# **LESSON PLAN**

### **Subject:** SCIENCE - Physics

**Topic:** Waves

Age of students: 17

Language level: Intermediate

Time: 4 hours + test

### Content aims:

After completing the lesson, the students will be able to: Distinguish local particle vibrations from overall wave motion. Differentiate pulse and periodic waves. Interpret waveforms of transverse and longitudinal waves. Apply the relationship among wave speed, frequency and wavelength to solve problems. Understand the waves equation.

#### Language aims:

After completing the lesson, the student will be able to: Apply the correct scientific language.

### Pre-requisites:

- Graphs of Trigonometric Function
- Harmonic motion

# Materials:

- Books
- Online resources <u>What is a Wave?</u>, <u>transverse and longitudinal waves</u>, <u>simulation</u>, <u>Lesson</u> <u>on waves with exercises</u>
- Video: <u>General Waves Lesson 1 of 2</u>: <u>Terms and Definitions for Waves</u>, <u>introduction to</u> <u>mechanical waves</u>
- Laboratory: springs, strings, ripple tank

The Lessons will take place in class and in physics laboratory

# **Procedure steps:**

TEACHER's activity:

- A first lesson -Supporting discussion and observation with students after homework (10')
- B 1st lesson Helping students in experiments (prepared in advance) to define amplitude, frequency, period, wavelength, transverse and longitudinal waves (50')
- C 2nd lesson theoretical explanation: graphics, wave equation, exercises on formula application (1h)
- D 3rd lesson Revision of the results of students' experiments (10')
- E 4th lesson homework correction, further exercises (mother tongue, 1h)



#### STUDENTS' activity:

- A reading the lessons What is a Wave?, transverse and longitudinal waves, (homework)
- B first lesson experiments to define amplitude, frequency and wavelength (50')
- C third lesson virtual and real experiments (50') 2 groups of students
  - a. wave on a string: attachment 1
  - b. waves on a spring: attachment 2
- D homework: exercises (up to n. 23 <u>http://www.physicsclassroom.com/reviews/waves/wavesrev.cfm</u>), video in English for the revision of contents and specific language
- E 4th lesson: solving exercises with teacher
- F End-module test (attachment 3)

#### **Attachment :**

