

**IMMACULATE CONCEPTION HIGH SCHOOL
PHYSICS SYLLABUS SEQUENCE 2023/2024**

GRADE:	11		
TERM:	1		
WEEK:	DATE	TOPICS	OBJECTIVES
1	Sept. 11 - 15	Revision	<p style="text-align: center;">Review the grade 10 End of Year Exam Paper</p> <p style="text-align: center;">Meet with IP students</p>
2	Sept. 18 - 22	Thermal Physics	<p>Conduct an experiment to determine c for metals and liquids using:</p> <ul style="list-style-type: none"> - Methods of Mixtures <p>Discuss Experiment:</p> <ul style="list-style-type: none"> - Determine the specific latent heat of vaporization l_v, and fusion, l_f of water <p>Review Thermal Physics group assignments.</p>
3	Sept. 25 - 29	Thermal Physics	<p><u>Gas Laws</u></p> <ol style="list-style-type: none"> 1. Use the relationship between Kelvin and Celsius scale. $T/K = \theta/^\circ\text{C} + 273$; 2. Relate pressure/volume against temperature graphs to the establishment of the Kelvin temperature scale 3. Explain gas pressure in terms of molecular motion 4. Apply the gas laws: Boyle's Law; Charles' Law; Pressure Law; General Gas Law;

4	Oct. 2 - 6	Physics of the atom	<p style="text-align: center;">Course Work # 1 - Thermal Physics</p> <p><u>Models of the Atom</u></p> <ul style="list-style-type: none"> describe the work done in establishing the modern view of the atom; describe the Geiger-Marsden experiment which established the nuclear structure of the atom. <p><u>Particles in the Atom</u></p> <ul style="list-style-type: none"> sketch the structure of simple atoms; compare the mass and charge of the electron with the mass and charge of the proton; explain why an atom is normally neutral and stable; recall and use the relationship $A = Z + N$; explain what is meant by the term "isotope"; relate the shell model of the atom to the periodic table.
5	Oct. 9 - 13 (3 Teaching days) Mid- term : Oct 12 - 16	Radioactivity	<p><u>Radioisotopes</u></p> <ul style="list-style-type: none"> discuss the useful applications of radioisotopes; <p><u>Radioactive Emissions</u></p> <ul style="list-style-type: none"> describe Marie Curie's work in the field of radioactivity; state the nature of the three types of emissions from radioactive substances; describe experiments to compare the ranges of α, β and γ emission interpret nuclear reactions in the standard form; describe the appearance of the tracks of radioactive emissions in a cloud chamber; predict the effects of magnetic and electric fields on the motion of α, β particles and γ rays;
6	Oct. 16 - 20	Oct. 16 is Heroes Day	Same as Week 5

7	Oct. 23 - 27		FIRST SIX WEEKS TEST
8	Oct. 30 - Nov. 3	Radioactivity	<p><u>Half-life</u></p> <ul style="list-style-type: none"> ● use graphs of random decay to show that such processes have constant half-lives; ● solve simple problems involving half-life; ● recall that the decay process is independent of the conditions external to the nucleus; <p><u>Nuclear Energy</u></p> <ul style="list-style-type: none"> ● relate the release of energy in a nuclear reaction to a change in mass; ● cite arguments for and against the utilization of nuclear energy. ● Application of Einstein's equation: $E = mc^2$.
9	Nov. 6 - 10	Magnetism	<p style="text-align: center;">LAB: Half-Life (Coins)</p> <p><u>Permanent Magnets</u></p> <ul style="list-style-type: none"> ● 6.1 differentiate between magnetic and non-magnetic materials; ● 6.2 explain how a magnet can attract an object; ● 6.3 distinguish between materials used to make "permanent" and "temporary" magnets; ● 6.4 identify the poles of a magnetic dipole; <p><u>Magnetic Forces</u></p> <ul style="list-style-type: none"> ● 6.5 investigate the forces between magnetic poles; ● 6.6 define a magnetic field; ● 6.7 map magnetic fields.

		<p>Circuits and Components</p>	<ul style="list-style-type: none">● state the unit of electrical current;● apply the relationship $Q = I t$ <p><u>Power, P and Energy, E</u></p> <ul style="list-style-type: none">● cite examples of the conversion of electrical energy to other forms and vice versa;● apply the relationship $V = E/Q$;● apply the relationship $P = IV$;● discuss the importance of conserving electrical energy and the means of doing so. <p><u>Circuit Diagrams</u></p> <ul style="list-style-type: none">● use symbols to construct circuit diagrams;● differentiate between series and parallel circuits
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			potential difference;
12	Nov. 27 - Dec. 1	Electronics	<p><u>Alternating Current</u></p> <ul style="list-style-type: none"> ● differentiate between direct and alternating currents; ● analyze current-time or voltage-time graphs. ● deduce the period and frequency of ac. or voltages <p><u>Rectification</u></p> <ul style="list-style-type: none"> ● describe how a semi-conductor diode can be used in half wave rectification; ● differentiate between direct current from batteries and rectified alternating current by a consideration of the V - t graphs for both cases; <p>LAB: I-V relationships</p>
13	Dec. 4 - 8		SECOND SIX WEEKS TEST
14	Dec. 11 - 15	Electromagnetism	<p>LAB: Series and Parallel Circuits</p> <p><u>Electricity in the Home</u></p> <ul style="list-style-type: none"> ● discuss the reasons for using parallel connections of domestic appliances; ● explain the purpose of a fuse or circuit breaker and the earth wire; ● select a fuse or circuit breaker of suitable current rating for a given appliance; ● state the adverse effects of connecting electrical appliances to incorrect or

			<p>fluctuating voltage supplies.</p> <p><u>Logic Gates</u></p> <ul style="list-style-type: none"> ● recall the symbols for AND, OR, NOT, NAND, NOR logic gates; ● state the function of each gate with the aid of truth tables; ● analyze circuits involving the combinations of not more than three logic gates; ● discuss the impact of electronic and technological advances on society.
15	<p>Dec. 18 - 19</p> <p>Dec. 19 Sports' Day</p>		<p style="text-align: center;">REVISION</p> <p style="text-align: center;">END OF TERM - Dec. 19</p>