# denotes for IP and SBGE only

<table>
<thead>
<tr>
<th>S/N</th>
<th>Term/ Week</th>
<th>Topics</th>
</tr>
</thead>
</table>
| 1   | 1/0-2      | **Introduce Innovation Challenge and Toys**  
(Non-examinable) Group work – Submission of toy in Term 1 Week 9  
**Chap 16 Transfer of Sound Energy Through Vibrations**  
Production of sound  
Propagation of sound  
Calculate speed of sound  
Factors affecting sound transfer  
Pitch and Loudness  
How our ear works  
Application of Sound  
Adverse effect of noise |
| 2   | 1/4-5      | **Graphs & Precision of Instruments**  
Units and Precision of Measuring Instruments – Metre rule, Protractor,  
Thermometer, Digital Stopwatch, Mass Balance, Measuring Cylinder,  
Voltmeter and Ammeter  
Demonstrate precision and accuracy in making measurements  
Types of Errors  
Calculated values and Significant Figures  
Presenting data and units in tables and graphs  
Best-Fit Line (with scale provided)  
Infer relationship between 2 variables  
Calculation of Gradient |
| 3   | 1/6-7      | **Chap 9 Ray Model of Light**  
Properties of Light  
#Electromagnetic spectrum  
Ray model  
Shadow formation  
Laws of Reflection  
Properties of image in a plane mirror  
Applications of reflection  
#How a telescope works |
| 4   | 1/7        | **Term 1 Common Test**  
Topics: Chap 16 Sound, Graphs and Precision  
Duration: 30 min  
Format: Section A MCQ (10 marks), Section B Structured Qn (20 marks) |
| 5   | 1/8-10     | **Chap 9 Ray Model of Light**  
Laws of Refraction  
#Calculate angles using \( \sin i / \sin r = \text{constant} \)  
#Refractive index \( = c/v \)  
Ray diagrams  
Dispersion of light  
Applications of refraction  
Colours  
Impact of light on society and environment |
| 6   | 1/9        | **Innovation Challenge and Toys**  
Submit Toys and participate in Innovation Challenge for ImaginaXium |
| 7   |            | **March Holidays** |
| Page | 2/1-2 | Practical Test (Counted for Term 3)  
Skills on making precise and accurate measurements and presentation of data in table and graph. |
|------|-------|--------------------------------------------------------------------------------|
| 9    | 2/1-4 | Chap 13 Electrical Systems  
- Importance of Electrical Energy  
- Electric current and electric charge  
- Open, Closed and Short Circuits  
- Circuit diagrams using circuit symbols  
- Series and Parallel Circuits – Advantages and Disadvantages  
- Describe and explain how electric current flows in series and parallel circuit in terms of electric charges and electrical energy  
- Electromotive Force  
- Use of ammeter and voltmeter  
- Troubleshoot electric circuits  
- Resistance and resistors (fixed and variable)  
- Calculation of resistance in simple and combined circuits  
- Effects of electric current and applications – chemical, heating and magnetic  
- Electric power (kWh) and energy consumption in electrical appliances  
- Electrical hazards  
- Safe use of electricity  
- 3-pin plug  
- Reduce electrical energy wastage  
- Alternative sources of energy for generating electrical energy |
| 10   | 2/5-10| Revision  
**Mid-Year Exams** (See Format of MYE on the last page)  
Post-Exam Activities |
| 11   | 3/1   | Atomic Structure  
- Review Atom and Sub-atomic particles  
- Review Periodic Table, Atomic Mass, Atomic Number  
- Electronic configuration of first 20 elements  
- Draw full electronic structure and electronic structure of first 20 elements  
- Explain arrangement of elements in Periodic Table  
- Recall chemical symbols of first 20 elements. |
| 12   | 3/2   | Periodic Table  
- Relationship between electronic configuration and position of element in Periodic Table  
- Chemical Properties of elements in same Group  
- State and explain trend for reactivity and atomic size for Groups I and VII  
- Applications of elements in Groups I, VII and 0 |
| 13   | 3/3-4 | Elements and Compounds (Chap 3 Exploring Diversity of Matter by its Chemical Composition) – Ionic Compounds  
- Define Ion  
- Define Ionic Bonding  
- Describe Ionic Bonds between NaCl and MgCl₂  
- Ionic compounds made up of giant lattice structure of ions held by electronic forces of attraction  
- Physical properties of ionic compounds (electrical conductivity, solubility in water and melting point)  
- Draw Dot-and-Cross Diagrams of Ionic Compounds  
- Memorize chemical formula of these polyatomic ions: ammonium NH₄⁺, hydroxide OH⁻, carbonate CO₃²⁻, nitrate NO₃⁻ and sulfate SO₄²⁻  
#Memorize additional chemical formula of these polyatomic ions: phosphate PO₄³⁻, sulfite SO₃²⁻, hydrogen carbonate or bicarbone HCO₃⁻, hydrogen sulfate or bisulfate HSO₄⁻ |
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<th>Week</th>
<th>Date</th>
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<tbody>
<tr>
<td>14</td>
<td>3/5</td>
<td><strong>Term 3 Common Test (Express only)</strong>&lt;br&gt;Topics: Atomic Structure, Periodic Table, Ionic Bonding&lt;br&gt;Duration: 1 hour&lt;br&gt;Format: Section A MCQ (20 marks), Section B Structured Qns (20 marks), Section C Free Response (10 marks)&lt;br&gt;NB: For Express, Term 3 marks consists of equal weightage of Practical Test and Common Test.</td>
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<tr>
<td>15</td>
<td>3/5-6</td>
<td><strong>Elements and Compounds (Chap 3 Exploring Diversity of Matter by its Chemical Composition) – Simple Covalent Compounds</strong>&lt;br&gt;Define covalent bonding&lt;br&gt;Arrangement of electrons in simple covalent molecules&lt;br&gt;Draw dot-and-cross diagrams of covalent compounds (single bond) – namely: hydrogen, oxygen, nitrogen, Group VII elements, carbon dioxide, ammonia and methane</td>
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<tr>
<td>16</td>
<td>3/6</td>
<td><strong># IP Coursework Submission</strong>&lt;br&gt;For IP, Term 3 marks consists of equal weightage of Practical Test and Coursework.</td>
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<tr>
<td>17</td>
<td>3/7</td>
<td><strong>Writing Chemical Formula</strong>&lt;br&gt;Deduce formulae and chemical names of other covalent compounds&lt;br&gt;Deduce formulae and chemical names of other ionic compounds (using given formulae of polyatomic ions and charge of transition metal ions)</td>
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<tr>
<td>18</td>
<td>3/8-10</td>
<td><strong>Chap 18 Chemical Changes</strong>&lt;br&gt;Identify chemical changes&lt;br&gt;Understand chemical reactions involve rearrangement of atoms, which are not created or destroyed&lt;br&gt;Conservation of Mass during chemical reactions&lt;br&gt;Classify reactions into mixing, thermal decomposition, combustion, photo decomposition&lt;br&gt;Different types of chemical reactions such as combustion, thermal decomposition, oxidation (e.g. cellular respiration) and neutralization&lt;br&gt;Cause of chemical changes – mixing, heating, exposure to light and passing electric current&lt;br&gt;Effect of acidic, alkaline and neutral solutions on indicators&lt;br&gt;Reactions between acids and alkalis, acids and metals, acids and carbonates&lt;br&gt;Strong and weak acid and base in aqueous state&lt;br&gt;Dilute and concentrated acid/base&lt;br&gt;Memorize chemical forumula of common Laboratory-used acids and bases: sulfuric acid $\text{H}_2\text{SO}_4$, hydrochloric acid $\text{HCl}$, nitric acid $\text{HNO}_3$, sodium hydroxide $\text{NaOH}$, potassium hydroxide $\text{KOH}$, magnesium hydroxide (milk of magnesia) $\text{Mg(OH)}_2$</td>
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<tr>
<td>19</td>
<td>4/1</td>
<td><strong>Chemical Changes, Chemical &amp; Word Equations</strong>&lt;br&gt;Balance simple chemical equations (given reactants and products)&lt;br&gt;Construct balanced equations with state symbols given</td>
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<tr>
<td>20</td>
<td>4/2</td>
<td><strong>Revision</strong></td>
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<td>21</td>
<td>4/3-4</td>
<td><strong>End-of-Year Examinations</strong></td>
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<td>22</td>
<td>4/4-6</td>
<td><strong>Post exam activities</strong></td>
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Format of MY Exam for Y2 Express Physical Science
Duration: 1 hour

Section A: MCQ (20m)
Section B: Structured Questions (20m)
Section C: Free Response (10m)

Total: 50 marks

Topics: as above, only Semester 1 topics (exclude Toys).

Format of EOY Exam for Y2 Express Physical Science
Duration: 1 hour 30 minutes

Section A: MCQ (30m)
Section B: Structured Questions (30m)
Section C: Free Response (20m)

Total: 80 marks

Topics: as above, 70% of paper will be Semester Two’s work while 30% will be Semester One’s work.