

## Chemistry (*Distant Learning*) Unit 7 Outline: Gases and Solutions

### Chapter 12: Gases

Must Do Underlined HW Questions

*Green Fonts - \*Asynchronous*

*Blue Fonts - \*\*Optional Video Lessons*

| Wk/Class            | Topics  | Suggested Reading  | ✓ | Assignments   | ✓ |
|---------------------|---|--|---|---|---|
| Mar 29 /<br>Day 1   | Properties of Gases, Pressure (kPa, atm, mmHg and torr), Barometer, Standard Atmospheric Pressure, Kinetic Molecular Theory of Gases Variables of a Gas ( $V$ , $P$ , $T$ , $n$ ), Boyle's Law ( $P$ & $V$ ), Temperature (K), Charles's Law ( $T$ & $V$ ), | 12.1 Characteristics of Gases (pg. 416 – 422)<br>12.2 The Gas Laws (pg. 423 – 432)<br><i>[12-1 &amp; 12-2A Video Lesson – 39:49]</i> |   | <a href="#">pg. 421 #1 to 3 (Practice);</a><br><a href="#">pg. 422 #1 to 10 (even), 11</a><br><br><a href="#">pg. 425 #1 to 4 (Practice);</a> |   |
| Mar 29 /<br>Day 2   | Gay-Lussac's Law ( $P$ & $T$ ), Avogadro's Law, Combined Gas Law ( $\frac{P_1V_1}{n_1T_1} = \frac{P_2V_2}{n_2T_2}$ )  | 12.2 The Gas Laws (pg. 423 – 432)<br><i>[12-2B Video Lesson – 40:49]</i>   |   | <a href="#">pg. 428 #1 to 4 (Practice);</a><br><a href="#">pg. 431 #1 to 3 (Practice);</a><br><a href="#">pg. 432 #11 &amp; 12</a>            |   |
| April 12 /<br>Day 1 | Ideal Gas, Ideal Gas Law ( $PV = nRT$ ), Ideal Gas Constant [ $R = 8.314$ (L • kPa)/(K • mol) = 0.0821 (L • atm)/(K • mol)], STP and SATP, Gas Stoichiometry  | 12.3 Molecular Composition of Gases (pg. 433 – 442)<br><i>[12-3A Video Lesson – 43:10]</i>   |   | <a href="#">pg. 435 #1 to 4 (Practice);</a><br><a href="#">pg. 442 #1 to 3 (Practice);</a>  |   |
| April 12 /<br>Day 2 | Dalton's Law of Partial Pressure, Graham's Law of Effusion, Diffusion, Departure from Ideal Gas Law, Real Gases   | 12.3 Molecular Composition of Gases (pg. 433 – 442)<br><i>[12-3B Video Lesson – 27:10]</i>   |   | <a href="#">pg. 438 #1 to 4 (Practice)</a><br><a href="#">pg. 442 #1 to 14</a>  |   |
| April 19 /<br>Day 2 | <b>Lab #7: Ideal Gas Law and Activity #5: What's the Matter with Your Gases?</b><br>(C Block: April 22, Thursday)<br>(F & G Blocks: April 23, Friday)   | <b>Lab #7 Handout</b><br><b>[Lab #7 Video – 34:14]</b><br><b>Activity #5 Handout</b><br><b>[Activity #5 Video – 23:31]</b>           |   | <b>Lab #7 Report &amp; Activity #5 Due:</b><br>(C Block: May 6, Thursday)<br>(F & G Blocks: May 7, Friday)                                    |   |
|                     | <b>Chapter 12 Take-Home Quiz</b><br>(C Block: April 22, Thursday)<br>(F & G Blocks: April 23, Friday)   |  |   | <b>Chapter 12 Take-Home Quiz Due:</b><br>(C Block: April 26, Monday)<br>(F & G Blocks: April 27, Tuesday)                                     |   |

### Chapter 13: Solutions

| Wk/Class            | Topics   | Suggested Reading  | ✓ | Assignments   | ✓ |
|---------------------|--|--|---|---|---|
| April 27 /<br>Day 1 | Solution, Suspension, Solvents and Solutes, Colloid, Methods of Separating Mixtures (Filtration, Distillation, Chromatography),  | 13.1 What is Solution? (pg. 454 – 459)<br><i>[13-1 Video Lesson – 12:29]</i>                     |   | <a href="#">pg. 459 #1 to 12 (odd)</a>  |   |
| April 27 /<br>Day 2 | Concentration, Parts Per Million (ppm), Molarity ( $C = \frac{n}{V}$ ), Preparing a Solution, Volumetric Flask, Solution Stoichiometry   | 13.2 Concentration and Molarity (pg. 460 – 467)<br><i>[13-2 Video Lesson – 39:09]</i>            |   | <a href="#">pg. 461 #1, 3, 5, 7 (Practice);</a><br><a href="#">pg. 465 #1, 3, 5, 7 (Practice);</a><br><a href="#">pg. 467 #1 to 3 (Practice);</a><br>(Optional) <a href="#">pg. 467 #3, 5 to 14</a> |   |
| May 3 /<br>Day 1    | Dilution ( $C_1V_1 = C_2V_2$ ), Solubility, "Like-Dissolves-Like", Miscible and Immiscible, Solubilities of Solid Compounds, Factors affecting Solubility, Dissociation and Hydration, Saturated, Unsaturated and Supersaturated Solutions, Dissolving Gas in Liquids, Factors affecting Gas Solubility, Henry's Law | 13.3 Solubility and the Dissolving Process (pg. 468 – 471)<br><i>[13-3 Video Lesson – 48:44]</i> |   | <a href="#">Worksheet: Solubility and Dilution</a>  |   |
| May 3 /<br>Day 2    | Conductivity, Electrolyte and Non-electrolyte, Weak and Strong Electrolytes, Colligative Properties (Freezing Point Depression and Boiling Point Elevation), Surfactant, Detergent, Soap, Emulsion & Emulsifying Agent, Hard Water and Water Softener  | 13.4 Physical Properties of Solution (pg. 478 – 486)<br><i>[13-4 Video Lesson – 38:11]</i>       |   | <a href="#">pg. 486 #1 to 12</a>  |   |
|                     | <b>Unit 7 Test</b><br>(C Block: May 13, Thursday)<br>(F & G Blocks: May 14, Friday)  | <b>Unit 7 Practice Test</b>  |   | (Optional) Chapter 13 Review:<br>pg. 488–491 #1, 5 to 8, 12, 13, 17,<br>18, 20 to 24, 27 to 34, 37 to 51<br>(odd), 52 to 54, 67 to 72   |   |