Lesson Plan - SPH3U
Unit – Electricity and Magnetism
Topic – Faraday’s Discovery
Day # 13

Curriculum Expectation(s) and Learning Goal(s) for the Lesson

a) Expectations: (List 1-3 specific expectations from the Ontario Curriculum. Be realistic about how much you can accomplish in one lesson.)

- investigate electromagnetic induction, and, using Lenz’s law, the law of conservation of energy, and the right-hand rule, explain and illustrate the direction of the electric current induced by a changing magnetic field
- describe the production and interaction of magnetic fields, using diagrams and the principles of electromagnetism (e.g., Oersted’s principle, the motor principle, Faraday’s law, Lenz’s law)

b) Learning Goal(s): (In your own words, what do you want the students to have learned by the end of the lesson? How will you know what they have learned the information?)

Students will:
- Understand the relevance of Faraday’s discoveries, and use them to determine what sort of situations result in an induced electric field.
- Discuss the relevance of Faraday’s discovery in terms of modern day applications

Learning Environment and Materials (Describe the set up of the classroom, safety considerations, individual and/or group work considerations, facilitating smooth and safe transitions)

Desks are set up in columns and in each column has 2 desks side by side. At the front there is a projector with white board, SMART board on the side of the class. Lab desks surround the columns of desks. J.B. is visually impaired and is seated closer to the front and there is a seating plan to enforce this and others that do not focus well with specific individuals. The seating plan is mostly alphabetical.

Materials: Conducting wire, conducting coil, ammeter, horseshoe magnet, bar magnet

Overview of the Lesson (Write the information that you will provide to the students as the intro to the lesson. This may be written on chart paper, white/blackboard, Smart board. This information will inform the students/EAs about what to expect during the lesson.)

Intro:
- Take up homework questions from previous day (student led)
- Historical Context (Oersted was 1819, and Faraday was 1831)

Body:
- Lecture/discussion style
  - Moving Wire through jaws of horseshow magnet (demonstrate with student assistance)
  - Moving bar magnet into and out of wire coil (demonstrate with student assistance)
  - The Law of Electromagnetic Induction
  - Induced Current (Faraday’s Iron Ring)
  - Factors effecting electromagnetic induction

Consolidation:
- Practice Problems and Examples done as a class
- Discussion - Applications of electric current induction (induction cooking, metal detectors, induction chargers, generators, transformers)
- Homework questions (could possibly be completed in remaining class time)

Assessment/Evaluation:
- Time will be allotted throughout lecture for students to ask questions
- Issue will be addresses as homework is attempted
- Homework will be formally taken up as a class next day