

Topics of knowledge in Science

OCSE-PISA

✓ Chemical and Physical systems

- Structure and properties of matter
- Physical and chemical transformations
- Force and motion
- Energy transformation
- Energy matter interaction

✓ Living organism

- Cell
- Human body
- Animal and plant life
- Biosphere
- Ecosystems

✓ Earth Science

- Structure and energy of the earth
- Earth modifications
- Earth history
- Earth in the space

~~✓ Technological systems~~

- Role of the technology
- Science versus technology
- Key idea and concept

SMART Topics of knowledge in Science

✓ **Methods in Science**

- **Measuring and uncertainty**
- **Modelling and data fitting**
- **Deductive scientific reasoning**

✓ **Chemical and Physical systems**

- **Structure and properties of matter**
- **Physical and chemical transformations**
- **Force and motion**
- **Energy transformation**
- **Energy matter interaction**

✓ **Living organism**

- **Cell**
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✓ **Earth Science**

- **Structure and energy of the earth**
- **Earth modifications**
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- **Earth in the space**

SMART Modules and Didactic units in Science

Methods in Science:

- Measuring and uncertainty
- Modelling and data fitting
- Deductive scientific reasoning

Optics:

- Reflection law
- Refraction law
- Imaging and lenses
- Diffraction
- Interference

SMART Modules and Didactic units in Science

Earth Science:

Earthquake:

Resonances

Energy storage and relaxation

Water in sands:

Capillarity and adhesion forces

Energy in Science:

Mechanics

Battery

Food

Photosynthesis

Photovoltaic cell

SMART Didactic Module in Science

Metadata

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Creator:	Carlo Meneghini (carlo.meneghini@uniroma3.it) M. Bionducci (m.bionducci@gmail.com)
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SMART Didactic Module in Science

Opening Section

Title and brief description

Objectives (competences)

Prerequisite knowledge

Teaching Units index

1. Believe, known understanding
2. The scientific method at work: the reflection law

SMART Teaching units in Science

Teaching Unit: Believe, known understanding

- **Metadata**
- **Summary**
- **Prerequisite Knowledge**
- **Materials and instrumentation**
- **Software and App**
- **Bibliography**
- **CONTENTS**
- **Section 1** **Didactic material**
- **Section 2** **Video**
- **Section 3** **Answer the questions**
- **Section 4**

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SMART didactic-teaching units in Science

Methods in Science

Measuring and uncertainty

Fis-171 Errori di Misura
Travelling lab of Optics

Modelling and data fitting

Fis-193 Determinazione del coefficiente di dilatazione dei gas a pressione costante
Fis-186 Grave lanciato, parte 1
Fis-153 Il moto parabolico
Fis-73 CADUTA DI UNA GOCCIA D'ACQUA IN OLIO D'OLIVA

Deductive scientific reasoning

Chi-251 Determinazione del Numero di Avogadro
Chi-250 Il concetto di mole mediante reazione acido forte-base forte
Chi-28 La mole: definizione e applicazioni

SMART didactic-teaching units in Science

Optics

Reflection law
Refraction law
Imaging and lenses
Diffraction
Interference

Travelling labs

SMART didactic-teaching units in Science

Earth Science:

Earthquake:

Resonances

Energy storage and relaxation

Water in sands:

Capillarity and adhesion forces

Travelling labs of Earth Science

SMART didactic-teaching units in Science

Energy in Science

Mechanics

Fis-196 Energia dissipata nel moto di rotolamento lungo una rampa

Fis-189 Verifica del principio di conservazione dell'energia meccanica

Fis-151 Energia e macchine

Battery

Chi-23 Reazione redox e pila Cu/Zn (pila Daniell)

Food

Travelling labs in Chemistry

Photosynthesis

BIO267: La foglia al lavoro - La fotosintesi clorofilliana

Photovoltaic cell

Fis-156 RISPOSTA CROMATICA DI CELLE FOTOVOLTAICHE

Travelling lab: Glazer Cell