate feasibility of ideas	
17	apply the concept of basic drawing techniques to communicate details for prototyping and the proposed design solution	isometric drawing, perspective drawing, orthographic projection drawing, exploded views, presentation drawing, working drawing, materials list
18	apply the concept of design elements and design principles	line, shape, form, colour, texture, balance, proportion, contrast and emphasis

SECTION 2 TECHNOLOGY

Candidates should be able to:		Content
19	use appropriate materials to build mock-ups	objects, paper, cardboard, foam board
20	show working knowledge of plastics and its uses	thermoplastics: nylon, polythene, polyvinyl chloride, polypropylene, acrylic, polystyrene; thermosets: polyester resin including G.R.P., melamine, urea formaldehyde and phenol formaldehyde
21	show working knowledge of wood and its uses	natural timber: jelutong, meranti, pine; processed wood: plywood, MDF boards, veneer
22	show working knowledge of metal and its uses	ferrous metal: mild steel and high carbon steels; non-ferrous metal: aluminium and the alloy duralumin, copper and its alloys (brass, bronze and pewter), zinc, lead and tin
23	explore materials for their properties and implications of their use in terms of cost, aesthetics, emotive response and sustainability	toughness, durability, stiffness, strength, hardness, elasticity
24	explain the application of control systems in everyday products	open-loop system: thermometer, table lamp, stapler, can opener; closed-loop system: infrared water dispenser, water cistern, air conditioner, lift door
25	consider the components of a control system in relation to user interface and functionality	input, process, output, feedback
26	adapt available electronic kits for practical application with working knowledge of the electronic components involved	counting, sensing of light, moisture and temperature
27	adapt simple mechanisms involving motion transmission, conversion and control for practical application	levers, linkages, screw, rack and pinion, pulley, cams, gears, springs
28	carry out measuring and marking out processes appropriate to the selected resistant material in a safe manner	datum referencing, measuring, scribing, gauging, marking centres for drilling
29	carry out shaping processes appropriate to the selected resistant material in a safe manner	sawing, filing, planing, snipping, chiselling, drilling, boring, thread cutting, countersinking, bending metals, thermoforming, lathe turning, milling
30	carry out joining and assembling processes appropriate to the selected resistant material in a safe manner	use of jigs and formers, adhesives, nailing, screwing, joining wood (butt, dowelled, mitre, housing), joining metal (bolts and nuts, machine screws, rivets, solder, welding rods), joining plastics (solvent, cement), hinges, knock-down fittings
31	carry out finishing processes appropriate to the selected resistant material in a safe manner	cleaning up, polishing, staining, painting, plastics coating

Final Assessment

Paper	Duration	Assessment Domains			Total
		A Knowledge with Understanding	B Design Thinking Skills	C Design Manipulating Skills	
1 Written Examination	1 hour 30 minutes	25%	10%	5%	40%
2 Design Project	20 weeks	15%	20%	25%	60%
Overall		40%	30%	30%	100%

Paper 1: Written Examination (1 hour)

- Candidates are to answer all questions.
- The questions will be design-centric and require knowledge application of:

Section	Question number	Marks
1 Design	1	24
2 Technology (mechanisms and electronics)	2 and 3	36

Paper 2: Design Project (20 weeks)

- The Design Journal
- Presentation Board
- Exam start period: January of Sec 4 year

	The Design Project is an individual coursework-based examination. The examination will be conducted over **20** weeks from the question paper release, excluding school holidays. Candidates will be required to work on a design and prototyping project based on the examination question. For projects that require further research and specialisation beyond the syllabus content, Centres should ensure that this extended learning is within the candidates' means. The Design Project will comprise two components: The Design Journal and Presentation Board. The Design Journal is a real-time document that reflects the candidate's attempt at managing his or her personal design process. It should contain design sheets showing the use of: • a time-stages plan such as a Gantt chart and sub-plans for advancing the project • information and images, doodles/sketches/drawings (rendered if necessary) and calculations for identifying design opportunity leading to the formulation of the design brief and design specifications, initiating a suitable design idea, and developing the design idea into a working prototype to arrive at a proposed design solution. Use notes and annotations only if necessary. Candidates are advised not to re-work any design sheet. Mock-up(s) and the resulting prototype are to be submitted as part of the journal. Format: • A3-size sheets that are securely fastened or A3-size sketch pads • mock-up(s) • prototype • mould/jig/former (if any) The Presentation Board is to communicate succinctly the proposed design solution in relation to the design brief and design specifications. It should show the functional and aesthetic details using appropriate graphical skills to highlight the practicality and appropriateness of the proposed design solution. Format: • A2-size board, single-side, two pieces maximum
Useful links	7055 DESIGN AND TECHNOLOGY GCE NORMAL (ACADEMIC) LEVEL SYLLABUS (2022) from SEAB: https://www.seab.gov.sg/docs/default-source/national-examinations/syllabus/nlevel/2022syllabus/7055_y22_sy.pdf

<table>
<tr><td>Subject</td><td>Nutrition and Food Science (6073)</td></tr>
<tr><td>Who should take the subject</td><td>Students with a strong interest in the following:
● Acquiring knowledge on Nutrition and Health, Food Literacy and Food Science.
● Advocating sustainable food consumption by planning and making appropriate food choices.
● Applying principles of culinary science creatively in food preparation and cooking.</td></tr>
<tr><td>Criteria</td><td>Students whose Sec 2 Overall Food and Consumer Education mark ≥ 50.</td></tr>
<tr><td>Topics</td><td>Nutrition and Health
1.1 Nutrients, Water and Dietary Fibre
1.2 Diet and Health Problems

Food Literacy
2.1 Food Management
2.2 Smart Consumer

Food Science
3.1 The Science of Food Preparation and Cooking
3.2 Reactions in Food during Preparation and Cooking
3.3 Evaluation of Food</td></tr>
<tr><td>Final Assessment</td><td>All candidates will offer Paper 1 and Paper 2. All questions are compulsory in both papers.
Paper 1 40% (80 marks)
Paper 2 60% (60 marks)

<table>
<tr><th rowspan="2">Paper</th><th colspan="3">Assessment Objectives</th><th rowspan="2">Total</th></tr>
<tr><th>AOA</th><th>AOB</th><th>AOC</th></tr>
<tr><td>1 (Written Examination)</td><td>~25%</td><td>~15%</td><td>N.A.</td><td>40%</td></tr>
<tr><td>2 (Coursework)</td><td>~10%</td><td>~10%</td><td>~40%</td><td>60%</td></tr>
<tr><td>Overall</td><td>35%</td><td>25%</td><td>40%</td><td>100%</td></tr>
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	Paper 1 (1½ hours) – Written Paper This will test the candidates' knowledge of theory and practice in response to the assessment objectives. Candidates are to answer all questions. Section A: 16 marks (multiple choice questions) Section B: 40 marks (short-answer-type questions and data-response-type questions) Section C: 24 marks (open-ended questions) Sub-total: 80 marks **Paper 2** – Coursework Candidates will be given an assignment at the beginning of the examination year which must be conducted under teacher supervision. It should be completed for assessment by the end of July or early August of the examination year. The assignment requires a problem-solving and investigative approach, with an emphasis on investigation work. A total of **25 hours** of curriculum time must be assigned to discuss, facilitate and carry out the investigation and practical work required. Assessment will focus on the research of the task; decision; development of an exploratory study; recording a methodical approach in the production and presentation of the final products. The evaluation will require candidates to conduct sensory evaluation of the dishes prepared and the outcomes of the execution process. Research (R) (6 marks) Decision Making (DM) (6 marks) Exploratory Study (ES) – Plan and Conduct (6 marks) – Discussion (6 marks) Planning (P) (6 marks) Execution (Exe) – Organisation and Management (6 marks) – Manipulation (10 marks) – Product and Presentation (8 marks) Evaluation (Eva) (6 marks) (60 marks)
Useful links	6073 NUTRITION AND FOOD SCIENCE GCE NORMAL (ACADEMIC) LEVEL SYLLABUS (2022) from SEAB: https://www.seab.gov.sg/docs/default-source/national-examinations/syllabus/nlevel/2022syllabus/6073_y22_sy.pdf

Subject	**Principles of Accounts (7086)**
Who should take the subject	The Principles of Accounts syllabus seeks to develop in students the knowledge and skills to prepare, communicate and use both accounting and non-accounting information related to the business for decision-making. To understand the purpose of the information and how business activities are presented, students will be equipped with the basic knowledge and skills to prepare and present accounting information and communicate them in a useful manner that can be understood by others.
Criteria	Students whose Sec 2 Overall Math mark ≥ 50.
Topics	**ACCOUNTING AND ITS ROLE IN STAKEHOLDERS' DECISION-MAKING PROCESS** 1.1 Roles of accounting and accountants 1.2 Stakeholders and their decision-making needs **BUSINESSES** 2.1 Types of businesses **MEASUREMENT AND PRESENTATION OF BUSINESS ACTIVITIES** 2.3 Elements of financial statements 2.4 Accounting equation 2.5 Financial statements 2.5.1 Statement of Financial Position[1] 2.5.2 Statement of Financial Performance 2.6 Income and expenses 2.6.1 Revenue and other income 2.6.2 Cost of sales and other expenses 2.7 Assets 2.7.1 Cash in hand and Cash at bank 2.7.2 Inventories 2.7.3 Trade receivables 2.7.4 Non-current assets[2] 2.8 Liabilities 2.8.1 Trade payables 2.8.2 Long-term borrowings[3] 2.9 Equities 2.9.1 Capital and share capital[4] 2.9.2 Drawings 2.9.3 Transfer of profit or loss for the year and retained earnings[5] **CORRECTION OF ERRORS** 2.10 Correction of errors

<table>
<tr><td></td><td>

ACCOUNTING ASSUMPTIONS AND PRINCIPLES
3.1 Accounting theories

ACCOUNTING INFORMATION SYSTEM AND ACCOUNTING CYCLE
3.2 Accounting information system and accounting cycle
3.3 Understanding the double-entry recording system
3.4 Internal controls

N(A) syllabus excludes the following content:
[1] working capital and private limited company
[2] non-accounting information and sale of non-current assets
[3] calculation of interest
[4] share capital
[5] retained earnings and dividends

</td></tr>
<tr><td>Final Assessment</td><td>

<table>
<tr><th></th><th>Details</th><th>Weighting</th><th>Duration</th></tr>
<tr><td>Paper 1</td><td>Answer 3 to 4 compulsory structured questions. (40 marks)</td><td>40%</td><td>1 hour</td></tr>
<tr><td>Paper 2</td><td>Answer 4 compulsory structured questions. (60 marks)
• One question requires the preparation of financial statements for a business for one financial year. (20 marks)
• A scenario-based question (5 marks) will be part of one of the 3 remaining questions.</td><td>60%</td><td>2 hours</td></tr>
</table>

</td></tr>
<tr><td>Useful links</td><td>7086 PRINCIPLES OF ACCOUNTS GCE NORMAL (ACADEMIC) LEVEL SYLLABUS (2022) from SEAB:
https://www.seab.gov.sg/docs/default-source/national-examinations/syllabus/nlevel/2022syllabus/7086_y22_sy.pdf</td></tr>
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