

## Master: Physics and technology of advanced materials in English Language

**1..Study programme title:** Physics and technology of advanced materials

**2. Number of available places:** 30

### **3. Short description**

Advanced materials with sizes ranging from nano to macro are in the core of many modern technologies. Therefore, it is important to understand and control the material properties from the atomic to the macroscopic scales. The „**Physics and technology of advanced materials**” MSc specialization focuses on understanding and manipulating the physical properties of materials to discover new features with application relevance. The deepening in the specific domain, mentioned above, is particularly important given the need for knowledge of how to obtain monocrystalline or nano-microsystems with well defined properties and qualities and how to characterize their properties.

### **4. Main subjects**

The curriculum can be found on the faculty website, at:

<https://physics.uvt.ro/physics-and-technology-of-advanced-materials/>

Some of the courses from the curriculum are listed below:

#### **First semester:**

**Complements of theoretical physics**

**Complements of Molecular and atomic physics**

**Complements of solid state physics and statistical physics**

**Complements of the material physics**

#### **Second semester:**

Transport phenomena

Crystal growth methods

Relaxation processes in advanced materials

Specialization practice (projects, etc)

#### **Third semester:**

Computational methods in the materials science

Magnetism of nanosystems

Extreme light/Physics of crystallization processes

Defects in crystals/Electric and dielectric properties of crystals  
Optical Spectroscopy of advanced materials/Electric and dielectric properties of crystals  
Specialization practice (projects)

#### **Fourth semester:**

Nanosystems in electromagnetic fields  
Condensed Matter Spectroscopy  
Rheological characterization of materials  
X-ray characterization of materials  
Specialization practice (projects)

### **5. Student advantages**

Given the extensive experience, accumulated in decades of scientific research by the members of the teaching staff, activity successfully confirmed on the international level, the students who are specialized in "**Physics and technology of advanced materials**" benefit by the most competent guidance, reflected in high level lectures on new trends in the field, current developments and novel advanced materials. Also, the existing labs infrastructure, along with the outperform apparatus of latest generation, offers the possibility of high accuracy experimental works to obtain and characterize semiconducting and optical crystals or nano-microsystems. This specialization will be of particular interest to students who wish to enhance their knowledge in the field of physics and technology of advanced materials. The programme also offer the opportunity to visit other universities from abroad and to study there one semester or one year in the frame of university international collaborations programm.

### **6. Career impact**

The mission of master studies in the "**Physics and technology of advanced materials**" is to prepare qualified staff for higher education and researchers in the field - closely related to the physics of condensed matter and the materials science and technology. Because of the experimental and theoretical skills achieved during the study, the students will also have the ability to meet the needs of the industrial community in the fields like : material processing, automotive, chemical engineering, IT and others.

### **7. Contact details**

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