

Recommended pass through the study plan

Name of the pass: Branch Electrical Power Engineering - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering

Department: Department of Electrical Power Engineering

Pass through the study plan: Electrical Engineering, Power Engineering and Management - Electrical Power Engineering

Branch of study guaranteed by the department: Electrical Power Engineering

Guarantor of the study branch: prof. Ing. Josef Tlustý, CSc.

Program of study: Electrical Engineering, Power Engineering and Management

Type of study: Follow-up master full-time

Note on the pass:

Coding of roles of courses and groups of courses:

P - compulsory courses of the program, PO - compulsory courses of the branch, Z - compulsory courses, S - compulsory elective courses, PV - compulsory elective courses, F - elective specialized courses, V - elective courses, T - physical training courses

Coding of ways of completion of courses (KZ/Z/ZK) and coding of semesters (Z/L):

KZ - graded assesment, Z - assesment, ZK - examination, L - summer semester, Z - winter semester

Number of semester: 1

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BEZM	Safety in Electrical Engineering for a master's degree Vladimír K la, Radek Havlí ek, Ivana Nová, Josef ernohous, Petr Novák, Zden k Burian, Adam Bou a, Pavel Mlejnek Radek Havlí ek Vladimír K la (Gar.)	Z	0	2BP+2BC	Z	P
B1M16EKE	Economy of Power Industry	KZ	4	2P+2S	Z	P
B1M14ESP	Electric Machinery and Apparatus Pavel Mindl Pavel Mindl Pavel Mindl (Gar.)	Z,ZK	5	2P+2L	Z	P
B1M15IAP	Engineering Applications Jan Kyncl Jan Kyncl (Gar.)	Z,ZK	5	2P+2C	Z	P
B1M13JAS	Quality and Reliability	Z,ZK	6	2P+2C	Z	P
B1M14SSE	Machinery and Structures of Power Plants Petr Ko árník, Ji í Š astný Petr Ko árník Petr Ko árník (Gar.)	Z,ZK	5	2P+2C	Z	P
B1M15DEE	Distribution of Electrical Energy Zden k Müller, Josef Tlustý, Ji í Vodrážka Josef Tlustý (Gar.)	Z,ZK	5	2P+2S	Z	PO

Number of semester: 2

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
B1M13EMP	Ecology of materials and processes	Z,ZK	5	2P+2L	L	P
B1M15ENY	Power Plants Zden k Müller, Jan Š petlík, Stanislav Bou ek Zden k Müller (Gar.)	Z,ZK	5	2P+2S	L	P
B1M15TVN	High Voltage Engineering Radek Procházka Radek Procházka (Gar.)	Z,ZK	5	2P+2L	L	P
B1M14TVM	Theory and Application of Power Converters Ji í Lettl Jan Bauer Ji í Lettl (Gar.)	Z,ZK	5	2P+2L	L	P
B1M15ELS	Electrical Light Petr Žák	Z,ZK	5	2P+2L	L	PO
B1M15ETT	Electrical Heat Jan Kyncl Jan Kyncl (Gar.)	Z,ZK	5	2P+2S	Z	PO

Number of semester: 3

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
B1M13ASS	Solar Systems Application Ladislava erná, Vít zslav Benda, Pavel Hrzina, Jakub Holovský Jakub Holovský Vít zslav Benda (Gar.)	Z,ZK	5	2P+2L	Z	P

B1M14EPT	Electric Drives and Traction <i>Ji í Lettl Ji í Lettl</i>	Z,ZK	6	2P+2L	Z	P
B1M15PRE	Transmission and Distribution of Electricity <i>Zden k Müller, Ladislav Musil Zden k Müller (Gar.)</i>	Z,ZK	6	2P+2S	Z	P
B1M15IND	Master Project <i>Zden k Müller</i>	Z	4	0P+4S	Z	PO
2015_MEEMH	Humanitní p edm ty <i>B0M16FI2,B0M16HT2,..... (see the list of groups below)</i>	Min. cours. 1 Max. cours. 6	Min/Max 4/22			V
2015_MEEMVOL	Volitelné odborné p edm ty	Min. cours. 0	Min/Max 0/999			V

Number of semester: 4

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
BDIP25	Diploma Thesis	Z	25	22s	L	P
2015_MEEMVOL	Volitelné odborné p edm ty	Min. cours. 0	Min/Max 0/999			V

List of groups of courses of this pass with the complete content of members of individual groups

Kód	Name of the group of courses and codes of members of this group (for specification see here or below the list of courses)	Completion	Credits	Scope	Semester	Role
2015_MEEMH	Humanitní p edm ty	Min. cours. 1 Max. cours. 6	Min/Max 4/22			V
B0M16FI2	Philosophy 2	B0M16HT2	History of science and technolog ...	B0M16HSD	History of economy and social st ...	
B0M16MPS	Psychology	A003TV	Physical Education	B0M16TE1	Theology	
2015_MEEMVOL	Volitelné odborné p edm ty	Min. cours. 0	Min/Max 0/999			V

List of courses of this pass:

Code	Name of the course	Completion	Credits
A003TV	Physical Education	Z	2
B0M16FI2	Philosophy 2 The course is oriented on the transdisciplinary aspects of philosophy, informatics, physics, mathematics and biology.	Z,ZK	4
B0M16HSD	History of economy and social studies This subject deals with the history of the Czech society in the 19th - 21th centuries. It follows the forming of the Czech political representation, its aims and achieved results as well as the social and cultural development and coexistence of the various ethnical groups in the Czech countries.	Z,ZK	4
B0M16HT2	History of science and technology 2 This subject traces historical developments in electrical engineering branches in the world and in the Czech Lands. Its ultimate goal is to stimulate students' interest in the history and traditions of the subject, while highlighting the developments in technical education and professional organizations, the process of shaping scientific life and the influence of technical engineers	Z,ZK	4
B0M16MPS	Psychology	Z,ZK	4
B0M16TE1	Theology This subject provides to students the basic orientation in christian theology and requires no special previous education. After short philosophic lecture the basic theologic disciplines are gone through. The subject is determined not only to believer students who want to know the reliable theologic grounding but also above all to ones who want to get know Christianity - religion from which grows our civilization up.	Z,ZK	4
B1M13ASS	Solar Systems Application Solar energy. Photovoltaic phenomena. Photovoltaic cells and modules and their characteristics. Photovoltaic systems and their applications. Photo-thermal phenomena. Photo-thermal power stations. Significance, economic and environmental aspects of solar energy exploitation.	Z,ZK	5

B1M13EMP	Ecology of materials and processes	Z,ZK	5
Electrical Technology from the perspective of ecology. Environmental assessment of the various types of surface protection. Environmental aspects of protective systems used in electronics. Environmental impacts of electrical production. Ekodesign proposal of the electrical product. Principles of the proposal product for a difficult operating environment. Disposal of electrical waste.			
B1M13JAS	Quality and Reliability	Z,ZK	6
Terminology and definitions from the area of quality and reliability and their control, philosophy of quality, systems of quality control in the world. Reliability as a part of quality. Basic definitions from the area of reliability, basic distributions used in reliability and their basic characteristics. Back-up using a warm and cold standby, types of warm and cold standbys. Reliability of components and systems, calculation of reliability using composition and decomposition. and using a method of a list. Basic statistical methods and tools joined with quality control, managerial tools for quality control. Techniques FMEA and QFFD, house of quality. Capability of a process. Taguchi loss function. Audits. Statistical inspection.			
B1M14EPT	Electric Drives and Traction	Z,ZK	6
The course focuses on the principles of designing electric drives with AC motors in different ways and different types of load, reliability, design for explosive environments and for special purposes and the necessary technical documentation. Students learn the basics of electric traction drives for trams in public transport systems, electric locomotives, as well as the systems of hybrid cars and electric vehicles.			
B1M14ESP	Electric Machinery and Apparatus	Z,ZK	5
The course is focused on contact and solid-state switching devices in LV networks. Basic topologies AC switches and stress of their components, systems with modern semiconductor devices and their protection circuits, testing electrical devices. The course also deals with the general theory of electrical machines. Magnetic field. Fundamentals of commutation. The transformer efficiency, voltage drop. Transients - switch to the network, a short circuit. Mathematical model of synchronous and asynchronous machines. A rotating magnetic field. Induction machine, starting and speed control. Influence of harmonic magnetic field. Single-phase induction motor. Work synchronous machine on a network. Torque, stability, overload capacity.			
B1M14SSE	Machinery and Structures of Power Plants	Z,ZK	5
The aim of the course is to acquaint students with forms of energy transformation in power plants, describing the function of power facilities, their structure, properties and characteristics.			
B1M14TVM	Theory and Application of Power Converters	Z,ZK	5
The course focuses on typical applications of power semiconductor converters on their sizing, switching and protection of power semiconductor converters. It also summarizes the basics of modulation and control strategies of power semiconductor converters and modern trends in their application in electric drives and other applications.			
B1M15DEE	Distribution of Electrical Energy	Z,ZK	5
B1M15ELS	Electrical Light	Z,ZK	5
B1M15ENY	Power Plants	Z,ZK	5
B1M15ETT	Electrical Heat	Z,ZK	5
B1M15IAP	Engineering Applications	Z,ZK	5
B1M15IND	Master Project	Z	4
B1M15PRE	Transmission and Distribution of Electricity	Z,ZK	6
B1M15TVN	High Voltage Engineering	Z,ZK	5
B1M16EKE	Economy of Power Industry	KZ	4
Fundamentals of financing of power companies. Cost structure of power generation and distribution. Prices and tariff systems for power, heat and gas production and distribution. Examples of economic evaluation and investment appraisal of the typical project in power sector. Renewable energy sources, externalities. Energy policy and energy law in CR. Liberalization and power market development.			
BDIP25	Diploma Thesis	Z	25
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination.			
BEZM	Safety in Electrical Engineering for a master's degree	Z	0
The course provides for students of all programs periodic training guidelines for health and occupational safety and gives knowledge of electrical hazard of given branch of study. Students receive indispensable qualification according to the current Directive of the Dean.			

For updated information see <http://bilakniha.cvut.cz/en/f3.html>

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