# Course Outline

**Department: Foreign Languages** (Bilingual) **Name of Subject:** Physics in English **Code:** 32283

**Teacher's Name:** Ms. Ritchelle S. Lamayo

**Level :**

☐ Primary …/….. ☑ Secondary ….…. **1st Semester / 2014**

**Subject :**

☐ Main Subject ☑ Optional Subject ☐ Development Activities for Students ☐ Others

## 1) Course Description ( 1st Semester )

This course for Secondary 5 students will provide a systematic introduction to the study of PHYSICS. It will allow the students to have a conceptual understanding of Physics through problem solving, laboratory, and discussion methods. The course is divided into four units namely: MOTION, FIELDS, WAVES, and NUCLEAR PHYSICS. However, for the first semester, only UNIT 1: MOTION and FIELDS will be covered.

## 2) Learning Objectives ( 1st Semester )

| Indicators of Semester | In accordance with government curriculum |
|---|---|
| 1. infer the general relationships among position, velocity and acceleration; | |
| 2. calculate problems involving one dimensional motion with constant acceleration; | |

| | |
|---|---|
| 3. calculate problems involving free falling bodies, projectile motion, circular motion and simple harmonic motion; | |
| 4. describe and calculate the magnitude and direction of an electric field produced by a single point charge or by two or more point charges; | |
| 5. differentiate the induced electromagnetic field by Faraday, Lenz, and Fleming's right-hand rule; and | |
| 6. calculate the magnitude and direction of the induced electromagnetic field and current in a loop of wire or a conducting bar;. | |
| | |

3) Contents of subjects

1st Semester

| Time Duration | Subject Contents |
|---|---|
| Beginning of the session – Mid-term | Unit 1 MOTION<br>- 1.1 Position<br>- 1.2 Displacement and Distance<br>- 1.3 Speed, Velocity, and Acceleration<br>- 1.4 Graphical Analysis of Motion<br>- 1.5 Equations of Motions<br>- 1.6 Ticker Timer<br>- 1.7 Acceleration of free fall<br>- 1.8 Projectile Motion<br>- 1.9 Moving in Circles<br>- 1.10 Simple Harmonic Motion (SHM) |
| Post – Midterm – Final | Unit 2 FIELDS<br>- 2.1 Laws of Magnetism<br>- 2.2 Magnetic Properties of Matter<br>- 2.3 Magnetic Fields<br>- 2.4 Uses of Temporary Magnets and Permanent Magnets<br>- 2.5 Electric charge<br>- 2.6 Electric effect of current<br>- 2.7 Electromagnets<br>- 2.8 Fields, current and forces<br>- 2.9 Electromagnetic induction<br>- 2.10 Electron beams |

4) Evaluation

Average marks for evaluation

Authentic Assessment: Written / Practical Exam = 70 : 30

Evaluation of Learning Objectives

| Semester | Learning Objectives (Items) |
|---|---|
| 1 | Items 1-6 |

5) Details of Evaluation

1st Semester/2014

Pre-test marks: 35 Marks (Authentic Assessment)

| Learning Objectives (Items) | Criteria Followed for Assessment | Maximum marks |
|---|---|---|
| 1 | - Graphical Analysis ,Problem Solving, Activity | 5 |
| 2 | - Problem Solving, Activity | 15 |
| 3 | - Research, Problem Solving, Group Activity, Oral Presentation | 15 |

Mid-term marks: 15 Marks (Written/Practical Exam)

| Learning Objectives (Items) | Criteria Followed for Assessment | Maximum marks |
|---|---|---|
| 1,2,3 | - Multiple Choice, Matching Type, Problem Solving<br>- Fill in the blanks, Illustration | 15 |

Post-Test marks : 35 Marks (Authentic Assessment)

| Learning Objectives (Items) | Criteria Followed for Assessment | Maximum marks |
|---|---|---|
| 4 | - Problem Solving, Illustration, Activity | 10 |
| 5,6 | - Group Work, Group Presentation, Problem Solving | 25 |

Portfolio : ..... Marks

| Learning Objectives (Items) | Criteria Followed for Assessment | Maximum marks |
|---|---|---|
| ..... | - ..... | ..... |

Final marks : 15 Marks (Written/Practical Exam)

| Learning Objectives (Items) | Criteria Followed for Assessment | Maximum marks |
|---|---|---|
| 4,5,6 | - Fill in the blanks, True or False, Problem Solving<br>Concept mapping | 15 |

# Course Outline

**Department: Foreign Languages (Bilingual)** **Name of Subject :Physics in English** **Code :** 32283

**Teacher's name :** Ms. Ritchelle S. Lamayo

**Level ;**

☐ Primary …/….. ☑ Secondary …./…. **2nd Semester / 2014**

**Subject :**

☐ Main Subject ☑ Optional Subject ☐ Development Activities for Students ☐ Others

## 1) Course Description (2nd Semester )

This course for Secondary 5 students will provide a systematic introduction to the study of PHYSICS. It will allow the students to have a conceptual understanding of Physics through problem solving, laboratory, and discussion methods. The course is divided into four units namely: MOTION, FIELDS, WAVES, and NUCLEAR PHYSICS. For the second semester, UNIT 3: WAVES and UNIT 4: NUCLEAR PHYSICS will be covered.

## 2) Learning Objectives (2nd Semester )

| Indicators of Semester | Accordance with governmental Curriculums |
|---|---|
| 7. differentiate reflection, refraction, diffraction, and interference of waves; | |
| 8. characterize waves through illustrations and calculations; | |
| 9. discuss the properties of electromagnetic waves; and | |
| 10. design a concept map showing the inter-relationships of concepts dealing with nuclear physics. | |

3) Contents of subjects

2nd Semester

| Time Duration | Subject Contents |
|---|---|
| Beginning of the session – Mid-term | Unit : 3 **WAVES**<br>- 3.1 Transverse Waves<br>- 3.2 Peaks and troughs<br>- 3.3 Amplitude<br>- 3.4 Wavelength<br>- 3.5 Period and frequency<br>- 3.6 Speed of waves<br>- 3.7 The ripple tank<br>- 3.8 Reflection of wave<br>- 3.9 Refraction of wave<br>- 3.10 Diffraction of wave<br>- 3.11 Interference of wave<br>- 3.12 Longitudinal waves<br>- 3.13 Sound waves<br>- 3.14 Propagation of sound<br>- 3.15 Transmission of sound through a medium<br>- 3.16 Echo<br>- 3.17 Pitch and Loudness of sound<br>- 3.18 Electromagnetic waves<br>- 3.19 Properties of electromagnetic waves<br>- 3.20 Where electromagnetic waves come from<br>- 3.21 Radio waves |

| | |
|---|---|
| | - 3.22 Infrared waves and light |
| **Post – Midterm – Final** | UNIT 4: **NUCLEAR PHYSICS**<br>4.1 Composition of Nucleus<br>4.2 Proton Number and Nucleon Number<br>4.3 Nuclide Notation<br>4.4 Isotope<br>4.5 Radioactivity<br>4.6 Ionizing effect of nuclear radiation<br>4.7 Alpha, Beta, and Gamma Radiation<br>4.8 The effect of electric and magnetic fields<br>4.9 Detecting nuclear radiation<br>4.10 Danger and uses of radioactive materials<br>4.11 Radioactive decay<br>4.12 Rate of decay and half-life<br>4.13 Uses of Radioactive Isotope<br>4.14 Hazards of Radiations<br>4.15 Safety Precaution<br>- 4.16 Nuclear Energy |

4) Evaluation

Average marks for evaluation

Authentic Assessment: Written / Practical Exam = 70 : 30

Evaluation of Learning Objectives

| Semester | Learning Objectives (Items) |
|---|---|
| 2 | 7-10 |

5) Details of Evaluation

2nd Semester/2014

Pre-test marks: 35 Marks (Authentic Assessment)

| Learning Objectives (Items) | Criteria Followed for Assessment | Maximum marks |
|---|---|---|
| 7 | Illustration, Exercises, Problem Solving | 20 |
| 8 | Research, Illustration, Oral Presentation, Assignments | 15 |

Mid-term marks : 15 Marks (Written/Practical Exam)

| Learning Objectives (Items) | Criteria Followed for Assessment | Maximum marks |
|---|---|---|
| 7,8 | Multiple Choice, Matching Type, Problem Solving<br>Fill in the blanks, Illustration | 15 |

Post-Test marks : 35 Marks (Authentic Assessment)

| Learning Objectives (Items) | Criteria Followed for Assessment | Maximum marks |
|---|---|---|
| 9 | - Illustration, Oral Presentation | 15 |
| 10 | - Group Presentation, Activity | 20 |

Portfolio : ..... Marks

| Learning Objectives (Items) | Criteria Followed for Assessment | Maximum marks |
|---|---|---|
| ..... | - ..... | ..... |

Final marks : 15 Marks (Written/Practical Exam)

| Learning Objectives (Items) | Criteria Followed for Assessment | Maximum marks |
|---|---|---|
| 9, 10 | - Fill in the blanks, True or False, Problem Solving<br>- Concept mapping, Problem Solving | 15 |