

## Mesoscopics and Advanced materials. Master Program in Physics.

### Semester 1 (18 weeks)

#### Compulsory Courses

Discipline	Final assessment	ECTS
<i>Philosophy of natural science</i>	Exam	4.0
<i>Physics of condensed matter</i>	Exam	4.0
<i>Nanomechanics of material and systems</i>	Exam	4.0
<i>Dimensional quantization phenomena in mesoscopics</i>	Exam	4.0
<i>Computer modeling of the atomic clusters and fullerenes</i>	Final Test	4.0
<i>Communication skills</i>	Final test	4.0

#### Elective Courses

<i>Electronic paramagnetic resonance: fundamentals and applications / Physics of disordered nanosystems</i>	Final Test	3.0
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**Semester 1: 27 ECTS**

### Semester 2 (22 weeks)

#### Compulsory Courses

Discipline	Final assessment	ECTS
<i>Fundamentals of modern techniques to study nanomaterials and nanostructures</i>	Exam	4.0
<i>Spectroscopy of atoms, molecules and clusters</i>	Exam	4.0
<i>Technology of advanced materials and structures</i>	Exam	4.0
<i>Computer modeling of light interaction with metal nanostructures</i>	Final Test	2.0
<i>Characterization of solid state surfaces by electron spectroscopy</i>	Final Test	3.0
<i>Individual Research Project</i>	Oral presentation	10.0

#### Elective Courses

<i>Nonequilibrium processes in low-dimensional systems / Fractals and chaos in condensed matter</i>	Final Test	3.0
<i>Advanced glassy materials / Plasmonics</i>	Final Test	3.0

**Semester 2: 33 ECTS**

**Semester 3 (16 weeks)****Compulsory Courses**

<b>Discipline</b>	<b>Final assessment</b>	<b>ECTS</b>
<i>History and methodology of physics</i>	<b>Exam</b>	<b>3.0</b>
<i>Advanced problems in physics</i>	<b>Final Test</b>	<b>5.0</b>
<i>Research project</i>	<b>Oral presentation</b>	<b>7.0</b>
<i>Pedagogic practice (2 weeks)</i>		<b>3.0</b>

**Elective Courses**

<i>Surface physics / Optical properties of nanostructures</i>	<b>Final Test</b>	<b>3.0</b>
<i>Quantum many-body theory / Theoretical physics of bio-nano systems</i>	<b>Final Test</b>	<b>3.0</b>

**Semester 3: 24 ECTS****Semester 4 (24 weeks)**

<b>Discipline</b>	<b>Final assessment</b>	<b>ECTS</b>
<i>Internship (10 weeks)</i>		<b>15.0</b>
<i>Master's Thesis</i>	<b>Written report</b>	<b>19.5</b>
<i>Master's Thesis Presentation</i>	<b>Oral presentation</b>	<b>1.5</b>

**Semester 4: 36 ECTS****Total workload: 120 ECTS**