**9.4**

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| **Transition year**  **2010-2011** |
| **Electromagnetism** |
| **Teacher:** Ms. Gallagher |
| **Time** **allocation**: (2 periods per week, each module is approximately eight weeks in duration) |
| **Aims:**   * To encourage students in having an ongoing interest in science. * To enable students to make an informed decision on taking physics as a leaving certificate subject. * To develop skills such as problem solving, identifying variables, reporting scientific outcomes and group working. |
| **Objectives:**   * To introduce basic ideas of magnetism. * To show the connection between magnetism and electricity. * To demonstrate practical ideas of these. |
| **Content:**   * Magnetic materials. * Use magnetic materials such as maglev trains, geomags. * Properties of magnetic materials. * Earth’s magnetic field(DVD) * Students’ presentations of work on earth’s magnetic field. * Demonstration of magnetic field around an electric conductor and right hand rule. * Group work on constructing electric motors. * Introduce ideas on electromagnetic induction. * Demonstration of transformers. * Assessment. |
| **Specific Teaching and learning methodologies:**   * Group work, student presentations, teacher demonstrations, DVD |
| **Interdisciplinary Links:**   * Links to other science subjects and history of relevant discoveries. |
| **Resources:**   * Lab resources, science library, DVD, computer, u tube, websites |
| **Modes and techniques of assessments:**   * Evaluation day by day of practical work. * Final assessment of module. * Summer Exam |
| **Evaluation:**   * Discussion with colleagues and head of science |

**Scheme of Work**

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|  | **Thurs** (single) | **Saturday** (single) |
| Week 1 | Magnetic materials  **Expt.** Sorting out materials using magnets.  Discussion on ferromagnetic materials.  Uses of magnets: google maglev trains show short video  h/w:3 uses of magnets | Discussion on h/w  How to make and destroy magnets.  Mention soft and hard magnetic materials.  Ask for uses of each.  Properties of magnets.  **Expt**: geomag |
| Week 2 | Magnetic field  **Expt:** Plotting magnetic field of bar magnets using iron filings. | DVD earth’s magnetic field.  h/w presentation on earth’s magnetic field. |
| Week 3 | Student presentation on earth’s magnetic field. | Demo: magnetic field around straight conductor.  Right hand rule.  Demo: electrical conductor in a magnetic field.  Fleming’s left hand rule. |
| Week 4 | **Expt:** Motor construction | Alternator: how electricity is produced. |
| Week 5 | Transmission of electricity  P=I2R  Why high voltages? | Transformers  DEMO: transformers. |
| Week 6 | Test | Optical instruments, Eye  **Expt**: round bottom flask  Diagram of eye  **Expt:** find blind spot  Google visual effects. |
| Week 7 | DVD eye dissection, Sight problems. | Telescopes, **Expt**: telescope use |
| Week 8 | DVD Hubble space telescope. | Solar system, power point. |