

***St. Nathy's College***

***Subject Plan for Physics***

***Year:***  
***2009-2010***

## **Index**

- **Mission Statement**
- **Programmes and Levels**
- **Subject aims**
- **Subject objectives**
- **Subject teachers – subject coordinator**
- **Time allocation, Options Structure and Timetabling**
- **Grouping of pupils (Mixed ability, Streaming)**
- **Student access to subject/level**
- **Class organisation**
- **Planning for students with special needs**
- **Cross-curricular planning**
- **Range and variety of resources**
- **Provision for Health and Safety requirements**
- **Curriculum content, Homework, Assessment Procedures:**
  - Year 5**
  - Year 6**
- **Record keeping procedures**
- **Reporting procedures**
- **Teacher in-career development**

## **Mission Statement:**

St. Nathy's College was established to act as a Centre of Learning. We strive to achieve this within a fostered Christian environment which equally provides for the faith and personal development of each student.

All of our school endeavours and activities are directed towards these objectives.

## **Subject Aims:**

The aims of the syllabus, common to both levels, are:

- to give students an understanding of the fundamental principles of physics and their application to everyday life and technology
- to develop an appreciation of physics as a human endeavour, thereby enriching the students' experience of life
- to provide a reasonably broad perspective of physics, thus developing an understanding of the physical environment and of how human beings interact with it
- to provide a general education in physics for all students, whether or not they proceed to further studies in physics
- to develop the ability to observe, to think logically, and to communicate effectively
- to develop an understanding of the scientific method
- to develop an appreciation of physics as a creative activity, using informed intuition and imagination to create an understanding of the beauty, simplicity and symmetry in nature.

## **Subject Objectives:**

### **A. Ordinary Level Syllabus Objectives**

Ordinary level physics provides an introduction to, and an overview of, physics. Students are expected to develop an appreciation of the fundamental laws and principles and their application to everyday life.

#### **The objectives of the syllabus are:**

### **1. Knowledge**

Students should know

- basic physical principles, terminology, facts, and methods
- that physics is fundamental to many technological developments
- that physics contributes to the social, historical, environmental, technological and economic life of society

### **2. Understanding**

Students should understand

- basic physical principles
- how physical problems can be solved
- how the scientific method contributes to physics
- how physics relates to everyday life.

### **3. Skills**

Students should be able to

- measure physical quantities in the appropriate SI units
- work safely in a laboratory
- follow instructions
- use scientific equipment appropriately
- use experimental data appropriately

## **4. Competence**

Students should be able to

- present information in tabular, graphical, written and diagrammatic form, as appropriate
- report concisely on experimental procedures and results
- use calculators
- solve numerical problems
- read popular science writing
- relate scientific concepts to issues in everyday life
- explain the science underlying familiar facts, observations, and phenomena.

## **5. Attitudes**

Students should appreciate

- the contribution of physics to the social and economic development of society
- the relationship between physics and technology
- that a knowledge of physics has many vocational applications.

## **B. Higher Level Syllabus Objectives**

Higher level physics provides a deeper, more quantitative treatment of physics. Students are expected to develop an understanding of the fundamental laws and principles and their application to everyday life.

**The objectives of the syllabus are:**

## **1. Knowledge**

Students should know

- basic physical principles, terminology, facts, and methods
- how physics is fundamental to many technological developments
- how physics contributes to the social, historical, environmental, technological and economic life of society.

## **2. Understanding**

Students should understand

- basic physical principles
- how physical problems can be solved
- how the scientific method contributes to physics
- how physics relates to everyday life
- the limitations and constraints on physics.

## **3. Skills**

Students should be able to

- measure physical quantities in the appropriate SI units
- work safely in a laboratory
- follow instructions
- use scientific equipment appropriately
- plan and design experiments
- use experimental data appropriately
- apply physical principles to solving problems
- analyse and evaluate experimental results.

## **4. Competence**

Students should be able to

- present information in tabular, graphical, written and

diagrammatic form, as appropriate

- report on experimental procedures and results concisely, accurately, and comprehensively
- use calculators
- solve numerical problems
- read scientific prose
- relate scientific concepts to issues in everyday life
- explain the science underlying familiar facts, observations, and phenomena
- suggest scientific explanations for unfamiliar facts, etc.
- make decisions based on the examination of evidence and arguments.

## **5. Attitudes**

Students should appreciate

- the contribution of physics to the social and economic development of society
- the relationship between physics and technology
- that a knowledge of physics has many vocational applications.

### **Subject Convenor:**

Patrick Curran

### **Subject Teachers:**

Patrick Curran.

### **Time allocation:**

5<sup>th</sup> Year: 5 periods

6<sup>th</sup> Year: 5 periods

### **Options Structure:**

An information night on subject choice is held for 3<sup>rd</sup>/4<sup>th</sup> Years prior to their Leaving Certificate subject selections. Students can avail of the support and guidance of the guidance counsellor and Junior Science teachers before choosing their subjects. Their choices are then used to create a ‘best-fit’ model for Leaving Certificate. All students may study Chemistry, Physics, Physics & Chemistry (combined), Applied Maths and Biology for Leaving Certificate.

**Timetabling:**

**Grouping of pupils (Mixed ability, Streaming, Banding):**

Mixed ability

**Student access to subject / level:**

All students may study Physics.

All Classes cater for Higher and Ordinary levels students.

**Class organisation:  
(seating/order/attendance)**

Seating arrangements are decided by the teacher.

Student attendance is taken at the beginning of every class.

**Planning for students with special needs:**

All teachers are given information on each student with special needs within their classes. Teachers may then consult the special needs co-ordinator for advice on best practice methods for teaching and helping students with special needs.

### **Cross-curricular planning:**

Informal co-operation occurs between Physics the teacher and other teachers such as Geography / Engineering & Construction teachers. More formal faculty meetings take place several times a year with teachers of Chemistry Agricultural Science & Biology.

### **Range/variety of resources:**

Three well-resourced Science Laboratories with two preparation rooms and 2 chemical storage areas which can be accessed from the laboratories.

### **Availability/Use of ICT facilities:**

Each laboratory has a computer, printer and data projector. The whole school is networked to 100mb Broadband. Data logging equipment for Science, Chemistry, Physics and Biology is available. A variety of Physics videos are also available.

### **Provision for Health and Safety requirements:**

- (a) All Laboratories have Safety Rules clearly displayed.
- (b) All rules are explained to students at the start of the school year.
- (c) All teachers are given health and safety talks on a regular basis by a consultant who visits the laboratories pointing out potential hazards.
- (d) The school has a health and safety officer (a science teacher) while the Science Department has its own health and safety representative.
- (e) The school arranges for a Health and Safety Consultant to come in and talk to the staff on issues of concern. Subject Department Teachers are then taken on a tour of their classrooms/laboratories and potential hazards highlighted and discussed. The Principal is informed immediately on the results of such discussions and remedial action is taken asap.

**SUBJECT: Physics**

**Curriculum – Long-Term Planning**

**Year 5**

<b>Content</b>	<b>Classwork</b>	<b>Homework</b>	<b>Assessment</b>
The teacher decides on the content depending on the abilities of the students.	Explaining Physics concepts.  Exploring students' understanding by asking frequent questions.  Carrying out practical investigations.  Explaining how to write up results of mandatory practical investigations into Physics Practical Hardback Copy.	Write answers to Textbook Questions in order to consolidate and reinforce work done in class.  Homework given every night – learning and/or written – to promote learning and encourage self-directed study.  Write up of practical investigations the same night as they are performed.	Teacher covers first 5 chapters (up to Christmas) but give their own exams as well as frequent oral and written class assessments. Results are given to students asap in order to highlight areas requiring further study.
<p><b>Textbook: Real World Physics – Dan O'Regan</b> <b>Differentiated Teaching Strategies</b></p> <p>The teacher decides the pace and methods of teaching. This involves catering for different abilities by offering material and assessments which are suited to the abilities of Ordinary Level students but which also stretch Higher Level students to fulfil their potentials.</p>			

**SUBJECT: Physics**

**Curriculum – Long-Term Planning**

**Year 6**

<b>Content</b>	<b>Classwork</b>	<b>Homework</b>	<b>Assessment</b>
<p>The teacher determines chapters and the pace depending on the calibre of students.</p> <p>Past examination questions</p>	<p>Explaining Physics concepts.</p> <p>Exploring students' understanding by asking frequent questions.</p> <p>Carrying out practical investigations.</p> <p>Explaining how to write up results of mandatory practical investigations into Physics Practical Hardback Copy.</p> <p>Past examination questions</p>	<p>Write answers to Textbook Questions.</p> <p>Homework given every night – Learning and/or written.</p> <p>Write up of practical investigations the same night as they are performed.</p> <p>Past examination questions</p>	<p>Teacher gives own Christmas and Summer exams as well as frequent oral and written class assessments.</p> <p>Past examination questions</p>

## **Record Keeping Procedures:**

Individual teachers keep their own records on students' attendance, behaviour and examination results.

Each student has a School Journal which he/she must be able to produce at all times. Teachers communicate with parents through this, which must be signed by the Parent/Guardian at the end of each week or each evening if required to do so.

Results of Christmas, Summer and State Examinations are kept on file at the main school office.

## **Reporting Procedures:**

Teachers communicate with parents through the School Journal which must be signed by the Parent/guardian at the end of each week or more frequently if necessary. Parents may make an appointment to meet a teacher.

Frequent Parent/Teacher Meetings are arranged.

Each Year Head communicates with parents on school business which concerns students.

Examination results are sent home at Christmas and Summer in addition to Exam student Mock results at Easter.

Teachers give their own regular assessments and request that parents sign the results.

## **TEACHER PROFESSIONAL DEVELOPMENT:**

### **1. Courses Attended:**

All relevant inservice from the SLSS attended over the past number of years.

### **ii) External provider/s of required professional development:**

Frequent update advice on Health and Safety.

### **3. Subject Department Teacher Support / Induction / Mentoring:**

With seven Science teachers, considerable expertise is available so that teachers can interchange their experience / knowledge / methods that work with each other. This is also particularly true in the case of new and temporary members of staff.