

 LICEO STATALE SCIENTIFICO E CLASSICO "E. MAJORANA" DESIO (MB)	PROGRAMMA SVOLTO	MD 01 05 R2 (2025-04-22)
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A.S.	Classe	Disciplina	Docente
2025/2026	3aa	Fisica	Matteo Erba

Libri di testo

Physics for Cambridge IGCSE Coursebook
Sang D., Follows M., Tarpey S.
Cambridge University Press

Programma svolto

Argomenti preliminari:

Nozioni preliminari, cinematica, dinamica.
Introduzione alla metodologia CLIL.

Programma Cambridge (in inglese)

Command Words. Definition of speed, average speed, acceleration.
Distance–time graph and speed–time graphs. Free fall with/without air resistance.
Difference between weight and mass. Definition of gravitational field strength.
Define density as mass per unit volume with reverse formulas.
Experimental measurement of volume and density of irregular bodies.
Determine whether an object floats based on density data.
Define forces as vector quantities. Elastic force, spring constant.
Equation $F=ma$. Circular motion.
Solid friction, friction drag on an object moving through a liquid/gas.
Turning effect of forces. Definition of moment of a force.
Principle of moments, equilibrium, centre of gravity
Define momentum as mass $\times$ velocity, define impulse as force $\times$ time for which force acts.
Relationship between force and momentum change.
Define different types of energy: kinetic, gravitational potential, chemical, elastic (strain), nuclear, electrostatic and internal (thermal).
Conservation of energy with simple examples. Definition of work of a force.
Energy sources. Energy from the Sun. Efficiency definition.
Power definition with reverse formulas. Pressure definition. Pressure change beneath the surface of a fluid. States of matter. Kinetic particle model of matter.
Relationship between the motion of particles and temperature. Absolute zero. Conversion of temperatures between kelvin and degrees Celsius.
Ideal gas law. Thermal expansion of solids, liquids and gases.
Specific heat capacity. Melting, boiling and evaporation.
Transfer of thermal energy: conduction, convection, radiation.
General properties of waves. Equation for wave speed $v = f \lambda$. Reflection, refraction and diffraction of waves.
Reflection, refraction and diffraction of waves.
Sound. Audible range. Speed of sound. Loudness and pitch. Ultrasound.
Reflection of light. Plane mirrors. Refraction of light.
Internal reflection and total internal reflection.
Refractive index. Refraction equation. Optical fibers.



Converging thin lenses, image formation.
Dispersion of light.
Electromagnetic spectrum. Speed of e.m. waves.

Desio, 6 giugno 2026

Firmato dagli studenti rappresentanti di classe con firma elettronica avanzata

Il docente
MATTEO ERBA

Firmato con firma elettronica avanzata