



## Syllabus

**Term:** 2025/26/2      **Subject name:** Introduction to Physics      **Subject code:** ENAFOLNA0901

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**Unit (Unit code)**      Institute of Geography and Earth Sciences (FOLDRAJZ)

**Lecturer responsible for the course:** Dr. EROSTYÁK János

**Requirement:** Exam

**Classes per week :** 2/0/0

**Classes per term:**

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### Purpose of education:

Introduction to different fields of physics at basic level. Both experimental and theoretical aspects are emphasized. Focus on physical phenomena and their applications.

### Contents:

**Mechanics.** Linear and rotational motion. Newton's Laws. Work and power. Work equation. Principle of the conservation of mechanical energy. Principle of the conservation of momentum. Oscillation and waves. Acoustics. Doppler effect. Ultrasound. Hydrostatics. Capillarity. Equation of continuity. Bernoulli equation. Viscosity. Hagen-Poiseuille's Law. Laminar and turbulent flow.

**Thermodynamics.** State of condition and change of state. Special property of water. Atmospheric humidity. Diffusion and osmosis. Gas law. Thermal dilatation. Thermal conduction, radiation and convection.

**Electrophysics.** Work and potential of electric field. Current intensity and current density. Ohm's law. Work of electric current. Joule heat. Capacity, capacitor. Inductivity and inductor device. Apparent resistance, apparent values. Thermoelectric effects. Electrolysis. Magnetism.

**Optics.** Velocity of light. Reflection and refraction. Optical fibers. Plane and spherical mirrors. Lenses. Camera, projector, magnifier, microscope, telescope. Human eye, colors. Interference. Diffraction. Polarization. Optical activity.

**Radiation.** Luminescence. Thermal radiation. X-ray. Isotopes. Decay law. Dosimetry. Detectors.

### System of examining and valuation:

First exam: written.



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**System of examining and valuation:**

Further exams: oral.

### Bibliography:

Walker, Jearl

Fundamentals of physics / Jearl Walker, David Halliday, Robert Resnick—10th edition. Copyright © 2014, 2011, 2008, 2005 John Wiley & Sons, Inc.

### Bibliography: