

**IMMACULATE CONCEPTION HIGH SCHOOL
PHYSICS SYLLABUS SEQUENCE 2024/2025**

GRADE:	11		
TERM:	1		
WEEK:	DATE	TOPICS	OBJECTIVES
1	Sept. 2 - 6	Revision	<p>Review the grade 10 End of Year Exam Paper</p> <p align="center">Meet with IP students</p>
2	Sept. 9 – 13	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. 16 – 20	Thermal Physics	<p><u>Gas Laws</u></p> <ol style="list-style-type: none"> 1. Use the relationship between Kelvin and Celsius scale. $T/K = \theta/^\circ C + 273$; 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	Sept. 23 - 27	Physics of the atom	<p 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;

			<ul style="list-style-type: none"> 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	Sept. 30 - Oct. 4	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. 7 - 11		Same as Week 5
7	Oct. 14 - 18		<p>LAB: Half-Life (Coins)</p> <p>MID-TERM Oct. 18 - 20</p>
8	Oct. 21 - 25		FIRST SIX WEEKS TEST
9	Oct. 28 - Nov. 1	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: $E = mc^2$.
10	Nov. 4 - 8	Magnetism	<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>NOTE: Magnetism was taught in Grade 9 so treat it as a revision topic.</p>
11	Nov. 11 - 15	Electrostatics Current Electricity	<p><u>Electric Charge, Q</u></p> <ul style="list-style-type: none"> explain the charging of objects; describe the forces that electric charges exert on each other; explain charging by induction; describe one hazard and one useful application of static charge <p><u>Electric Field</u></p> <ul style="list-style-type: none"> define an electric field; Draw the electric fields around and between point charges, and between charged parallel plates; distinguish between conductors and insulators; state that an electric current in a metal consists of a flow of electrons;

		<p>Circuits and Components</p>	<ul style="list-style-type: none">• differentiate between electron flow and conventional current;• 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
--	--	---------------------------------------	---

14	Dec. 2 - 6		SECOND SIX WEEKS TEST
15	Dec. 9 - 13	Electromagnetism	<p data-bbox="894 306 1300 338">LAB: Series and Parallel Circuits</p> <p data-bbox="760 384 1062 415"><u>Electricity in the Home</u></p> <ul data-bbox="808 422 1390 764" 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 fluctuating voltage supplies. <p data-bbox="760 810 911 842"><u>Logic Gates</u></p> <ul data-bbox="808 848 1450 1150" 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.
16	Dec. 16 - 17		<p data-bbox="1032 1199 1159 1230">REVISION</p> <p data-bbox="943 1272 1252 1304">END OF TERM – Dec. 19</p>