

# Electrical Power Engineering



## What is electrical power engineering?

Electrical power system is the most complex and advanced technical system in the world and the basis for the development of all other technical solutions; through the synergy of electrical engineering, electronics, control and communication, it drives all other technical processes in the world and enables the present as we know it and the future we desire.

## Why study electrical power engineering?

There is no doubt that the changes in the energy sector, which are already taking place now and will continue in the coming decades, will determine the future of our planet and of the humanity. All relevant strategic documents in the world unanimously agree – the transition towards a low/zero carbon society will create new R&D engineering challenges, while also creating numerous business opportunities.

## Competences and skills



An optimal mix of research and practical work will result in a number of highly relevant skills:

- the ability to work independently and create innovative solutions,
- mathematical modelling for simulating and optimizing the electrical power system,
- modeling and controlling battery storage systems, renewable energy systems, electric vehicles, smart homes/buildings,
- mathematical modelling, simulating and setting/ implementing protection and control setups in electrical power networks,
- modelling and programming solutions for tracking atmospheric discharges, as well as processing and analyzing the collected data and applying it in planning and protecting systems sensitive to overvoltages caused by atmospheric discharges.

## Career



At Electrical power engineering we strive to develop skills and knowledge to ensure our students have a wide range of choices and opportunities in their future careers – whether as researchers, R&D engineers, designers, operational engineers, dispatchers or consultants, our graduates are recognized and praised worldwide.



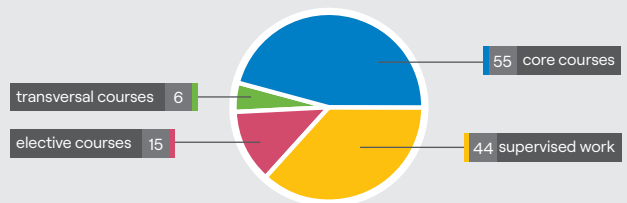
## Become a part of Department of Energy and Power Systems (DEPS)

At the Electrical power engineering you will have the opportunity to:

- apply theoretical knowledge in the largest laboratories in FER: High voltage laboratory and Smart Grid laboratory,
- work as part of the interdisciplinary teams of power system engineers, physicists, mathematicians, computer engineers and control engineers,
- work on some of the most innovative and most attractive EU projects,
- work with top FER researchers as your mentors/supervisors,
- collaborate with our industry and solve practical real-world problems,
- work with modern tools and software used by the industry in their everyday tasks,
- be socially active and collaborate on some of the best and award-winning EU projects,
- learn from leading Croatian experts in the field through on-site visits to electrical facilities, power plants, industrial facilities,
- have the opportunity to learn and work in a dedicated student laboratory at the Department of energy and power systems, where your professors and assistants are always at your disposal.

PLAN OF STUDY	SEMESTER	ECTS
<b>Core courses</b>		<b>55</b>
Power system analysis	1	5
Electric Power System 1*	1	5
Fundamentals of Power Electronics*	1	5
Power Generation	1	5
Seminar I	1	3
Economics of Power and Energy Systems	2	5
Electric Power System 2*	2	5
Renewable Energy and Energy Storage	2	5
High Voltage Technology and EMC	2	5
Seminar II	2	3
Energy Policy Analysis and Modelling	3	5
Power Systems Dynamics and Control	3	5
Electric Power Distribution Systems	3	5
Istraživački seminar	3	5
Project	3	3
Diploma Thesis	4	30
<b>Elective courses</b>	<b>1, 2, 3</b>	<b>25</b>
<b>Transversal courses</b>	<b>1, 2, 3</b>	<b>6</b>

\* the course is also offered at the undergraduate level (if the course is passed at the undergraduate level, it can be replaced by the Elective course recommended for the profile)



*"Dramatic changes taking place in electrical power engineering today are rapidly changing the vision of energy and power systems as we know them. The combination of ICT, classical energy and high environmental standards requires top engineering skills and gives young engineers the opportunity to prove themselves in a very challenging environment."*

**Tomislav Plavšić, PhD**  
Chairman of the Board at HOPS



*"Studying electrical power engineering has defined me as the person I am today and helped me to achieve the results of which I am proud. Participating in different projects thought me the value of interdisciplinary approach, but also to be a part of the team and to recognize how each individual can make their optimal contribution."*

**Petra Mesarić, PhD**  
CEO of her own company  
SmartWay



*"Studying electrical power engineering at FER has made me a rich man: I got to know the world and many new cultures, different ways of thinking and interesting views on life and work priorities. By working directly on topics related to energy transition, I learned how important energy efficiency is for sustainable development of the society as a whole."*

**Ivan Paić**  
Global VP Schneider Electric