

## Specification for the book of courses

<b>Study program</b>	Electrical Engineering and Computer Science			
<b>Module</b>	Electron Devices and Microsystems			
<b>Type and level of studies</b>	Undergraduate Academic Studies			
<b>The name of the course</b>	Fundamentals of Quantum and Statistical Physics			
<b>Lecturer (for lectures)</b>	Ristić S. Goran			
<b>Lecturer/associate (for exercises)</b>	Živanović N. Emilija			
<b>Lecturer/associate (for OFE)</b>				
<b>Number of ECTS</b>	6	<b>Course status (obligatory/elective)</b>	Elective	
<b>Prerequisites</b>				
<b>Course objectives</b>	Introduction to the fundamentals of nonrelativistic quantum mechanics and the principle of quantum components. Introduction to classical and quantum statistics and their application to photons and electrons.			
<b>Course outcomes</b>	Mastering methods for solving the problem of tunneling electrons through potential barriers and finding the energy of electrons in potential well. The possibility of applying quantum statistics to solid states, with particular reference to semiconductors.			
<b>Course outline</b>				
<b>Theoretical teaching</b>	Limitations of classical physics. Introduction to quantum mechanics. Particle-wave dualism. De Broglie's hypothesis and Heisenberg's uncertainty relations. Wave function. Stationary and non-stationary Schrödinger equation. Potential step, potential barriers and well. WKB approximation. Tunnel diode. Quantum microstructure. Quantum transistors. Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac distribution. Statistics of electrons and photons.			
<b>Practical teaching (exercises, OFE, study and research)</b>	Practical classes take place through computational exercises. Concrete problems are solved during computer tutorials in order to make students more easily and successfully master certain areas that are covered in theoretical classes.			
<b>Textbooks/references</b>				
1	Fundamentals of Quantum and Statistical Physics, Faculty of Electronic Engineering, Niš, 2008 (in Serbian)			
2				
3				
4				
5				
<b>Number of classes of active education per week during semester/trimester/year</b>				
<b>Lectures</b>	<b>Exercises</b>	<b>OFE</b>	<b>Study and research work</b>	<b>Other classes</b>
2	2	0	0	0
<b>Teaching methods</b>	Lectures, computational exercises and consultations			
<b>Grade (maximum number of points 100)</b>				
<b>Pre-exam duties</b>	<b>Points</b>	<b>Final exam</b>		<b>Points</b>
<b>Activity during lectures</b>		<b>Written exam</b>		30
<b>Exercises</b>		<b>Oral exam</b>		30
<b>Colloquia</b>	40			
<b>Projects</b>				