

## St. Nathy's College

### Physics and Chemistry Subject Plan 2010 - 2011

#### Aims:

- To simulate and sustain students interest in and enjoyment of, physics and chemistry.
- To provide a relevant course for those students who will complete their study of physics and chemistry at this level.
- To provide a foundation course in physics and chemistry for those students who will continue their studies in physics and / or chemistry or in related subjects.
- To develop an appreciation of scientific method and rational thought.
- To develop skills in laboratory procedures and techniques, carried out with due regard for safety, together with the ability to assess the users and limitations of those procedures.
- To develop skills of observation, analysis, evaluation, communication and problem solving.

#### Objectives Physics:

1. Knowledge:  
Students should know
  - Basic physical principles, terminology, facts and methods
  - 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 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 instruction
  - Use scientific equipment 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
5. **Attitudes:**  
Students should appreciate
- The contribution of physics to the social and economic development of society
  - The relationship between physics and technology

### **Objective Chemistry:**

1. **Knowledge:**  
Students should have the knowledge of
- Basic chemical terminology, facts principles and methods
  - Scientific theories and their limitations
  - Social, historical, environmental, technological and economic aspects of chemistry.
2. **Understanding:**  
Students should understand
- How chemistry relates to everyday life
  - Scientific information in verbal, graphical and mathematical form
  - Basic chemical principles

- How chemical problems can be solved
- How scientific method applies to chemistry

3. Skills:

Students should be able to

- Follow instruction given in a suitable form
- Perform experiments safely and co-operatively
- Select and manipulate suitable apparatus to perform specified tasks
- Make accurate observations and measurements.

4. Competence:

Students should be able to

- Translate scientific information in verbal, graphical and mathematical form
- Organise chemical ideas and statements and write clearly about chemical concepts and theories
- Report experimental procedures and results in a concise, accurate and comprehensible manner
- Explain both familiar and unfamiliar phenomena by applying known laws and principles
- Use chemical facts and principles to make chemical predictions
- Perform simple chemical calculations

5. Attitudes

Students should appreciate

- Advances in chemistry and their influences on our lives
- That the understanding of chemistry contributes to the social and economic development of society

Teacher: Mr. Gerry Carmody

**Time:**

5 class periods (1 double class and 3 single classes)

**Class Organisation Policy:**

Maximum number of 24 pupils

Students have a choice to do physics and chemistry or not

**Procedures:**

All senior years (fourth and fifth years) are mixed ability classes

**Texts:**

“Physics and Chemistry, the combined course” by Daithi Quinn

Exam papers in fifth year

**Special Needs:**

Every effort is made to integrate International and special needs students into main stream science subjects according to their ability.

**Health and Safety:**

As per safety folder

**Curriculum Content:**

|             |           |                  |
|-------------|-----------|------------------|
| Fourth Year | Physics:  | Mechanics        |
|             |           | Gravity          |
|             |           | Energy           |
|             |           | Gas laws         |
|             |           | Electricity      |
|             |           | Magnetism        |
|             |           | Light            |
|             | Chemistry | Atomic structure |

|            |            |                              |
|------------|------------|------------------------------|
|            |            | Molecular theory and bonding |
|            |            | Equations and calculations   |
|            |            | Acids, bases and pH          |
|            |            | Oxidation and Reduction      |
| Fifth Year | Physics:   | Radioactivity                |
|            | Chemistry: | Solutions and Titration's    |
|            |            | Electrochemistry             |
|            |            | Thermochemistry              |
|            |            | Comparison of compounds      |
|            |            | Organic Chemistry            |

**Homework Policy:**

- Revision of class work
- Regular homework relevant to topic being covered
- Homework written into homework journal
- If homework not done note in homework journal and it signed by parents or guardian
- Persistent lack of homework report to year-head
- Option to send letter home

**Assessment:**

- Regular class tests
- In class questions
- Homework

- End of term or chapter class test
- Practical work – skill attainment

### **Methodologies**

- Verbal
- Visual
- Kinetic
- Whole class teaching
- Practical work
- Roll play
- Work Sheets
- Peer Teaching
- Appropriate field trips
- Student reflection and self assessment
- AV, C,D., power – point, data projector
- Newspaper articles
- Quiz's