## Lesson Plan - SPH3U

### Unit – Electricity and Magnetism

#### Topic – Magnetic Fields

### Day # 8

#### 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.)

- Analyze the social and economic impact of technologies related to electromagnetism (e.g., particle accelerators, mass spectrometers, magnetic levitation [maglev] trains, magnetic resonance imaging [MRI], electromagnetic pulses after nuclear explosions)
- Conduct an inquiry to identify the characteristics and properties of magnetic fields (e.g., using magnetic compasses, iron filings, and electric and magnetic field sensors)

**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:
- Recognize the social impact of magnets in scientific technologies
- Demonstrate an understanding of magnetic fields and be able to show their magnetic field lines

#### 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: Bar magnet, acetate sheet, iron filings, compass

#### 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:**
- Iron Filings activity

**Body:**
- Lecture/discussion style
  - Magnetic field, magnetic field lines
- Applications
  - Magnetic Trains, MRI, hard drives, electric motors (refrigerators), electric bell, the northern lights, spiny lobster

**Consolidation:**
- Sketching magnetic field lines examples
- 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