

LO for Academic Studies in Power Systems (first and second cycle)



University "St. Kliment Ohridski" – Bitola

PROGRAMME LEARNING OUTCOMES FOR ACADEMIC STUDIES IN POWER SYSTEMS

	First Cycle	Second cycle
Title of diploma	University Bachelor degree in electrical engineering	Master of science in electrical engineering
Duration of study(years)	4	1
Number of credits	240	60

Type of descriptor	Qualific. cycle	Qualification descriptors
Knowledge and understanding	First cycle	<p>Recognizes and remembers the well established principles within the fundamental fields of physics, mathematics and engineering sciences related to electrical engineering;</p> <p>Describes and discusses key aspects and concepts particularly in the principal focus areas of the Power systems: power production, transmission and distribution;</p> <p>Keeps abreast with the current research and development work as well as the wider multidisciplinary context of electrical engineering.</p>
	Second cycle	<p>Identifies appropriate methodologies and techniques for acquiring knowledge and understanding in one of the areas of Power systems in which the student has chosen to develop special expertise: electric machines, electric transmission and distribution systems, computer application in power systems, power electronics, renewable energy sources, energy efficiency and environment protection;</p> <p>Systematically and creatively explains and discusses the current and emerging research, concepts, principles and theories relevant to the chosen area of specialization in Power systems;</p> <p>Keeps abreast of the most advanced disciplines in the field of Power systems, providing a basis for originality in developing and applying autonomous ideas in a research context.</p>

Type of descriptor	Qualific. cycle	Qualification descriptors
Applying knowledge and understanding	First cycle	<p>Determines and analyses the processes, methods and results in the area of power production, transmission and distribution;</p> <p>Locates, formulates and solves fundamental problems in a real power system related to designing, exploitation, maintenance and technical control, using established methods;</p> <p>Selects and uses appropriate equipment, tools and analytical methods relevant for power systems analysis;</p> <p>Applies regulations and techniques for environmental protection.</p>
	Second cycle	<p>Examines, analyzes, develops, optimizes and manages Power systems;</p> <p>Independently and creatively advises on problems that arise in the process of designing and construction of power systems, technical control and expertise;</p> <p>Applies innovative methods in solving multidisciplinary, unfamiliar and incompletely defined problems, using advanced mathematical, scientific, IT and engineering knowledge;</p> <p>Applies regulations and techniques and take measures for environmental protection.</p>

Type of descriptor	Qualific. cycle	Qualification descriptors
Making judgment	First cycle	<p>Gathers, analyzes and presents information from relevant data within the field of Power systems, usually from the perspective of: power production, transmission and distribution;</p> <p>Exercises appropriate judgment in implementing and evaluating knowledge crucial for regular operation of the power systems. taking into account relevant personal, social, scientific or ethical aspects;</p> <p>Combines theory and practice to solve power systems' problems, to explain the reasons and to choose adequate solution.</p>
	Second cycle	<p>Synthesizes and integrates knowledge across several areas in the field of power systems, related to the area in which the student has chosen to develop special expertise;</p> <p>Critically evaluates data, makes sound judgments and draws conclusions even on the basis of incomplete or restricted information, using current information and communication technology necessary for regular operation of the power systems in practice; Investigates the application of new and emerging technologies, innovations and best practices in the everyday real Power systems practice, researchs and analyses national development situation.</p>

Type of descriptor	Qualific. cycle	Qualification descriptors
Communication skills	First cycle	<p>Communicates effectively in written reports and oral presentations using appropriate terminology and technical language, common for Power systems;</p> <p>Shares and debates concepts and ideas in the field of Power systems with the engineering community and with society in large;</p> <p>Is capable of teamwork and cooperate actively within the group by sharing in the tasks and responsibilities.</p>
	Second cycle	<p>Clearly and unambiguously communicates conclusions, results and study outcomes to specialist audiences, along with the ability to appropriate the style and form of expression to non-specialist audience;</p> <p>Participates effectively in multidisciplinary designed teams where Power systems competences are necessary, either as a team leader or in a specialist role;</p> <p>Accepts significant responsibility and accountability for the quality of individual and collective results, leads and initiates activity in specialized areas of Power systems within electrical engineering.</p>

Type of descriptor	Qualific. cycle	Qualification descriptors
Learning skills	First cycle	<p>Takes initiative to identify and address learning needs for further professional education in the field of power systems, with a high degree of autonomy;</p> <p>Keeps track of scientific issues in the field of Power systems such as scientific papers, journals, seminars, conferences etc.</p>
	Second cycle	<p>Identifies personal need for further knowledge and operates independently to acquire new knowledge and skills autonomously within the societal context;</p> <p>Ability to take responsibility for ongoing self-directed individual learning in the area of Power systems in which the student has chosen to develop special expertise.</p>