IMMACULATE CONCEPTION HIGH SCHOOL				
PHYSICS SYLLABUS SEQUENCE 2023/2024				
GRADE:	11			
TERM:	1			
WEEK:	DATE	TOPICS	OBJECTIVES	
1	Sept.	Revision	Review the grade 10 End of Year Exam Paper	
	11 - 15		Meet with IP students	
2	Sept. 18 - 22	Thermal Physics	 Conduct an experiment to determine <i>c</i> for metals and liquids using: Methods of Mixtures Discuss Experiment: Determine the specific latent heat of vaporization <i>l</i>_v, and fusion, <i>l</i>_f of water Review Thermal Physics group assignments. 	
3	Sept. 25 - 29	Thermal Physics	 <u>Gas Laws</u> 1. Use the relationship between Kelvin and Celsius scale. T/K = θ/°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	 <u>Course Work # 1 - Thermal Physics</u> <u>Models of the Atom</u> 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. <u>Particles in the Atom</u> 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	 <u>Radioisotopes</u> discuss the useful applications of radioisotopes; <u>Radioactive Emissions</u> 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 ∝, 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 ∝, 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.	Radioactivity	 <u>Half-life</u> 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;
	30 - Nov. 3		Nuclear Energy
			 relate the release of energy in a nuclear reaction to a change in mass; cite arguments for and against the utilization of nuclear energy.
			 cite arguments for and against the utilization of nuclear energy. Application of Einstein's equation: E = mc².
9	Nov.		LAB: Half-Life (Coins)
	6 - 10	Magnetism	Permanent Magnets
		magnetism	 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;
			Magnetic Forces
			 6.5 investigate the forces between magnetic poles;
			● 6.6 define a magnetic field;
			● 6.7 map magnetic fields.

			NOTE: Magnetism was taught in Grade 9 so treat it as a revision topic.
10	Nov. 13 - 17	Electrostatics	 Electric Charge, Q 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 Electric Field 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; differentiate between electron flow and conventional current;

		 state the unit of electrical current; apply the relationship Q = 1 t
		 apply the relationship Q = I t <u>Power, P and Energy, E</u>
		 cite examples of the conversion of electrical energy to
		other forms and vice versa;
		• apply the relationship $V = E/Q$;
	Circuits and Components	• apply the relationship $P = IV$;
		 discuss the importance of conserving electrical energy and the means of doing so.
		<u>Circuit Diagrams</u>
		 use symbols to construct circuit diagrams;
		 differentiate between series and parallel circuits

11	Nov.	Circuits and	Cells
	20 - 24	Components	 explain the functions of the various parts of a zinc-carbon cell;
			 distinguish between primary and secondary cells;
			 draw a circuit diagram to show how a secondary cell can be recharged;
			<u>Resistance, R</u>
		Current Electricity	 explain the concept of resistance;
			State Ohm's Law
			apply the relationship R= V/I
			 explain why it is necessary for an ammeter to have a very
			low resistance;
			explain why it is necessary for a voltmeter to have a very
			high resistance;
			 solve problems involving series and parallel resistance;
			<u>I - V Relationships</u>
			 solve problems involving series, parallel and series-parallel
			circuits;
			 investigate the relationship between current and

			potential difference;
12	Nov. 27 - Dec. 1	Electronics	 <u>Alternating Current</u> differentiate between direct and alternating currents; analyze current-time or voltage-time graphs. deduce the period and frequency of ac. or voltages
			Rectification
			 describe how a semi-conductor dioxide 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;
			LAB: I-V relationships
13	Dec. 4 - 8		SECOND SIX WEEKS TEST
14	Dec.		LAB: Series and Parallel Circuits
		Electromagne	Electricity in the Home
		tism	 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.
		Logic Gates
		 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.
	Dec.	
	18 - 19	REVISION
15	Dec. 19	
	Sports'	END OF TERM – Dec. 19
	-	
	Day	