EDUC 144: Evaluating Learning Outcomes
Quarter Assessment Plan

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Grade Level & Subject: Grade 12 General Physics 2 Quarter: 3rd Quarter Date: 22/03/2022

Week No.	Topic	Learning Competency *At the end of the third quarter, the Grade 12 students must be able to…*	Assessment to be Given (with short description)
1	**Electric Charge, Coulomb's Law, Electric Fields, and Electric Flux**	• Describe using a diagram charging by rubbing and charging by induction • Explain the role of electron transfer in electrostatic charging by rubbing • Describe experiments to show electrostatic charging by induction	**Opening WaterBending Activity # 1(5 points):** The students need to prepare a set-up that will show the concept of static electricity using 3 Styrofoam cups and a toothpick. This experiment will also require water and someone with dry and clean hair. The students will be given an activity guide and after following it, the students will answer five questions about the experiment they did.
		• Calculate the net electric force on a point charge exerted by a system of point charges • Describe an electric field as a region in which an electric charge experiences a force • Calculate the electric field due to a system of point charges using Coulomb's law and the superposition principle • Calculate electric flux • Use Gauss's law to infer electric field due to uniformly distributed charges on long wires, spheres, and large plates • Solve problems involving electric charges, dipoles, forces, fields, and flux in contexts such as, but not	**EXERCISE # 1 (20 points/10 items)** : Guided problem solving exercises on Electric Charge, Electric Forces, Electric Field and Electric Flux **QUIZ # 1 (30 points)** : Multiple Choices, True or False, and Problem Solving on Electric Charge, Electric Forces, Electric Fields and Electric Flux ***Reflective Journal # 1 (10 points)**: Conduct simulations on electrostatics, electric fields, and Gauss's law using online sources. From this, write a ten-sentence reflection. Write this in your reflection journal. Refer to any sites below:

		limited to, systems of point charges, electrical breakdown of air, charged pendulums, electrostatic ink-jet printers	• https://phet.colorado.edu/en/simulation/charges-and-fields • https://www.falstad.com/emstatic/ • http://web.mit.edu/viz/soft/visualizations/DLIC/doc/simulations/experiments/electrostatics/package-summary.html • https://javalab.org/en/category/electricity_en/static_electricity_en/
2	**Electric Potential**	• Relate the electric potential with work, potential energy, and electric field • Determine the electric potential function at any point due to highly symmetric continuous- charge distributions	***Reflective Journal # 2 (10 points)** Conduct simulations on relating electric potential and electric fields using online sources. From this, write a 10-sentence reflection from the activity you have done. Refer to any sites below: • https://www.edumedia-sciences.com/en/node/81-electric-potential • https://ophysics.com/em4.html
		• Infer the direction and strength of electric field vector, nature of the electric field sources, and electrostatic potential surfaces given the equipotential lines • Calculate the electric field in the region given a mathematical function describing its potential in a region of space • Solve problems involving electric potential energy and electric potentials in contexts such as, but not limited to, electron guns in CRT TV picture tubes and Van de Graaff generators	**EXERCISE # 2 (20 points/10 items):** Guided problem solving exercises on Electric Potential **QUIZ # 2 (30 points)** : Multiple Choices, True or False, and Problem Solving on Electric Potential

3	**Capacitance and Dielectrics**	• Deduce the effects of simple capacitors (e.g., parallel-plate, spherical, cylindrical) on the capacitance, charge, and potential difference when the size, potential difference, or charge is changed • Describe the effects of inserting dielectric materials on the capacitance, charge, and electric field of a capacitor	**Make Your Own Capacitor Activity # 2 (30 points) :** The class will be grouped (ideally) into six depending on the class size. Then as a group you will create your own capacitor and a video explaining how your capacitor works. Materials: aluminum foil, paper, scissors, 2 AA batteries, 2 office fasteners, 2 paper clips, tape, and a multimeter Check this site for step-by-step procedures: https://sciencewithkids.com/Experiments/Energy-Electricity-Experiments/how-to-make-a-capacitor.html
		• Calculate the equivalent capacitance of a network of capacitors connected in series/parallel • Determine the total charge, the charge on, and the potential difference across each capacitor in the network given the capacitors connected in series/parallel • Determine the potential energy stored inside the capacitor given the geometry and the potential difference across the capacitor • Solve problems involving capacitors and dielectrics in contexts such as, but not limited to, charged plates, batteries, and camera flashlamps.	**EXERCISE # 3 (20 points/10 items):** Guided problem solving exercises on Capacitance and Dielectrics **QUIZ # 3 (30 points) :** Multiple Choices, True or False, and Problem Solving on Capacitance and Dielectrics ***Reflective Journal # 3 (10 points)** Conduct simulations on capacitors and dielectric. From this, write a 10-sentence reflection from the activity you have done. Refer to the site below: https://www.physics-prep.com/index.php/virtual-activity-capacitor-lab-2
4	**Current, Resistance, and Electromotive force**	• Distinguish between conventional current and electron flow • Describe the effect of temperature increase on the resistance of a metallic conductor • Describe the ability of a material to conduct current in terms of resistivity and conductivity	**OPENING QUALITATIVE ACTIVITY # 3 (6 points/3 items) :** Answer the three qualitative questions about current, resistance and EMF. Describe and distinguish the points needed in each given scenario.

		• Apply the relationship charge = current x time to new situations or to solve related problems • Apply the relationship of the proportionality between resistance and the length and cross sectional area of a wire to solve problems • Differentiate ohmic and non-ohmic materials in terms of their I-V curves • Differentiate emf of a source and potential difference (PD) across a circuit • Given an emf source connected to a resistor, determine the power supplied or dissipated by each element in a circuit • Solve problems involving current, resistivity, resistance, and Ohm's law in contexts such as, but not limited to, batteries and bulbs, household wiring, and selection of fuses.	**EXERCISE # 4 (20 points/10 items):** Guided problem solving exercises on current, resistance and EMF **QUIZ # 4 (30 points) :** Multiple Choices, True or False, and Problem Solving on current, resistance and EMF ***Reflective Journal # 4 (10 points)** Conduct simulations on current, resistance and EMF. From this, write a 10-sentence reflection from the activity you have done. Include your drawing of different circuit diagrams (Power Sources, Switches, Lamps, Resistors, Fuses, Ammeters and Voltmeters). Refer to the site below: https://phet.colorado.edu/en/simulations/ohms-law
	Devices for Measuring Currents and Voltages	• Operate devices for measuring currents and voltages • Draw circuit diagrams with power sources (cell or battery), switches, lamps, resistors (fixed and variable) fuses, ammeters and voltmeters	
5	**Direct-Current Circuits**	• Evaluate the equivalent resistance, current, and voltage in a given network of resistors connected in series and/or parallel	**CONCEPT MAPPING ACTIVITY # 4 (10 points) :** Create a concept map of your prior knowledge about equivalent resistance, current, and voltage in a given network of resistors connected in parallel and/or series.

		• Calculate the current and voltage through and across circuit elements using Kirchhoff's loop and junction rules (at most 2 loops only) • Solve problems involving the calculation of currents and potential difference in circuits consisting of batteries, resistors, and capacitors.	**EXERCISE # 5 (20 points/10 items):** Guided problem solving exercises on direct-current circuits **Quiz # 5: GROUP QUIZ CONTEST (30 points):** The class will be divided into (ideally) five groups, quiz contest type with the use of cardboard and chalk (if online, using Kahoots, Meet or Zoom Presentation). Types of question revolve around calculations, descriptions and evaluation of direct-current circuits. ***Reflective Journal # 5 (10 points)** Conduct simulations on direct-current circuits. From this, write a 10-sentence reflection from the activity you have done. Refer to the site below: https://phet.colorado.edu/en/simulations/circuit-construction-kit-dc
6	**Magnetic Fields and Magnetic Forces**	• Differentiate electric interactions from magnetic interactions • Evaluate the total magnetic flux through an open surface • Describe the motion of a charged particle in a magnetic field in terms of its speed, acceleration, cyclotron radius, cyclotron frequency, and kinetic energy • Evaluate the magnetic force on an arbitrary wire segment placed in a uniform magnetic field	**EXERCISE # 6 (20 points/10 items):** Guided problem solving exercises on Magnetic Fields and Magnetic Forces **CREATE YOUR OWN ELECTRIC MOTOR ACTIVITY # 5 (30 points):** Your class will be grouped accordingly. Using a battery and copper wires, build your own electric motor. Take a video of the group while doing the project and explain all the concepts related to electric motors to your created video. Follow this link for procedure: https://www.education.com/science-fair/article/no-frills-motor/

			Quiz # 6 (30 points): Multiple Choices, True or False, and Problem Solving on Magnetic Fields and Magnetic Forces ***Reflective Journal # 6 (10 points)** From the electric motor you have done with your group, write a 10-sentence reflection.
7	**Sources of Magnetic Fields (Biot-Savart and Ampere's Law)**	• Evaluate the magnetic field vector at a given point in space due to a moving point charge, an infinitesimal current element, or a straight current-carrying conductor • Calculate the magnetic field due to one or more straight wire conductors using the superposition principle • Calculate the force per unit length on a current carrying wire due to the magnetic field produced by other current-carrying wires • Solve problems involving magnetic fields, forces due to magnetic fields and the motion of charges and current-carrying wires in contexts such as, but not limited to, determining the strength of Earth's magnetic field, mass spectrometers, and solenoids.	**OPENING ACTIVITY # 6 ON BIOMAGNETIC MONITORING (10 points):** Create a map showing the location of tree species in your neighborhood or town then answer the question that will be posted. **EXERCISE # 7** (20 points/10 items): Guided problem solving exercises on Sources of Magnetic Fields **Quiz # 7 (30 points):** Multiple Choices, True or False, and Problem Solving on Sources of Magnetic Fields ***Reflective Journal # 7 (10 points)** Conduct simulations on Sources of Magnetic Fields. From this, write a 10-sentence reflection from the activity you have done. Refer to the site below: https://ocw.mit.edu/high-school/physics/exam-prep/magnetic-fields/biot-savarts-law-amperes-law/

8			**Major Performance Task (100 points):** ***My General Physics 2 E-Portfolio*** Create a compilation of ALL your outputs (e.g., reflections, pictures of actual experiments, exercises with correct solution, reflective journals, quizzes with correct solution) in this course using an application of your choice (Google Site, Wix, Powerpoint Presentation, Word etc.) to support all types of learners. It should contain a highly organized assemblage of prints, pictures, diagrams, artwork, and other materials that will all contribute to show how much you have achieved the learning outcomes of General Physics 2. This can also serve as your reviewer for LONG QUIZ and QUARTER EXAM. **LONG QUIZ (55 points):** This Long Quiz will cover Weeks 1-7. Test types include Identification, Multiple Choice, True or False, Problem Solving and Essay.
9			**QUARTER EXAM (70 points)** Coverage of the exam will be the topics tackled in Week 1 to 7 of the 3rd quarter. Quarter exam is worth 70 points. Exam types are identification, multiple choice, true or false, problem solving, and essay.

Notes for this quarter:

***Reflective Journal**

Reflective journals can be in any form (paragraph, drawing, or K-W-F chart to support different learning styles. This will be treated as a weekly assignment and MAY also serve as exit tickets of the week/topic. This must be submitted on the last day of the week/topic.