

# EXAMPLES OF THE USE OF INFORMATION TECHNOLOGY IN SCIENCE EDUCATION

## LIST OF EXERCISES

### I. Microcomputer Based Science Laboratory

#### 1. Mechanics experiments

- Laws of dynamics - experiments with using of the air track
- Free fall investigation – checking of the Galileo law
- Motion parameter investigations for harmonic oscillations and any other motions in gravitational field, using ultrasound, based on Doppler's effect motion detector
- Principles of operation and the applications of Global Positioning System (GPS) in practice.

#### 2. Acoustic experiments

- Acoustic oscillations and waves, computer analysis of sound
- Noise and infrasound investigations in the environment. Hearing exploration

#### 3. Thermal and thermoelectric experiments.

- Measurement of air humidity and thermal phenomena investigations with the use of datalogger
- Computer studies of reversible phenomena using Peltier's effect device
- Effectivity of cooling effect with the use of based on Peltier's effect refrigerator

#### 4. Electromagnetic, optics and nuclear physics experiments

- Checking the dependance of magnetic induction on intensity of current flowing in the coil
- The use of dataloggers in UV and IR investigations
- Investigation of copper electrosedimentation process - fractals
- Computer aided ionising radiation investigation

#### 5. Chemical and biological experiments

- Effect of different factors on chemical reactions rate
- Studies of milk fermentation
- Effect of some medicines on pH of gastric fluid
- Investigation of the water acidity
- Monitoring of respiration and photosynthesis processes of plants
- Checking whether "field hopper" respire

### II. Simulation and modelling

1. Brownian motion: observations, computer simulations, interactive video method
2. Thermodynamics phenomena: ideal gas – transformations, internal energy, I thermodynamics principle
3. Radioactive decay