La Salle College
Junior Science Program Outline
Form 2
2024 - 2025

1. Course Aims & Objectives

- To develop students' basic scientific knowledge and concepts for living in and contributing to a scientific and technological world.
- To develop the ability to enquire and to solve problems by scientific method.
- To provide a learning environment for students' acquaintance with the language of science and the skills in communicating ideas in science-related contexts.
- To develop students' curiosity and interest in science.
- To develop students' awareness of the usefulness and limitations of science and the interactions between science, technology and society.
- To develop students of responsible citizenship, including respect for the environment and commitment to the wise use of resources.

2. Course Outline

List of Topics			Knowledge & Concepts	Remarks
Term	Unit	Section		
1	8 Making Use of Electricity	8.1	**Introducing electricity and simple circuits** A. The importance of electricity B. Conditions needed for electricity to flow C. Electrical conductors and insulators D. Switches	1. Scientific skills ● handle apparatus and instrument properly ● follow instructions to carry out experiments, able to measure accurately, record honestly, infer appropriately from observation, drawing proper conclusion to find out scientific facts or solution of problems ● formulate hypothesis and devise methods for testing them in scientific investigations ● identify dependent and independent variables of a scientific investigation ● analyze data, draw conclusions and make further predictions in science experiments 2. Collaboration skills ● work and negotiate with others to solve problems, conduct experiment s and accomplish tasks
		8.2	**Circuit diagrams**	
		8.3	**Circuit diagrams** A. Basic ideas of an electric current B. Measuring electric current C. Heating effect and magnetic effect of electric current	
		8.4	**Voltage** A. Basic ideas of voltage B. Measuring voltage C. How does voltage affect current?	
		8.5	**Resistance** A. Basic ideas of resistance B. How does resistance affect current? C. Factors affecting resistance D. Resistor E. Rheostat	
		8.6	**Series circuits and parallel circuits** A. Basic ideas of series circuits and parallel circuits B. Current & voltage in series circuits and in parallel circuits	
		8.7	**Our household electricity**	

			A. How do electrical appliances work? B. Mains electricity and domestic circuits	3. Communication skills ● extract useful information from a variety of sources (e.g. the library, the Internet) and forms (e.g. texts, graphs, tables, charts) ● understand, analyze, evaluate and respond to a range of texts ● use appropriate scientific terminology and format to present one's understanding, finding from experiments and points of views in oral and written modes 4. Creativity ● ask relevant questions, suggest ideas and make predictions in science experiments, tasks and project work ● explore innovative ideas and try new approaches or methods in solving science problem 5. Critical thinking skills ● Recognize preconceptions or misconceptions based on experimental evidence ● try out different solution methods and identify the strengths and weaknesses of these methods ● distinguish between scientific facts, myths, conjecture and legends ● examine evidence and argument based on one's own knowledge and value before arriving at a judgment 6. Problem solving skills ● Identify the problem and describe its key issue(s) at stake ● propose solution plans for scientific problems and evaluate the appropriateness of these plans ● evaluate the quality of outcomes against established criteria, and review the effectiveness of the solution process
		8.8	**Electrical safety with household electricity** A. Potential hazards in using electricity B. Electrical safety devices C. Safety precautions in using electricity	
		8.9	**Power, energy and the cost of electricity** A. Power of electrical appliances B. Cost of electricity ~~C. Efficiency of electrical appliances~~	
	7 Living Things and Air	7.1	**Air** A. Major components of air B. Test for the gases in air C. Daily applications of the gases in air	
		7.2	**Photosynthesis** A. Plants make food by photosynthesis B. Test for the products of photosynthesis C. Necessary factors for photosynthesis D. Significance of photosynthesis to other living things	
		7.3	**Respiration** A. Food as a source of energy for living things B. Obtaining energy from food by respiration C. Relationship between photosynthesis and respiration	
		7.4	**Gas exchange in plants and animals** A. Gas exchange in plants B. Gas exchange in animals	
		7.5	**Balance of carbon dioxide and oxygen in nature** A. How is the balance of carbon dioxide and oxygen in Nature maintained? B. Effects of the increasing amount of carbon dioxide in the atmosphere	
		7.6	**Air quality** A. Effects of air quality on health B. Air Quality Health Index (AQHI)	
	11 Force and Motion	11.1	**Motion** A. Distance, time and speed B. Distance-time graph C. Uniform motion and non-uniform motion	
		11.2	**Force** A. Basic ideas of force B. Effect of force C. Measuring forces D. Contact forces and non-contact forces E. Balanced forces and unbalanced forces	

		11.3	**Gravity** A. Gravity and its effect B. Weight and mass	
		11.4	**Friction and air resistance** A. Basic ideas of friction B. Basic ideas of air resistance C. Reducing friction and air resistance D. Making use of friction and air resistance	
		11.5	**Action and reaction** A. Basic ideas of action-and-reaction pairs B. Daily examples of action-and-reaction pairs	
		11.6	**Space flight** A. Launching B. Travelling in space C. Returning to the Earth	
2	9 Acids and Alkalis	9.1	**Common acids and alkalis** A. Acids B. Alkalis C. Handling acids and alkalis safely in the laboratory	
		9.2	**Acid-alkali indicators and pH scale** A. Acid-alkali indicators B. Universal indicator and pH scale C. pH meter	
		9.3	**Neutralization** A. Mixing acids and alkalis B. Applications of neutralization	
		9.4	**Corrosive nature of acids** A. Reactions between acids and metals B. Reactions between acids and building materials C. Acid rain	
		9.5	**Potential hazards related to the use of acids and alkalis** A. Corrosive nature of acids and alkalis B. Proper handling of household cleaners containing acids and alkalis	
	10 Sensing the environment	10.1	**Senses and sense organs**	
		10.2	**Sight** A. The main parts of the eye and their functions B. How is an image formed in the eye? C. How do we see objects at different distances? D. How do we see colours? E. Limitations of human eyes F. Common eye defects G. Protecting our eyes	

		~~10.3~~	~~**Hearing**~~ ~~A. Sound~~ ~~B. How we hear~~ ~~C. Limitations of our ears~~ ~~D. Noise pollution~~	
		~~10.4~~	~~**Smell and taste**~~ ~~A. Sense of smell~~ ~~B. Sense of taste~~ ~~C. The relationship between the senses of smell and taste~~	
		~~10.5~~	~~**Touch**~~ ~~A. Skin as a sense organ~~ ~~B. Sensitivity of the skin to touch~~ ~~C. Sensitivity of the skin to temperature~~	
		~~10.6~~	~~**Sense of balance**~~	
		10.7	**The brain and our senses** A. The role of our brain B. Reaction time C. Main parts of the brain D. Illusions E. Effects of alcohol, drugs and organic solvents on our senses	

3. Assessment

(*Note: Dates are given as an approximation only. Specific dates will be given during the course*)

A. School-Based Assessments

Term	Date	Components	Requirements	Assessment Criteria	Marks
1	Nov	Uniform Test	● Written test MCQ structural questions	Understanding and application of scientific knowledge, concepts and skills	**15**
	Sep – Nov	Practical skills assessment	● Practical skills assessments ● at least 3 ● including wiring of a pin plug	Proper handling of apparatus and equipment, measuring, recording, inferring, drawing conclusion	**6**
	Sept – Nov	Quizzes	● Written quizzes ● Online quizzes	Understanding and application of scientific knowledge, concepts and skills	**3**
	Sep – Nov	Daily performance	● Online exercises ● Written tasks ● Classroom performance	Concept and skills, classroom performance, learning attitude, responsibility of completing assignments	**6**
				Total	**30**
2	May	Uniform Test	● Written test ● MCQ ● structural questions	Understanding and application of scientific knowledge, concepts and skills	**15**
	Jan – May	Practical skills assessment	● Practical skills assessments ● at least 2	Proper handling of apparatus and equipment, measuring, recording, inferring, drawing conclusion	**4**
	Jan – May	Project based assessment	● STEM project ● La Salle Cares STEAM competition (proposal + final design)	Proper handling of apparatus and equipment, measuring, recording, inferring, drawing conclusion	**6 (3+3)**
	Jan – May	Daily performance	● Quizzes ● Online exercises ● Written tasks ● Classroom performance	Concept and skills, classroom performance, learning attitude, responsibility of completing assignments	**5**
				Total	**30**

B. Examinations – Duration and breakdown of marks for Exams

Exam	Date	Paper	Total	Composition	% of Report total	Duration
Mid-year	Jan 2025	Written paper	100 (will be converted into 120 on report card)	MC Questions, Structural Questions	80%	**1.5 hr**
Final	Jun 2025	Written paper	100 (will be converted into 120 on report card)	MC Questions, Structural Questions	80%	**1.5 hr**

C. Term 1

Report total (100%)	=	SBA (20%)	+	Examination (80%)
150	=	30	+	120

Term 2

Report total (100%)	=	SBA (20%)	+	Examination (80%)
150	=	30	+	120

4. Other Information & Useful Resources

Textbook:

Aristo Science for the New Century (Reprinted with minor amendments), Textbooks and assignment books 2A & 2B,
W.K. Chan, A. Kai, F. Sit, M.W. Tang, Y.M. Cheung, D.S.C. Lee
Aristo Educational Press Ltd.

Online resources:

Hong Kong EdCity http://www.hkedcity.net/index_student.php
Understanding Integrated Science (Aristo Educational Press Ltd.) http://www.aristo.com.hk/