

Docente: Enrico Campagna
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Libro di testo: Il nuovo Amaldi per i licei scientifici. blu
Le misure, l'equilibrio, il moto, il calore, la luce

Il seguente programma è stato svolto o esclusivamente in italiano o in italiano e inglese.

1. Introduction to physics
 - Birth of physics
 - Scientific method: induction and deduction
 - Historical period of physics: classical physics, modern physics, contemporary physics
 - Science and technique
2. Making measurements
 - Standard form, mixed form
 - International System of units of measurements: fundamental units of measurements, definition of meter, kilogram and second
 - Time interval, length, area, volume and density. Definition of liter.
 - Conversion among different units
 - Measuring instruments: sensitivity and capacity
 - Vernier caliper
 - Absolute errors, relative errors
 - Mean value
 - Significant figures and roundings: measurements with errors
 - The parallax error
 - Direct and indirect measurements
 - Error on sum, difference (composition rule),
 - Error on product and ratio (using the number of significant figures)
3. How to make a laboratory report
 - Aim of the experiment
 - Instruments and materials
 - Procedure
 - Data taking
 - Data analysis
 - Conclusions
4. Representation of data and phenomena
 - How to read a formula: inverse formulae
 - Cartesian graph
 - Direct and inverse proportionality
 - Linearity and non linearity
 - How to plot errors on graph
 - Graphical fit with the estimation of slope and its error
5. Describing motion
 - Vectors: definition, sum and difference of vectors, decomposition along given directions
 - Understanding speed: distance-time graphs
 - Understanding acceleration: speed-time graphs
 - Calculating speed and acceleration
6. Forces and motion
 - Mass, weight and gravity
 - 1st Newton's law: inertial reference frame
 - 2nd Newton's law: force, inertial mass, acceleration
 - 3rd Newton's law: action and reaction
 - Sliding, rolling friction, drag
 - Free fall: terminal velocity

- Moving in circles
- Linear momentum
- 7. Turning effects of forces
 - Centre of mass
 - The moment of a force
 - Stretching and compressing
 - Lever of three different classes
 - Equilibrium: stable, unstable, neutral
- 8. Forces and matter
 - Forces acting on solids
 - Stretching springs
 - Hooke's law
- 9. Pressure
 - Pascal's principle and Stevin's law, hydraulic jack
 - Pressure measurements: manometer
 - Atmospheric pressure: barometer
 - Archimedes' law
 - Microscopic interpretation of pressure in gases
- 10. Gravity
 - Newton's force
 - The three Kepler's laws
 - Solar system
 - Life of a star
 - The Milky Way
 - Structure of the universe
 - Expansion of the universe
 - Red-shift
- 11. IGCSE assessment
 - Meaning of Core and Extended syllabuses
 - The "Alternative to practical" paper

Laboratory experiences:

- Density
- Uniform motion
- Stiffness of springs
- Pressure

Roma, 06/06/2024

Il docente del corso
prof. Enrico Campagna

I rappresentanti degli studenti

Liceo Scientifico Statale Morgagni

PROGRAMMA SVOLTO

Anno scolastico: 2023-2024

Classe: 1E

Docente: MOHAMED ELHIGAZI - ENRICO CAMPAGNA

Disciplina: PHYSICS

Libri di testo adottati: CAMBRIDGE IGSCE COMPLETE PHYSICS FOURTH EDITION

Argomenti svolti:

CHAPTER 1: MEASUREMENT AND UNITS

CHAPTER 2: FORCES AND MOTION

CHAPTER 3: FORCES AND PRESSURE

CHAPTER 4: FORCES AND ENERGY

CHAPTER 5: THERMAL EFFECTS

CHAPTER 11: THE EARTH IN SPACE

Il docente

MOHAMEDELHIGAZI

Rappresentante di classe

ENRICO CAMPAGNA