



# PHYSICS EDUCATION IN ALBANIA

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# Physics education in Albania

- Physics education in Albania is implemented in several educational levels. In many aspects is similar to other Balkan countries, but also has some peculiarities related to the specific needs of Albania
- The main objectives of the educational system are:
  - Nurture and educate the future physicists
  - Provide basic scientific support for various engineering specialties
  - Prepare the future teachers of Physics for all pre-university educational system

# Educational System in Albania

- Primary School (1<sup>st</sup> - 5<sup>th</sup> grade)
  - No formal Physics Education. Rather there is a subject known as “Dituri Natyre” (Knowledge of Nature)
- Secondary School/Middle Low School (6<sup>th</sup> - 9<sup>th</sup> grade)
  - Formal Physics Education
- High School/Middle High School (10<sup>th</sup> - 12<sup>th</sup> grade)
  - Formal Physics Education
- Higher education/Universities
  - Faculty of Natural Sciences (University of Tirana and other public universities), Polytechnic University of Tirana, Non public universities that offer engineering programmes

# Physics in Secondary School

- 6<sup>th</sup> grade
  - Motion and Forces
  - Electricity and electrical circuits
- 7<sup>th</sup> grade
  - Interactions (applying Newtonian mechanics to various systems)
  - Earth and Space (Solar system)
  - Energy
  - Measurements

# Physics in Secondary School

- 8<sup>th</sup> grade
  - Mechanical waves and sound
  - Light (Geometrical optics)
  - Magnetic field
  - Measurements
- 9<sup>th</sup> grade
  - Pressure and elements of fluid mechanics
  - Electrical circuits (extended information)
  - Thermal physics
  - Measurements (more advanced topics)

# Physics in Secondary School

- 8<sup>th</sup> grade
    - Mechanical waves and sound
    - Light (Geometrical optics)
    - Magnetic field
    - Measurements
  - 9<sup>th</sup> grade
    - Pressure and elements of fluid mechanics
    - Electrical circuits (extended information)
    - Thermal physics
    - Measurements (more advanced topics)
- 1 hour per week**

# Physics in High School

- 10<sup>th</sup> – 11<sup>th</sup> grade
  - Newtonian Mechanics
  - Energy and energy source
  - Oscillations and waves
  - Electromagnetism
  - Electromagnetic waves and Optics
  - Molecular-Kinetic Theory
  - Thermodynamics
  - Modern Physics and Models of Atoms

# Physics in High School

- 10<sup>th</sup> – 11<sup>th</sup> grade
  - Newtonian Mechanics
  - Energy and energy source
  - Oscillations and waves
  - Electromagnetism
  - Electromagnetic waves and Optics
  - Molecular-Kinetic Theory
  - Thermodynamics
  - Modern Physics and Models of Atoms

**2 consecutive hours per week**



# Physics in High School

- 12<sup>th</sup> grade
  - The level of the material is in line with traditional university courses. It suffers from the fact that it provides too much material in a relatively short amount of teaching hours
  - In the 12<sup>th</sup> grade there is foreseen a special elective course known as advanced physics for those students that plan to attend courses at the University of Tirana, Polytechnic University of Tirana and Medicine University of Tirana (these universities has made advanced physics a requirement to enter there)

**3 hours per week**

# Physics in Higher Education

- Faculty of Natural Sciences (University of Tirana)
  - All Bachelor programs have Physics in their first or second years
  - Bachelor in Physics (“standard” 3 years cycle)
  - Master in Physics
    - Institute of Applied Nuclear Physics
    - Institute of Geophysics
    - Institute of Public Health
  - Master in Physics Education

# Physics in Higher Education

- Faculty of Natural Sciences (University of Tirana)
  - PhD in Physics:
    - Complex Systems (Geophysics or Socio-Economic systems)
    - Astrophysics
    - Particle Physics (In January 2024 UT and PUT joined CMS Experiment)
    - Biophysics and Medical Physics
    - Material Physics
    - Physics Didactics

# Physics in Higher Education

- Faculty of Physics Engineering (Polytechnic University of Tirana)
  - All Bachelor programs have Physics in their first or second years
  - Bachelor in Physics Engineering
  - Master programs
    - Master in Medical Physics
    - Master in Renewable Energies Education
  - PhD Program
    - Medical Physics
    - Material Physics
    - Renewable Energies