

Science subjects offered

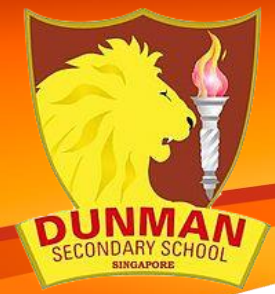
■ Pure Sciences

- Biology
- Chemistry
- Physics

■ Combined Sciences

- Science (Physics/ Chemistry) [Express and NA]
- Science (Chemistry/ Biology) [Express only]

■ Science Syllabus T



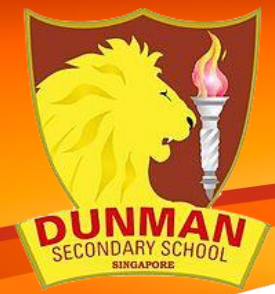
is the science that deals with the composition and properties of substances and various elementary forms of matter.

Syllabus Overview:

- I. MATTER – STRUCTURE AND PROPERTIES***
- II. CHEMICAL REACTIONS***
- III. CHEMISTRY IN A SUSTAINABLE WORLD***



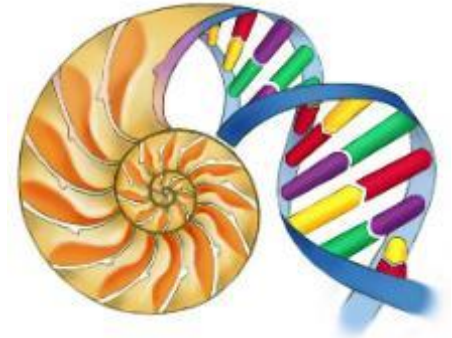
Assessment: Theory Papers and Science Practical



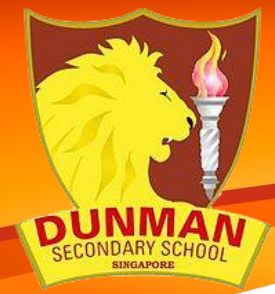
is the science of life or living matter in all its forms and phenomena.

Syllabus Overview:

- I. CELLS AND THE CHEMISTRY OF LIFE***
- II. THE HUMAN BODY – MAINTAINING LIFE***
- III. LIVING TOGETHER – PLANTS, ANIMALS AND ECOSYSTEMS***
- IV. CONTINUITY OF LIFE***



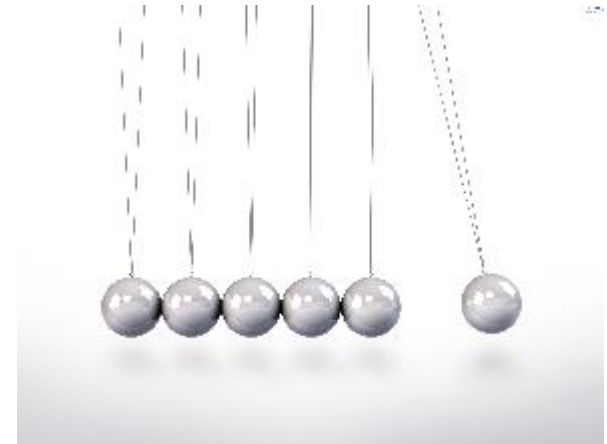
Assessment: Theory Papers and Science Practical



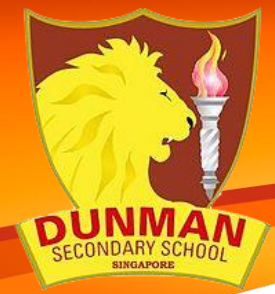
is the science of matter and energy and of interactions between the two.

Syllabus Overview:

- I. MEASUREMENT*
- II. NEWTONIAN MECHANICS*
- III. THERMAL PHYSICS*
- IV. WAVES*
- V. ELECTRICITY AND MAGNETISM*
- VI. RADIOACTIVITY*



Assessment: Theory Papers and Science Practical



Science (Physics/Chemistry) ***Science (Chemistry/Biology)***

- ***Science (Physics/Chemistry) is a combined subject between Chemistry (50%) and Physics (50%). [Express & NA]***
- ***Science (Chemistry/Biology) is a combined subject between Chemistry (50%) and Biology (50%). [Express only]***

Assessment:

- ***Theory Papers***
- ***Science Practical (only for Express)***

Similarities and Differences

	Pure Sciences	Combined Sciences
Content coverage	Pure Sciences covers a wider scope and more in depth. Typically, Pure Sciences have 3 to 5 chapters more than Combined Sciences	
Assessment rigor	<p><u>Pure Sciences:</u> 45% on Knowledge & Comprehension; 55% on Application</p> <p><u>Combined Science:</u> 50% on Knowledge & Comprehension; 50% on application</p>	
Assessment mode	Theory and Practical (deals with different skill sets)	Theory and Practical (focus on Qualitative Analysis) (For express only)

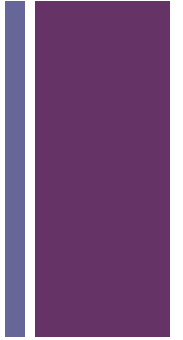
Why study Chemistry?



***Physical
Science
that studies
matter***

+

The Screen That You Are Reading



liquid crystal displays (LCDs)

+

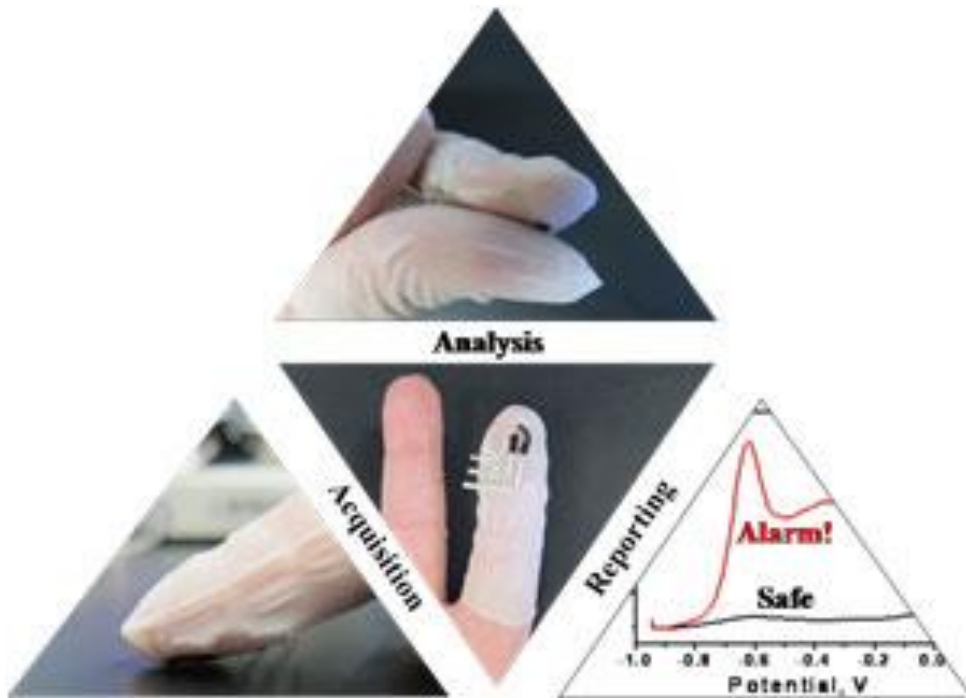
PLASTIC



Polythene



Forensic Fingers!



- **new sensor is made up of an electrode screen-printed onto a stretchable sheath worn on the index finger and a second sheath, worn on the thumb, coated with a solid-state ionogel electrolyte.**
- a detection system that investigators can wear on their fingertips to rapidly identify suspected traces of explosives and gunshot residue.

CONTENT STRUCTURE

CONTENT STRUCTURE

Sections	Topics
I. Matter – Structures and Properties	<ol style="list-style-type: none">1. Experimental Chemistry2. The Particulate Nature of Matter3. Chemical Bonding and Structure
II. Chemical Reactions	<ol style="list-style-type: none">4. Chemical Calculations5. Acid-Base Chemistry6. Qualitative Analysis7. Redox Chemistry8. Patterns in the Periodic Table9. Chemical Energetics10. Rate of Reactions
III. Chemistry in a Sustainable World	<ol style="list-style-type: none">11. Organic Chemistry12. Maintaining Air Quality

+ **Interest and Career Prospects**

Important pre-requisite for university admission for:

Medicine

Dentistry

Pharmacy

Pharmaceutical industry

Petrochemical Companies

Governmental Agencies e.g. HSA, DSO

Polymer/paint/semiconductor/materials

Food and Beverage Industry

Quality Control labs - (Analytical Chemists)

Research Institutes e.g. A*STAR

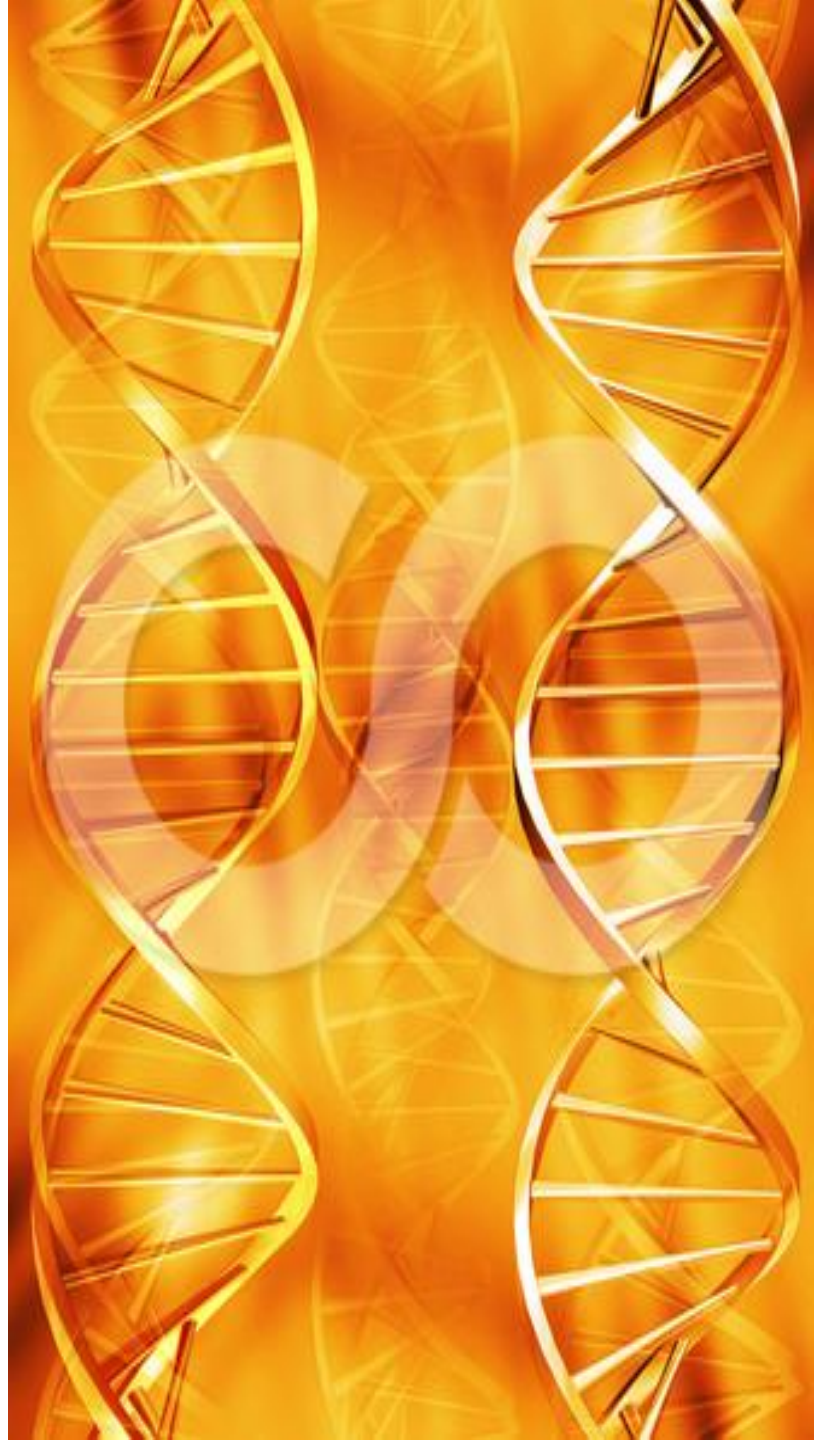
And the list goes on.....

+

Why study Biology?

Science of Life

“Life Science”





***Do identical twins have identical DNA?
How does paternity test work?***



I am
2.47 m

I am
0.74m



**Why are we different?
Can the characteristic be changed?**

CONTENT STRUCTURE

CONTENT STRUCTURE

THEMES	Topics
I. Cells and The Chemistry of Life	1. Cell Structure and Organisation 2. Movement of Substances 3. Biological Molecules
II. The Human Body – Maintaining Life	4. Nutrition in Humans 5. Transport in Humans 6. Respiration in Humans 7. Excretion in Humans 8. Homeostasis, Co-ordination and Response in Humans 9. Infectious Diseases in Humans
III. Living Together – Plants, Animals and Ecosystems	10. Nutrition and Transport in Flowering Plants 11. Organisms and their Environment
IV. Continuity of Life	12. Molecular Genetics 13. Reproduction 14. Inheritance

+ **Interest and Career Prospects**

Medical

Sports

Pharmaceutical

Environment

Biochemical

Bio-engineering

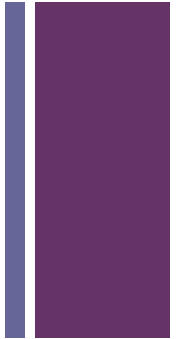
Marine biology

Zoology

Microbiology

Neurobiology

And the list goes on.....



+ BIOPOLIS – A*STAR





Why study Physics?



“Knowledge of Nature”

such as energy and force



Tea Bag that Cleans!



- *This tea bag makes use of nanotechnology to clean drinking water, making it free from contaminants and bacteria.*
- *Ingredients are nanoscale fibers and grains of carbon.*





“Bow”lingual!



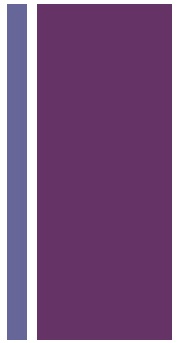
- device that helps human understand dog's language
- able to understand six of the dog's basic emotions

**I want a
bone**



+

One of the Greatest Engineering Feat of the 20th Century



CONTENT STRUCTURE

CONTENT STRUCTURE

Section	Topics
I. Measurement	1. Physical Quantities, Units and Measurement
II. Newtonian Mechanics	2. Kinematics 3. Dynamics 4. Turning Effect of Forces 5. Pressure 6. Energy
III. Thermal Physics	7. Kinetic Particle Model of Matter 8. Thermal Processes 9. Thermal Properties of Matter
IV. Waves	10. General Properties of Waves 11. Electromagnetic Spectrum 12. Light
V. Electricity and Magnetism	13. Static Electricity 14. Current of Electricity 15. D.C. Circuits 16. Practical Electricity 17. Magnetism 18. Electromagnetism 19. Electromagnetic Induction
VI. Radioactivity	20. Radioactivity

Comparison of Syllabus from SEAB Website

CHEMISTRY	BIOLOGY	PHYSICS
<u>Syllabus 6092</u>	<u>Syllabus 6093</u>	<u>Syllabus 6091</u>

SCIENCE (PHYSICS/CHEMISTRY) EXPRESS	SCIENCE (CHEMISTRY/BIOLOGY) EXPRESS
<u>Syllabus 5086/5088</u>	

SCIENCE (PHYSICS/CHEMISTRY) NORMAL ACADEMIC
<u>Syllabus 5105</u>