

## The effects of forces

### 1st teaching period

#### **1st Activity: Mass or weight**

Time: 15'

Type of activity: video projection and discussion

Class organisation: class work

Actions/Tasks: First of all, the teacher introduces the new unit. After that, shows a video (twice) about mass and weight <https://www.youtube.com/watch?v=Y8-T8RouhPA>

#### **2nd Activity: Mass or weight**

Time: 10'

Type of activity: completing worksheet.

Class organisation: class work

Actions/Tasks: The teacher asks students to complete the first exercise.

#### **3rd Activity: Mass or weight**

Time: 20'

Type of activity: pair work

Class organisation: pair work and discussion in class

Actions/Tasks: In pairs, students try to define both concepts. At the end, share all the definitions in order to correct them.

### 2nd teaching period

#### **1st Activity: Stretching springs**

Time: 20'

Type of activity: filling worksheet

Class organisation: class work

Actions/Tasks: students fill a worksheet about vocabulary.

#### **2nd Activity: Stretching springs**

Time: 15'

Type of activity: share and discussion

Class organisation: pair work

Actions/Tasks: students discuss in pairs the vocabulary they have work alone.

#### **3rd Activity: Robert Hooke**

Time: 15'

Type of activity: searching information and creating a wiki

Class organisation: groups of 3 or 4

Actions/Tasks: teacher presents the wiki on the moodle that students have to build together. Students, in groups of 3 or 4, search information about Robert Hooke: biography, experiments, Hooke's law, discussion with Newton,...

### **3rd teaching period**

#### ***1st Activity: Hooke's law***

Time: 35'

Type of activity: experimental practice

Class organisation: groups of 3 or 4

Actions/Tasks: teacher introduces how we are going to check Hooke's law. Students work in group and complete their lab report till collect experimental data.

#### ***2nd Activity: Hooke's law***

Time: 15'

Type of activity: digital data processing

Class organisation: class work

Actions/Tasks: students start their spreadsheet.

### **4th teaching period**

#### ***1st Activity: Hooke's law***

Time: 20'

Type of activity: creating a chart on a digital tool

Class organisation: class work

Actions/Tasks: following the instructions of the teacher, students follow data processing in order to create a chart on a digital tool for checking Hooke's law.

#### ***2nd Activity: Hooke's law***

Time: 15'

Type of activity: share and discussion the results

Class organisation: group work

Actions/Tasks: students that belong to the same experimental group, discuss their results and share their conclusions with the other groups.

#### ***3rd Activity: Robert Hooke***

Time: 15'

Type of activity: searching information and finishing wiki

Class organisation: groups of 3 or 4

Actions/Tasks: Students, in groups of 3 or 4, complete information about Robert Hooke: biography, experiments, Hooke's law, troubles with Newton,...

### **Suggestions for future development and expansion of the scenario**

#### ***Vocabulary revision/Practice***

Students/teacher may create crossword or a bingo for playing with other students:

<http://www.crosswordpuzzlegames.com/create.html>

### ***Interactive resources***

Students, by pairs, may use simulators in order to understand, explain to the others, prepare an oral presentation,...

[https://phet.colorado.edu/sims/html/masses-and-springs-basics/latest/masses-and-springs-basics\\_en.html](https://phet.colorado.edu/sims/html/masses-and-springs-basics/latest/masses-and-springs-basics_en.html)

[https://phet.colorado.edu/sims/html/forces-and-motion-basics/latest/forces-and-motion-basics\\_en.html](https://phet.colorado.edu/sims/html/forces-and-motion-basics/latest/forces-and-motion-basics_en.html)

### ***Project***

They are asked to work individually first (at home) searching for contemporary European scientists of Hooke and Newton (men and women). Then they meet in class and chose one of their scientist. Work in groups of 4: students that have been chosen the same scientist. Each group is asked to work on collaborative digital tools and create a digital poster, a presentation,... about their scientist.