**Electronics 3 (ECTS credits: 6)**

Language: the course is offered in English, Serbian and Hungarian.

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**Course description:**

In its first part, the course covers the behavior of basic power electronic circuits: rectifiers, dc-dc converters, inverters, ac-ac converters and resonant converters.

In the second part the applications of these circuits are described and analyzed: power supplies, motor control solutions, battery circuits, welding current sources and high voltage equipment.

In the third part, the elements of computer aided electronic design are presented. Rules of drawing schematics and PCB design are described.

The following topics are covered:

* Lecture 1. Classification of basic power conversion electronic circuits
* Lecture 2. Description of rectifiers
* Lecture 3. Description of dc-dc converter circuits
* Lecture 4. Description of inverters
* Lecture 5. Description of ac-ac converters: phase control circuits, frequency changers, cycloconverters
* Lecture 6. Description of resonant converters
* Lecture 7. Construction of power supplies
* Lecture 8. Behavior of power supplies and their parameters
* Lecture 9. Analysis of motor control circuits
* Lecture 10. Other applications of power electronic circuits
* Lecture 11. Elements of computer aided electronic design
* Lecture 12. Design capture, net list, design rules
* Lecture 13. Component libraries
* Lecture 14. PCB design
* Lecture 15. Design rule checks

**Aims:**

The goals of the course are the following:

* The students have to get understanding of electronic power conversion principles
* They have to learn the analysis tools of power electronic circuits
* They will be able to construct or select power supplies from the market
* They will be able to construct or select motor control circuits from the market
* They will be able to use computer aided electronic design tools
* They will be able to prepare documentation for electronic design projects