

Understanding the demands and differences
between G3 Pure and Combined Sciences

SCIENCE

is all around us



Goals of Science Education

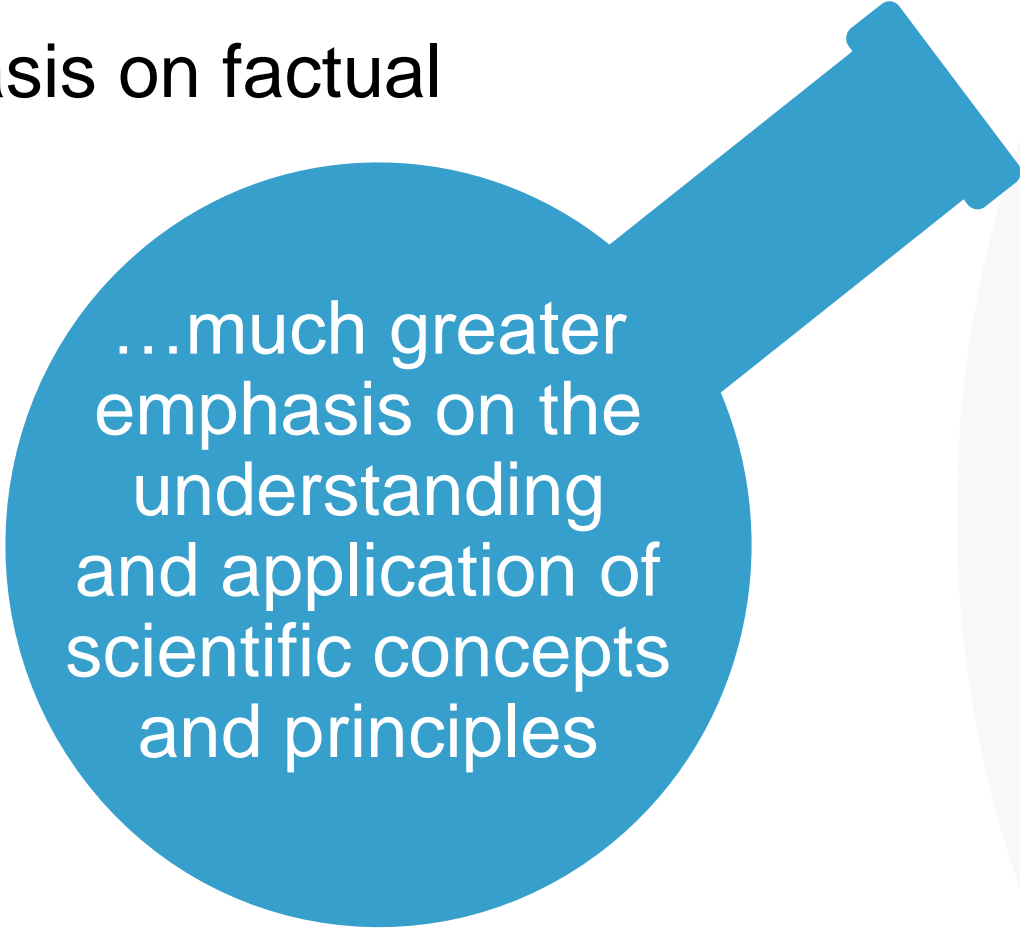
- Enthuse and nurture all students to be scientifically literate
- Provide strong fundamentals for students to pursue science related areas (STEM) in learning and work
- Prepare individuals to navigate an increasingly complex and technologically advanced world, while also fostering a deeper appreciation for the wonders of the natural world.

| | Science |
|--|--|
| CRITERIA, DESIRED DISPOSITIONS | <p>A Science student should have:</p> <ul style="list-style-type: none"> • a strong foundation in Science, and possess the spirit of scientific inquiry • the confidence to engage confidently in issues and questions that relate to the roles played by Science in daily life, society and the environment • the ability to discern, weigh alternatives and evaluate claims and ideas critically, based on logical scientific evidence and arguments |
| SKILLS & COMPETENCIES TO BE DEVELOPED | <p>Science education plays a vital role in developing the 21st-century skills needed to thrive in an increasingly complex, interconnected, and rapidly changing world. Students will learn to:</p> <ul style="list-style-type: none"> • analyze and evaluate complex problems through critical thinking. • problem solve issues through experimentation and research. • communicate their findings and ideas effectively through reports and presentations. • collaborate and work in teams. • exercise adaptability and flexibility during challenges. • exercise ethical awareness in responsible conduct of research, ethical considerations in scientific inquiry, and the importance of ethical behavior in the scientific community. • cultivate a sense of curiosity and a passion for discovery. |
| POST-SECONDARY OPPORTUNITIES | <p>Science education provides students with a diverse set of skills and competencies that are valuable not only in scientific careers but also in many other fields, including education, healthcare, technology, and environmental conservation.</p> |



The Science Syllabus

less emphasis on factual materials...



...much greater emphasis on the understanding and application of scientific concepts and principles

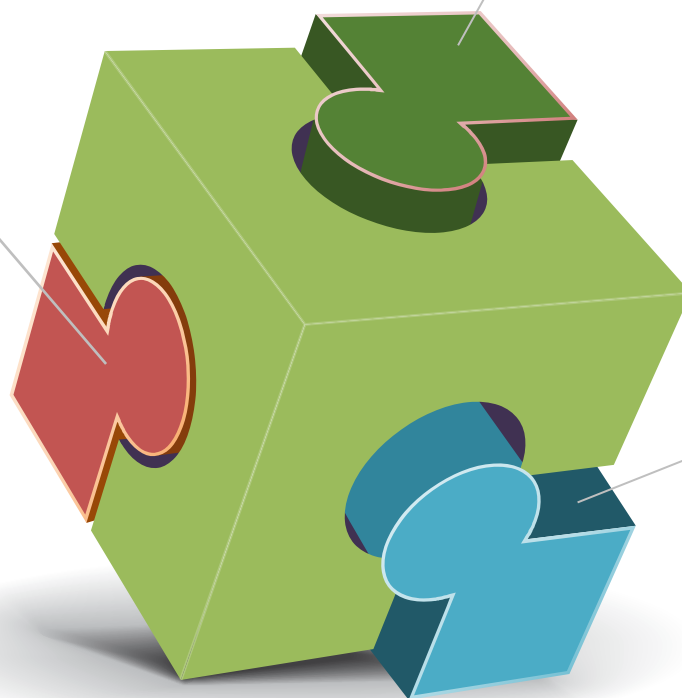
builds on the foundations of Lower Secondary science

the need to develop skills that will be of **long-term value**

Differences between the Sciences

Chemistry

The study of the composition, structure, properties and change of matter... known as the 'central science' that bridges physics and biology



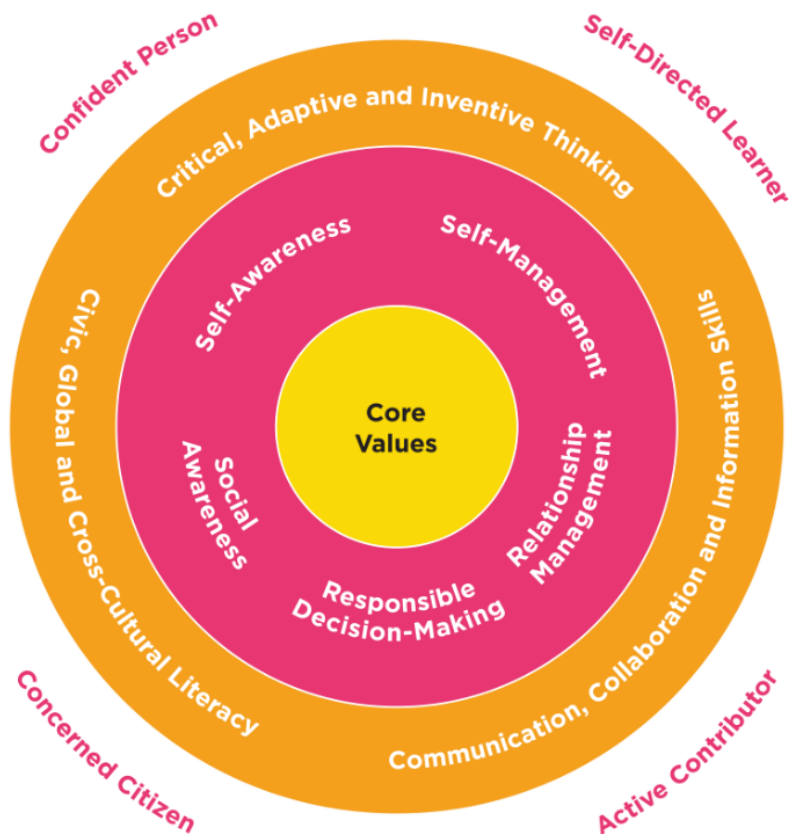
Biology

The study of life and living organisms... including their physical structure, function, growth and evolution

Physics

The study of matter & its motion through space & time... the concepts of energy & forces... how the universe behaves...

Skills, 21st Century Competencies and Student Outcomes



Skills, Values & Attitudes in Science



Topics covered in Lower Secondary Science

Chemistry

- 2. Physical Properties
- 3. Chemical Composition
- 4. Separation Techniques
- 7. Particulate Nature of Matter
- 8. Atoms and Molecules
- 11. Chemical changes

Biology

- 6. Cells
- 12. Ecosystems
- 14. Human Digestive System
- 15. Transport Systems in Living Things
- 16. Human Sexual Reproduction System

Physics

- 5. Ray Model of Light
- 9. Forces, Pressure, Moments, Energy
- 10. Transfer of Heat Energy and its Effects
- 13. Electrical Systems



G3 Science combinations offered

**Combined
Sciences**
(Chem, Bio)

**Double Pure
Chemistry and
Biology**

**Combined
Sciences**
(Phy, Chem)

**Double Pure
Chemistry and
Physics**



Is taking Triple Pure Sciences necessary?

- Entry requirements to Junior colleges revised to L1R4 (5 subjects)
- Students are encouraged to focus on holistic development
- Junior colleges do not offer Triple Science
- Medicine and Dentistry admission requirements require **two** Sciences only - **Chemistry** and either Biology **OR** Physics

G3 Pure Sciences – Scheme of Assessment

| Paper | Pure Sciences | Duration | Marks | Weighting |
|-------|----------------------------|----------|-------|-----------|
| 1 | Multiple Choice | 1h | 40 | 30% |
| 2 | Structured & Free Response | 1h 45m | 80 | 50% |
| 3 | Practical Assessment | 1h 50m | 40 | 20% |

G3 Combined Science – Scheme of Assessment

| Paper | Combined Sciences | Duration | Marks | Weighting |
|-------|--|----------|-------|-----------|
| 1 | Multiple Choice | 1h | 40 | 30% |
| 2 | Structured & Free Response (Physics) | 1h 15m | 65 | 32.5% |
| 3 | Structured & Free Response (Chemistry) | 1h 15m | 65 | 32.5% |
| 4 | Structured & Free Response (Biology) | 1h 15m | 65 | 32.5% |
| 5 | Practical Test | 1h 30m | 30 | 15% |

Pure vs Combined Science

| Details | Pure Sciences | Combined Sciences |
|--------------------------|--|--|
| Subject component | Standalone subject | Two Science subjects combined into a single subject |
| Content coverage | 100% | Approximately 65% of the corresponding Pure Science subject |
| Curriculum time per week | Each Pure Science subject 9 periods Double Pure = 18 periods | Each Combined Science subject 6 periods Combined Sciences = 12 periods |

Scheme of Assessment

| Details | Pure Sciences (for 1 subject) | Combined Sciences (for 1 component) | Sec 2 Science |
|-------------------|--------------------------------------|--|-------------------------|
| MCQ | 30% (of subject) 40 marks 1 hr | 10% 20 marks 30 mins | 30% 30 marks |
| Structured Qns | 50% 80 marks 1 hr 45 mins | 32.5% 65 marks 1 hr 15 mins | 70% 70 marks 2 hr |
| Practical | 20% 40 marks 1 hr 50 mins | 7.5% 15 marks 45 mins | N.A. |

Pure vs Combined Science – Assessment Weightings

| Assessment Objectives | Pure Sciences | Combined Sciences |
|---|----------------------|--------------------------|
| Knowledge | 15% | 20% |
| Understanding | 30% | 30% |
| Handling Information & Solving Problems | 55% | 50% |

Pure vs Combined Science

| Details | Pure Sciences | Combined Sciences |
|-------------------------------|--|---|
| No. of Assessments at O-Level | Double Pure: 6 papers | 4 papers |
| Assessment questions posed | <ul style="list-style-type: none"> • Demanding - tend to be tricky and indirect. Students need to unpack the meaning of the questions. • 1 Data-based question (10 – 12 marks) • About 5 to 30% calculations • Greater % of explanations | <ul style="list-style-type: none"> • Less demanding - tend to be more straightforward than for Pure Science. • Simple data-infused question • About 10 to 40% calculations • Lesser % of explanations |

Pure vs Combined Science

| Details | Pure Sciences | Combined Sciences |
|------------------------|---|--|
| Requirement of answers | <ul style="list-style-type: none">• More marks allocated to each part question• Some calculation questions require 2 or 3 steps to solve | <ul style="list-style-type: none">• Fewer marks allocated to each part question• Most calculation questions require 1 or 2 steps to solve |

Pure vs Combined Science Practicals

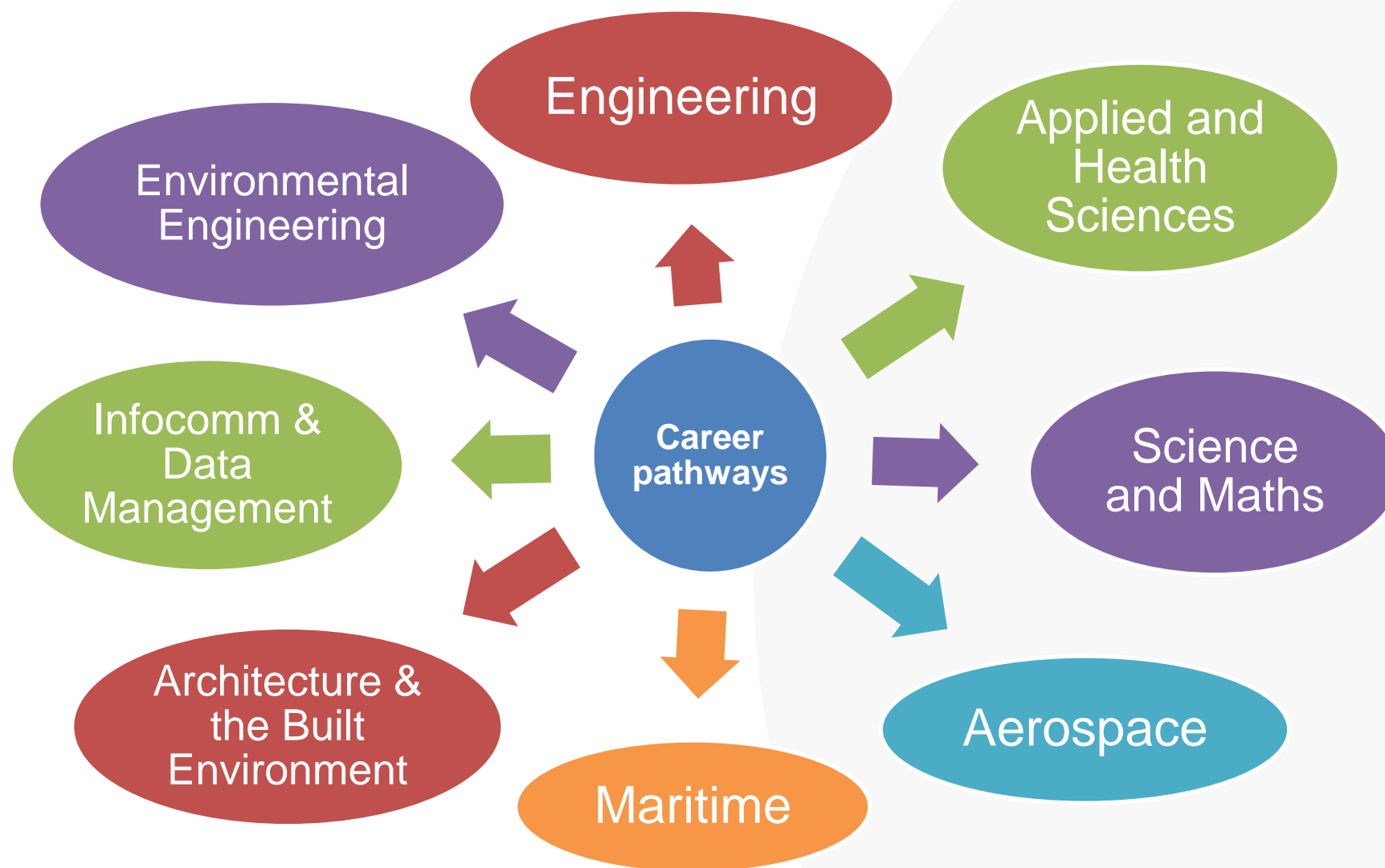
| Details | Pure Sciences | Combined Sciences |
|------------------|---|--|
| No. of questions | <ul style="list-style-type: none">• 2 to 3 questions per subject | <ul style="list-style-type: none">• 1 question per subject |
| Measurements | <ul style="list-style-type: none">• decide on the appropriate decimal places and units | <ul style="list-style-type: none">• informed on the appropriate decimal places and units |
| Table | <ul style="list-style-type: none">• draw a table and decide on the measurements to take | <ul style="list-style-type: none">• provided in the paper |
| Graph | <ul style="list-style-type: none">• interpret the set of data and its respective axis | <ul style="list-style-type: none">• guided on both axes |
| Planning | <ul style="list-style-type: none">• write out a plan for an experiment | <ul style="list-style-type: none">• none |

G3 Science Assessment Weightage

| Level | Subject Title | Subject Code | SEAB website links |
|-------|---------------------|--------------|---|
| G3 | Physics | 6091 | https://www.seab.gov.sg/files/O%20Lvl%20Syllabus%20Sch%20Cddts/2026/6091_y26_sy.pdf |
| | Chemistry | 6092 | https://www.seab.gov.sg/files/O%20Lvl%20Syllabus%20Sch%20Cddts/2026/6092_y26_sy.pdf |
| | Biology | 6093 | https://www.seab.gov.sg/files/O%20Lvl%20Syllabus%20Sch%20Cddts/2026/6093_y26_sy.pdf |
| | Science (Phy, Chem) | 5086 | https://www.seab.gov.sg/files/O%20Lvl%20Syllabus%20Sch%20Cddts/2026/5086_y26_sy.pdf |
| | Science (Chem, Bio) | 5088 | https://www.seab.gov.sg/files/O%20Lvl%20Syllabus%20Sch%20Cddts/2026/5088_y26_sy.pdf |



**Relevance
of Science
for Post-
Secondary
Education**



Course Requirements (University)

| Course | School | Course Requirements |
|------------------------|--------|---|
| Dentistry | NUS | H2 pass in Chemistry and either Biology or Physics. |
| Medicine | NUS | H2 pass in Chemistry and either Biology or Physics. |
| Biomedical Engineering | NUS | H2 pass in Mathematics or Further Mathematics and either Physics or Chemistry |
| Biological Sciences | NTU | H1 pass in Mathematics and H2 pass in Physics / Chemistry / Biology |
| Medicine | NTU | H2 pass in Chemistry and Physics / Biology |
| Bioengineering | NTU | H2 pass in Mathematics and Physics / Chemistry / Biology / Computing |

Course Requirements (Polytechnic)

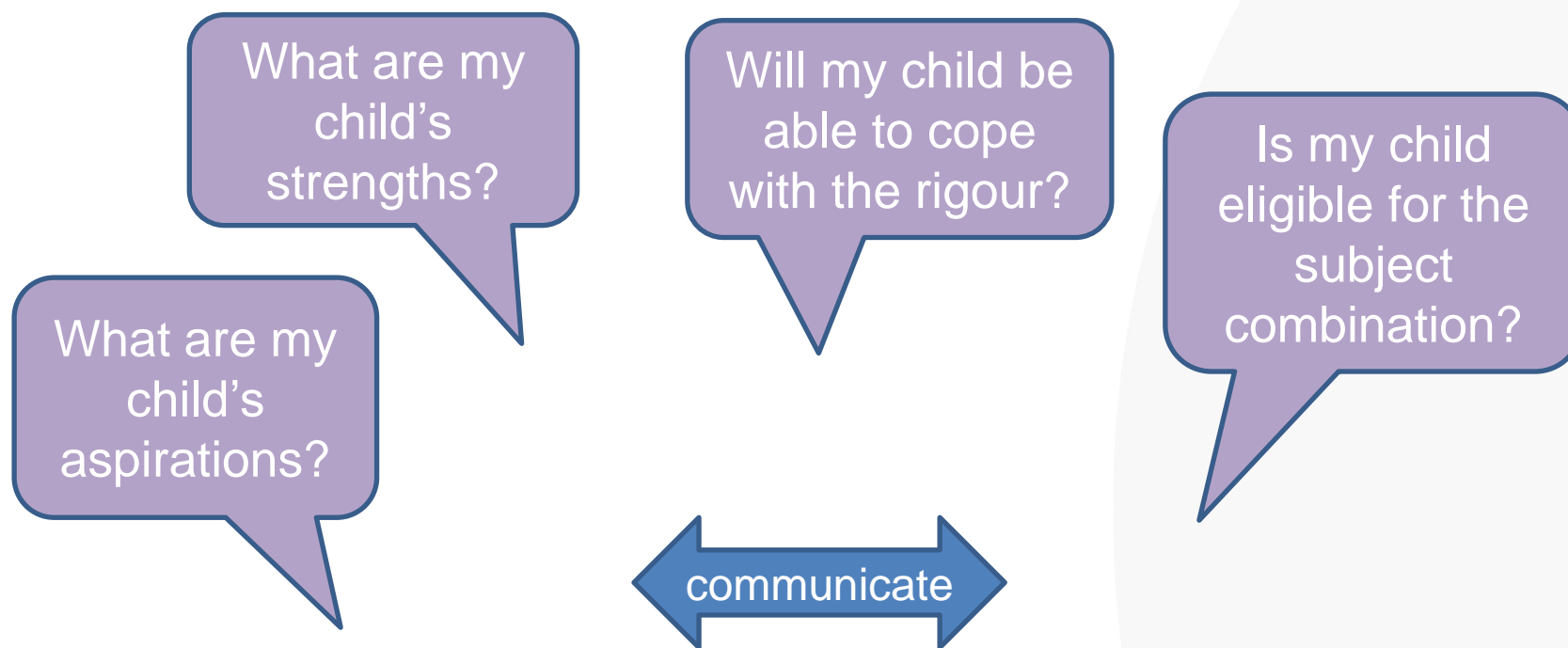
| Course | School | Course Requirements |
|-------------------------------------|-----------------------|-------------------------------------|
| Biomedical Science | Singapore Polytechnic | Any 1 Science ELR2B2 range: 4-7 |
| Biomedical Science | Ngee Ann Polytechnic | Any 1 Science ELR2B2 range: 3-7 |
| Chemical & Biomolecular Engineering | Ngee Ann Polytechnic | Any 1 Science ELR2B2 range: 4-12 |
| Pharmaceutical Science | Nanyang Polytechnic | Any 1 Science ELR2B2 range: 7-10 |

Course Requirements (ITE)

| Course | Course Requirements |
|--|---------------------|
| <ul style="list-style-type: none"> Electronics & Info-Comm Technology Applied & Health Sciences Design & Media Engineering | Maths or Science |

*The ELR2B2 range changes by the year

Key Considerations



Making an Informed Decision

- Talk to seniors and/or FTs for clarifications
- Parents and students should discuss and come to an agreement if both parties have different aspirations
- Work towards aspirations and desired subject combinations in Semester 2 (setting up positive routines and developing good habits, the importance of help seeking behaviours, etc)