

## Information sheet for the course Selected Chapters from Physics

<b>University:</b> <i>Alexander Dubček University of Trenčín</i>	
<b>Faculty:</b> <i>Faculty of Industrial Technologies in Púchov</i>	
<b>Course unit code:</b> <i>TTN-P-7</i>	<b>Course unit title:</b> <i>Selected Chapters from Physics</i>
<b>Type of course unit:</b> <i>compulsory</i>	
<b>Planned types, learning activities and teaching methods:</b> <i>Lecture: 2 hours weekly/26 hours per semester of study; face to face</i> <i>Seminar: 2 hours weekly/26 hours per semester of study; face to face</i> <i>Laboratory tutorial: 0</i>	
<b>Number of credits:</b> <i>4</i>	
<b>Recommended semester:</b> <i>the 2<sup>nd</sup> semester in the 1<sup>st</sup> year full-time form of study</i> <i>the 2<sup>nd</sup> semester in the 1<sup>st</sup> year part-time form of study</i>	
<b>Degree of study:</b> <i>I the 1<sup>st</sup> degree of study (Bachelor's degree)</i>	
<b>Course prerequisites:</b> <i>TTN-P-3 Selected chapters from mathematics</i>	
<b>Assessment methods:</b> <i>One semestral work themed: 1. Matter, space, time, space-time – cover design of electronic course of modern physics on DVD, 2. – Paradigm of classical physics – autoseat cover design in Marc Chagall vitrage style, 3. Light – design of maker's emblem in Rembrandt, Monet and pictogram style, 4. Optical enlargement of flatlet – creative study for architect, 5. Thermal confort of police uniform – design of police uniform model in thermograms style, 6. Quantum-mechanical shoes of Salvador Dali – hand-bill design for fashion show, 7. Who killed the Schrödinger's cat ? – patchwork design in the style of Picasso blue period, 8. The probability density of Gaudi's Sagrada Familia finalization – design of internet portal fashion 9. – Chaos theory – Alfonz Mucha style fractal geometry, 10. Parallel universes hypothesis – creative design of sheeting in 3D Painting style,</i> <i>Students have to sustain the work in the face of follow students.</i> <i>Evaluation: A – 25 points, B – 20 points, C – 15 points, D – 10 points, E – 5 points at least.</i>	
<b>Learning outcomes of the course unit:</b> <i>Students have deeper knowledge of classical and modern physics, laboratory skills, ability to use mathematics to solve physics problems, critical thinking skills, effective written and oral communications skills.</i>	
<b>Course contents:</b> <i>Introduction to study of physics, paradigms of current physics, the relation of physics to other sciences and its status in modern society, Physics Nobel Price in actual year, international achievements of Slovak physics, meaning of physics learning for materials sciences, textile technology and design.</i> <i>Matter, dark matter, substances, fields, space, time, space-time, incident.</i> <i>Introduction to vector analysis.</i> <i>Paradigm of Newtons physics and special relativity theory.</i> <i>Location, motion, its description and forms, atomic theory of matters, energy, dark energy, gravity, introduction to general theory of relativity and its practical consequences, conservation laws.</i> <i>Introuction to mechanics of continuum, shape.</i> <i>Heat and heat trasfer, basic thermophysical parameters of textile materials.</i> <i>Quantum physics paradigm, Copenhagen interpretation of quantum physics, parallel universes hypotesis, standard model of elementary praticles and forces, Higgs boson, M-theory and superstring model, actual cosmological theories of universe.</i> <i>Bosse-Einstein and Fermi condensates, quantum teleportation, quantum computers</i>	

<p><i>and quantum cryptography..</i>  <i>Introduction to physical fields, gravitation and electromagnetic field, light.</i>  <i>Wave-particle nature of mater.</i>  <i>Non-equilibrium thermodynamic systems</i>  <i>Introduction to chaos theory and fractal geometry.</i></p>																	
<p><b>Recommended of required reading:</b>  <i>Feynman, R.: The Feynman Lecturers on Physics I-III, California Institute of Technology-Addison Wesley Longman, 1970, ISBN-10: 0201021153.</i>  <i>Hawking, S.: Ilustrovaná stručná história času, Slovart, Bratislava, 2004, ISBN: 978-80-8085-920-6.</i>  <i>Kittel Ch.: Thermal Physics, Acad. Press, NewYork-London, 1997.</i>  <i>Lizák, P., Murárová, Z: Komfort odevov, Towarzystwo Slovakow w Polsce, Krakov, 2013, ISBN: 979-83-7490-694-4.</i>  <i>Kopal, I., Košťal, P.: Základy infračervenej termografie – Experimentálne metódy materiálového inžinierstva, Vysoká škola báňská, Ostrava, 2011, ISBN: 978- 80-248 – 2519-9.</i>  <i>Pijoan, J.: Dejiny umenia I-IX, Bratislava</i></p>																	
<p><b>Language:</b> Slovak</p>																	
<p><b>Remarks:</b></p>																	
<p><b>Evaluation history:</b></p> <table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>FX</th> </tr> </thead> <tbody> <tr> <td>45.45</td> <td>4.55</td> <td>18.18</td> <td>9.09</td> <td>13.64</td> <td>9.09</td> </tr> </tbody> </table>						A	B	C	D	E	FX	45.45	4.55	18.18	9.09	13.64	9.09
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<p><b>Lecturers:</b> doc. Mgr. Ivan Kopal, PhD.</p>																	
<p><b>Last modification:</b> 16.03.2015</p>																	
<p><b>Supervisor:</b> doc. Ing. Pavol Lizák, PhD.</p>																	