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Science subjects offered

- **Pure Sciences**
  - Biology
  - Chemistry
  - Physics
- **Combined Sciences**
  - Science (Physics/ Chemistry) [G3 and G2]
  - Science (Chemistry/ Biology) [G3 only]
- **Science (G1)**

Chemistry

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

Syllabus Overview:

I. ***EXPERIMENTAL CHEMISTRY***

II. ***ATOMIC STRUCTURE AND STOICHIOMETRY***

III. ***CHEMISTRY OF REACTIONS***

IV. ***PERIODICITY***

V. ***ATMOSPHERE***

VI. ***ORGANIC CHEMISTRY***

Assessment: Theory Papers and Science Practical

Biology

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

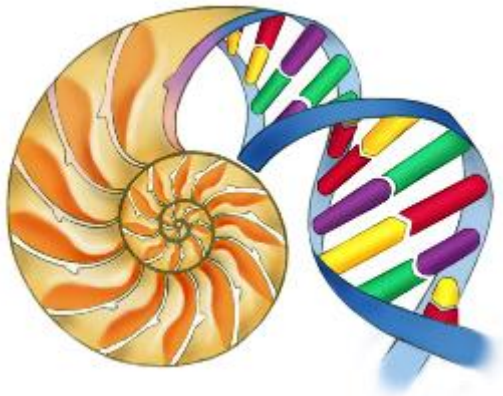
Syllabus Overview:

I. ***PRINCIPLES OF BIOLOGY***

II. ***MAINTENANCE AND REGULATION OF LIFE PROCESSES***

III. ***CONTINUITY OF LIFE***

IV. ***MAN AND HIS ENVIRONMENT***



Assessment: Theory Papers and Science Practical

Physics

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

Syllabus Overview:

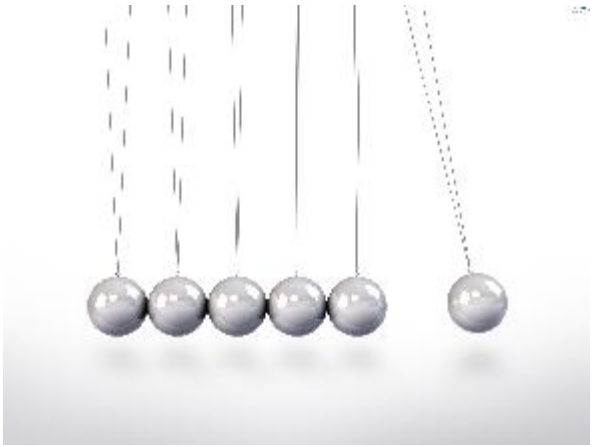
I. ***Measurement***

II. ***Newtonian Mechanics***

III. ***Thermal Physics***

IV. ***Waves***

V. ***Electricity and Magnetism***



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%). [G3 and G2]*

- *Science (Chemistry/Biology) is a combined subject between Chemistry (50%) and Biology (50%). [G3 only]*

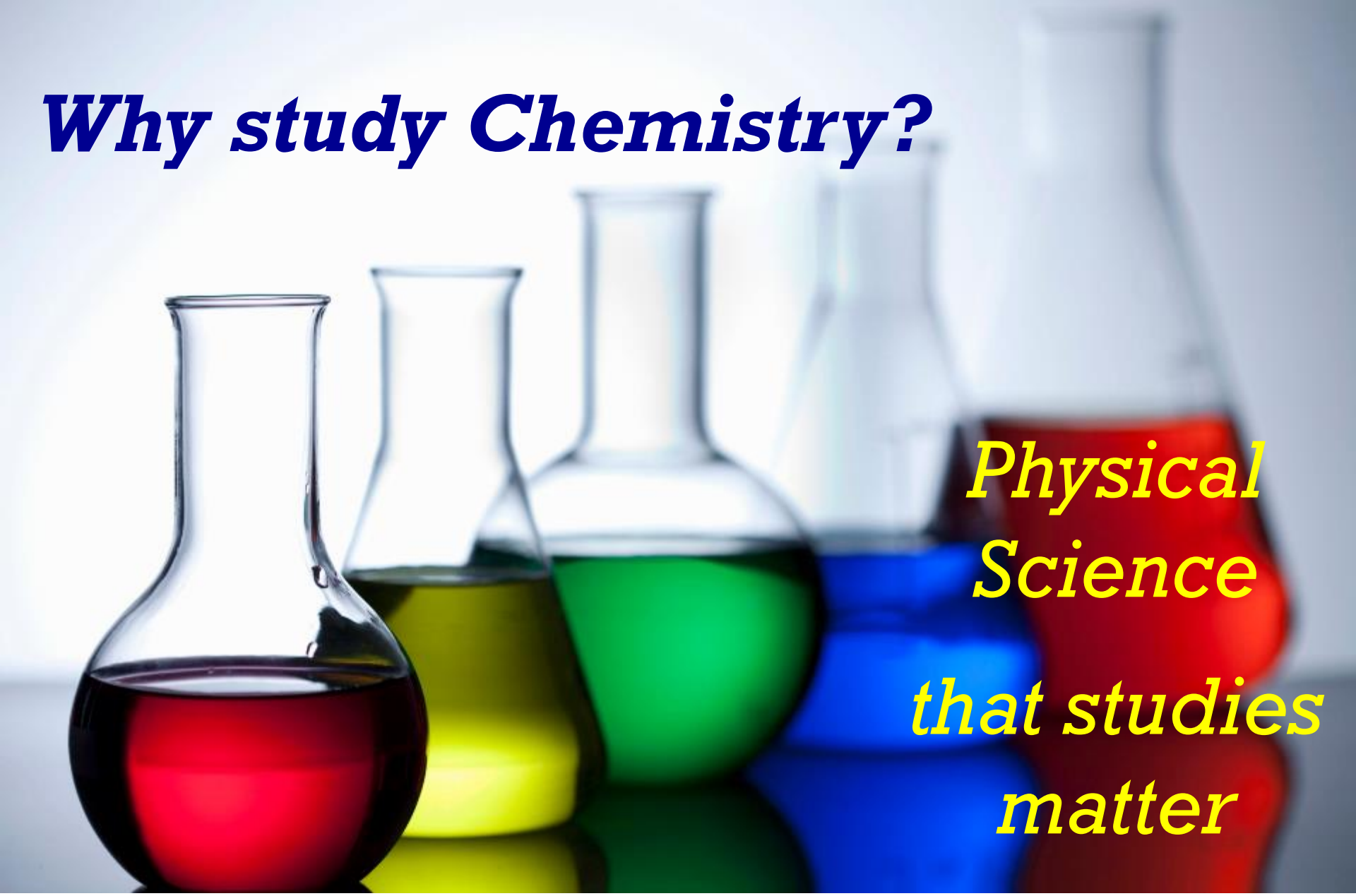
Assessment:

- ***Theory Papers***
- ***Science Practical (only for G3)***

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	*Pure Sciences:* 45% on Knowledge & Comprehension; 55% on Application *Combined Science:* 50% on Knowledge & Comprehension; 50% on application	
Assessment mode	Theory and Practical (deals with different skill sets)	Theory and Practical (focus on Qualitative Analysis) (For G3 only)

Why study Chemistry?



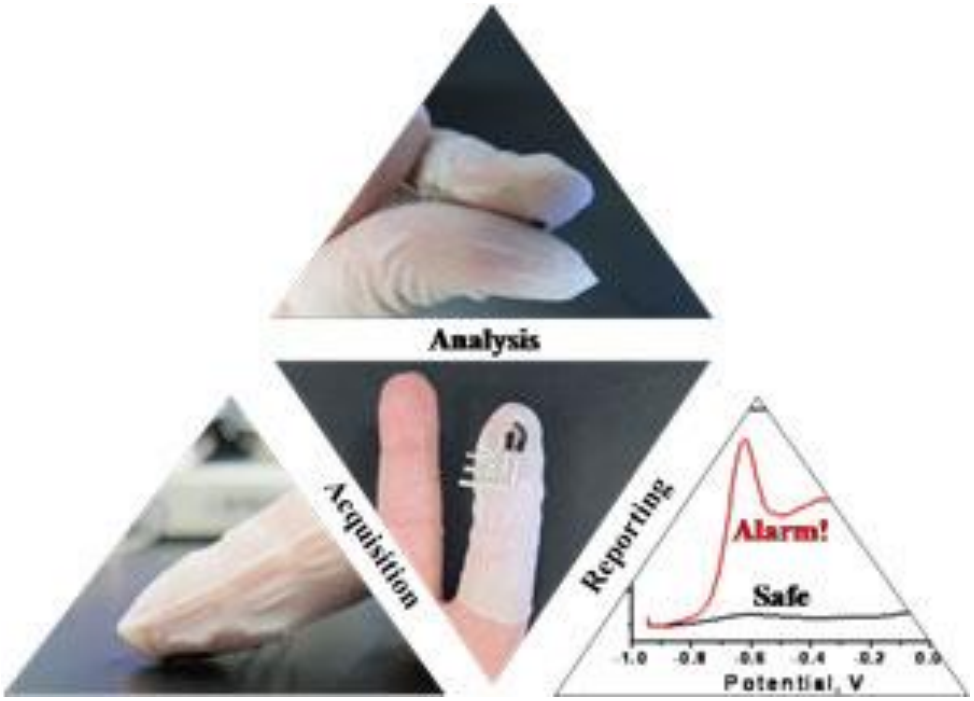
The Screen That You Are Reading

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

Section		Topic	
I.	EXPERIMENTAL CHEMISTRY	1.	Experimental Chemistry
II.	ATOMIC STRUCTURE AND STOICHIOMETRY	2.	The Particulate Nature of Matter
		3.	Formulae, Stoichiometry and the Mole Concept
III.	CHEMISTRY OF REACTIONS	4.	Electrolysis
		5.	Energy from Chemicals
		6.	Chemical Reactions
		7.	Acids, Bases and Salts
IV.	PERIODICITY	8.	The Periodic Table
		9.	Metals
V.	ATMOSPHERE	10.	Air
VI.	ORGANIC CHEMISTRY	11.	Organic Chemistry

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)

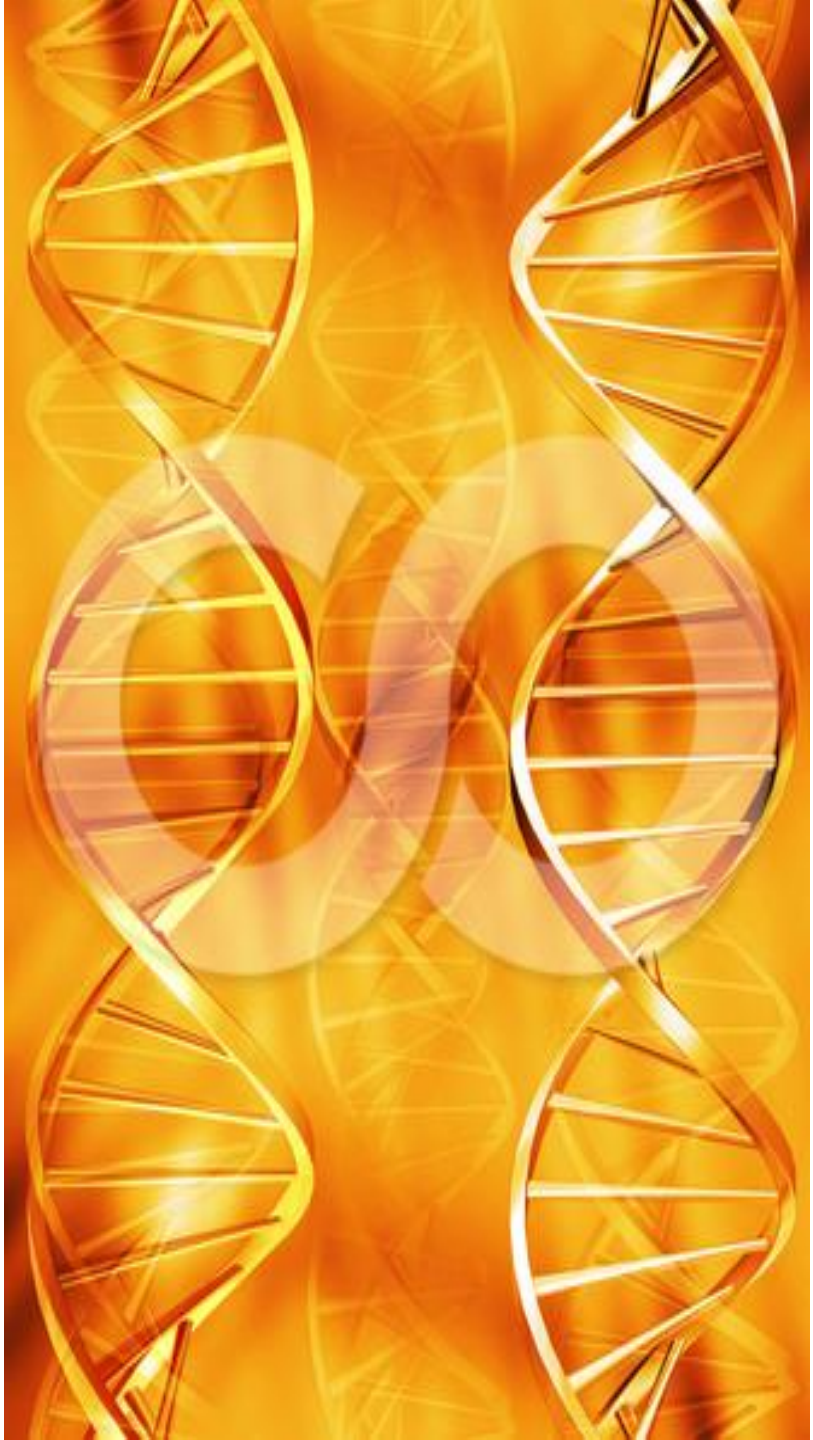
Research Institutes e.g. A*STAR

And the list goes on……

Why study Biology?

Science of Life

"Life Science"



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

Why are we different?

Can the characteristic be changed?

CONTENT STRUCTURE

THEMES	Topics
I. PRINCIPLES OF BIOLOGY	1. Cell Structure and Organisation 2. Movement of Substances 3. Biological Molecules
II. MAINTENANCE AND REGULATION OF LIFE PROCESSES	4. Nutrition in Humans 5. Nutrition in Plants 6. Transport in Flowering Plants 7. Transport in Humans 8. Respiration in Humans 9. Excretion in Humans 10. Homeostasis 11. Co-ordination and Response in Humans
III. CONTINUITY OF LIFE	12. Reproduction 13. Cell Division 14. Molecular Genetics 15. Inheritance
IV. MAN AND HIS ENVIRONMENT	16. Organisms and their Environment

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

One of the Greatest Engineering Feat of the 20th Century

CONTENT STRUCTURE

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