

**Wah Yan College Kowloon**  
**F2K Integrated Science Scheme of Work (2017-2018)**

<b>Textbook</b>	1. Mastering Science Book 2A (With Bilingual online E-BOOK 2016: iPad & PC Version) (1 <sup>st</sup> ) 2. Mastering Science Book 2A Workbook (1 <sup>st</sup> ) 3. Mastering Science Book 2B (With Bilingual online E-BOOK 2016: iPad & PC Version) (2 <sup>nd</sup> ) Mastering Science Book 2B Workbook (2 <sup>nd</sup> )
<b>Other Resources</b>	

**◆Repertoire of Self-directed Learning Skills:**

**1. reading to learn, 2. notes-taking, 3. looking up words in the dictionary, 4. pre-lesson preparation, 5. group discussion, 6. group presentation, 7. initiative to ask questions, 8. setting learning objectives and doing reflection, 9. eLearning platform with instant feedback, 10. flipped classroom, 11. peer assessment, 12. searching for information on the internet, 13. project learning, 14. training of higher-order thinking skills, etc.**

**SL: Scheduled number of lessons**

**AL: Actual number of lessons**

<b>School Term</b>	<b>Weeks/ Dates</b>	<b>Topics/ Extended Parts*</b>	<b>Learning Objectives/ Teaching Focus</b>	<b>SL/ AL</b>	<b>Teaching and Learning Activities</b>	<b>Self-directed Learning Skills◆</b>	<b>Values#</b>	<b>Basic Law Education *</b>	<b>Consolidation and Assessment</b>
<b>First Term (3/9/2017- 30/12/2017, Weeks 1-17)</b>	1	Revision	-Revise the safety rules and precautions in lab. -Revise the names and drawings of apparatus.	2	-Worksheet (name of apparatus)	2, 4, 8			-Quiz of the names of apparatus
	1-2	7.1 Gases in the air	-Know the basic composition of air -Acquire basic laboratory skills to test for oxygen, carbon dioxide and water -Compare the composition of breathed air and unbreathed air	5	-Lab Act 7.1-7.5	2, 4, 8, 14			-Section quiz 1 -Workbook 7.1
	3	7.2 Air and	-Able to understand the	4	-Lab Act 7.6	2, 4, 5, 6, 8,			-Section quiz 2

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		burning	concept of chemical change -Know the conditions for burning -Understand the principles of putting out a fire -Acquire some knowledge of the fire prevention and survival skill in case of fire		-Expt: hot paper pot (demo) -Classroom Act 7.1, 7.3	12, 14			-Workbook 7.2
	4-5	7.3 How Humans obtain energy *Use of food labels	-Know that food stores chemical energy -Know that food is a source of energy for our body -Design an experiment to find the energy of peanut	4	-Expt: energy of peanut	1, 2, 4, 5, 6, 8, 12, 14			-Section quiz 3 -Workbook 7.3
	5-7	7.4 How green plants obtain energy	-Recognize that green plants make their own food by photosynthesis -Be able to test for the products of photosynthesis -Infer from experiments the necessary conditions for photosynthesis	7	-Lab Act 7.11-7.14	2, 4, 5, 6, 8, 12, 14	18		-Practical test: test for starch in green leaf -Section quiz 4 -Workbook 7.4

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			-Understand the importance of photosynthesis -Understand the concept of food chain						
	8-9	7.5 Gaseous exchange in animals and plants	-Recognize respiration as the process during which the chemical energy in food is released in cells -Know the structure of the respiratory system and the breathing mechanism in humans -Point out the differences between gaseous exchange in animals and green plants -Appreciate the interdependence between plants and animals	7	-Lab Act 7.15-7.19	2, 4, 5, 6, 8, 12, 14	2		-Section quiz 5 -Workbook 7.5
	10	7.6 Air pollution and smoking *More about the effects of air pollutants on our	-Identify some common air pollutants, their sources and effects on health -Understand what the Air Quality Health Index is	4	-Lab Act 7.20	2, 4, 8, 12,	14, 18		-Workbook 7.6

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		health *Say “No” to smoking	-Understand the harmful effects of smoking and passive smoking on health						
	11	Revision	-Revise the concepts of Unit 7	1					-Unit exercise -Unit test
	11	8.1 Conditions necessary for current flow	-Be aware that chemical energy on a cell is changed to other forms of energy in a closed circuit -Be able to illustrate with experiments the conditions necessary for current flow	1	-Lab Act 8.1	2, 4, 5, 6, 8, 12, 14			-Workbook 8.1
	11	8.2 Electrical conductors and insulators	-Be aware that objects can be classified as conductors and insulators -Be able to design a simple circuit to test for insulators and conductors -Be familiar with the structures of simple switches	1	-Lab Act 8.2	2, 4, 8			-Section quiz 1 -Workbook 8.2
	12	8.3 Current , voltage and resistance	-Be able to measure current, resistance and voltage with ammeters,	4	-Lab act 8.5-8.9	2, 4, 8, 14			-Workbook 8.3

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			ohmmeter and voltmeters respectively -Be able to use the units: ampere, volt and ohm appropriately -Recognise the factors affecting the resistance of a wire -Recognise the function of resistors in a circuit -Understand how a rheostat works						
	13	8.4 Circuit symbols and diagrams	-Be able to use common circuit symbols in drawing circuit diagrams -Acquire some skills in wiring simple circuits	2	-Worksheet (drawing circuit diagrams) -Lab Act 8.10	2, 4			-Section quiz 2 -Workbook 8.4
	13	Revision	Revision	2					-Unit test (8.1-8.5)
	14-17	Christmas exam and holiday							
<b>Second Term (31/12/2017-18/7/2018, Weeks</b>	18-19	8.5 Series and parallel circuits	-Recognise and describe patterns of changes in currents and voltages in electric circuits	5	-Lab Act 8.11-8.12	2, 4, 5, 14			-Workbook 8.5

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18-46)			-Be familiar with the properties of series and parallel circuits						
	19	8.6 The heating effect of current and its potential hazards	-understand the heating effect of current as a kind of energy conversion -Understand the working principle of a fuse and its use in protecting electrical appliances -be able to choose fuses of suitable ratings to protect appliances -Know that the circuit breaker is another safety device	2	Lab Act 8.13-8.14	1, 2, 4, 8			-Workbook 8.6
	20	8.9 The magnetic effect of current	-understand the magnetic effect of current and its applications -recognise the factors affecting the magnetism of an electromagnet	2	-Expt: magnetism (demo) -Lab Act 8.18	2, 4, 8, 12			-Workbook 8.9 -Section quiz 4
	20-21	8.7 Household electricity	-Know the mains voltage in Hong Kong -Understand the wiring of	4	-Lab Act 8.15-8.17 -Classroom Act	2, 4, 8			-Workbook 8.7 -Section quiz 5

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			a 3-pin plug and the colour coding of wires -Be able to describe the advantages of a ring circuit -Be able to state the potential dangers and safety precautions in using electricity from the mains		8.3				
	21	8.8 Electrical power	-Understand electrical power and its relationship with current and voltage -Be able to use the units watt and kilowatt-hour appropriately -Be able to calculate the cost of electricity from an electricity bill	3	-Classroom Act 8.4 -Worksheet: calculate the cost of electricity	2, 4, 8	17		-Workbook 8.8
	22	Revision	-Revise the concepts of unit 8	2					-Unit exercise
	22	10.1 Acids and alkalis	-Recognize the hydronium ion and hydroxide ion in acids and alkalis -Recognize that many food and household	2	-Worksheet: acid and alkalis	2, 4, 8, 12			-Workbook 10.1

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			products contain acids and alkalis -Recognize some commonly used acids and alkalis in the laboratory -Be aware of the safety precautions when handling acids and alkalis and the related emergency treatment						
	23	10.2 Indicators for distinguishing acids and alkalis	-Know some natural indicators and be able to use them to distinguish acids -Be able to use litmus to distinguish acids and alkalis -Be able to use pH paper to find out the pH value of a substance	4	-Lab Act 10.1-10.4	2, 4, 5, 6, 8, 14			-Workbook 10.2 -Section quiz 1
	24-25	Lunar new year holiday							
	26	10.3 Corrosive nature of acids	-Recognize the corrosive nature of acids -Carry out experiments with dilute acids and	4	-Lab Act 10.5, 10.6	2, 4, 5, 8, 14			-Workbook 10.3 -Section quiz 2



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			metals -Carry out experiments with dilute acids and building material like marble, limestone and sandstone -Recognize the potential dangers in handling concentrated acids and alkalis						
	27	10.4 Acid rain	-Identify the cause and effects of acid rain -Recognize acid rain as a regional and global problem -Suggest ways to prevent the formation of acid rain	1	-Lab Act 10.7(demo)	1, 2, 4, 8			-Worksheet: Acid rain -Workbook 10.4
	27-28	10.5 Neutralization	-Manipulate some basic science process skills such as constructing table to record experimental results -Recognize that a salt and water are formed when an acid and an alkali	5	-Worksheet: Basic science process skills -Lab Act 10.8,10.9	2, 4, 5, 8, 14			-Practical test: Neutralization -Workbook 10.5 -Section quiz 3

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			neutralize each other -Recognize some use of neutralization in daily life						
	28	10.6 More uses of acids and alkalis in daily life	-Acquire some knowledge of the everyday uses of acids and alkalis	1	-Lab Act 10.10	2, 4, 8, 12	18		-Workbook 10.6
	28	Revision of Unit 10	-Revise the basic concepts of unit 10	1					-Unit exercise
	29	Uniform test							
	30-31	Easter Holiday							
	32	11.1 Importance of sensing the environment	-Understand the importance of sensing the environment -Be able to state the five senses, the sense organs involved and the stimuli they detected	2	-Classroom Act 11.1	2, 4, 8			-Workbook 11.1
	32-34	11.2 Slight	-Understand the structures and functions of main parts of our eyes -Understand the functions of the light-sensitive cells -Recognize the limitations	8	-Lab Act 11.1: Eye model (3D animation) -Lab Act 11.2, 11.3: Dissecting an ox eye (video)	1, 2, 4, 8			-Workbook 11.2 -Section quiz 1

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			of our eyes and know the methods for extending vision -Understanding the causes of some eye defects and their corrections and treatment		-Lab Act 11.4: Long sight, short sight and their correction (demo) -Classroom Act: 11.2-11.4				
	34-35	11.3 Hearing	-Understand how sound is produced and transmitted -Understand the structures and functions of main parts of our ears -Recognize the limitations of our ears -Be aware of the noise pollution problem and its harmful effects	6	-Lab Act 11.5-11.9,11.11 -Lab Act 11.10: Examining the model (3D animation) -Classroom Act 11.7	2, 4, 8, 12			-Workbook 11.3 -Section quiz 2
	36	11.4 Touch, smell and taste	-Acquire some knowledge about our senses of touch, smell and taste -Understand that different parts of our body are not equally sensitive to touch -Be aware that our skin is not reliable in detecting	4	-Lab Act 11.2-11.4	2, 4, 8			-Workbook 11.4 -Section quiz 3

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			hot and cold						
	37	11.5 The brain and our senses	-Recognize the role of brain as the control centre of our body activities -Understand the main parts of our brain and their functions -Understand the meaning of reaction time -Be aware that our senses are not always reliable	2	-Lab Act 11.5-11.6	2, 4, 8, 12			-Workbook 11.5 -Section quiz 4
	37	11.6 Effects of alcohol, drugs and solvents on our senses	-Recognize that alcohol, drugs and solvent can affect our senses -Understand how breathalyzers work -Be able to make informed decisions on the use and the abuse of drugs	2	-Lab Act 11.17	1, 2, 4, 8, 12	12		Workbook 11.6
	38	Revision of Unit 11	-Revise the concepts of unit 11	2			12		-Workbook 11.6 -Unit exercise -Unit test
	39	Pre-exam	-Preparation for the final	2			12		

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		revision	examination.						
	40-46	Final exam and post-exam activities							

\* The extended parts should be marked with asterisks. These parts should be more challenging and can be covered when the students can master the knowledge, skills and values covered in the conventional topics.

※ Check the appropriate box with a “√” if Basic Law Education can be promoted when covering a particular topic.

#### # Core Values of Wah Yan College, Kowloon

I. Love and care	1. Accept & feel positive about himself 2. Appreciation & Gratitude 3. Empathy & Compassion	4. Forgiveness & Reconciliation 5. Service 6. Family as a basic unit of society; marriage is the foundation of a family
II. Strive for excellence	7. Reflective 8. Commitment 9. Perseverance	10. Curiosity & willingness to learn 11. Value imagination and creativity
III. Respect and Justice	12. Life is valuable and respectable 13. Openness to good in all things 14. Respect for himself & others	15. Integrity 16. Faithfulness
IV. Responsibility	17. Freedom & Self-discipline 18. Care for the environment	19. Social Identities: citizen identity, national identity and global citizen identity
V. Faith	20. Experience of God 21. Explore & practise one's faith	22. Appreciate religious liturgies