**9.4**

|  |
| --- |
| **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**

|  |  |  |
| --- | --- | --- |
|  | **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 videoh/w:3 uses of magnets | Discussion on h/wHow 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=I2RWhy high voltages? | TransformersDEMO: transformers. |
| Week 6 | Test | Optical instruments, Eye **Expt**: round bottom flask Diagram of eye**Expt:** find blind spotGoogle visual effects. |
| Week 7 | DVD eye dissection, Sight problems. | Telescopes, **Expt**: telescope use |
| Week 8 | DVD Hubble space telescope. | Solar system, power point. |