

07 Objective-Module Matrix of Electrical (Power) Engineering and Its Automation

ASIIN Subject-Specific Criteria (SSC)	Learning Outcomes of the Study Programme	Corresponding Modules
Knowledge and Understanding Graduates have in particular		
Master a solid foundation of mathematics, natural sciences, and engineering fundamentals, be able to apply knowledge of mathematics, natural sciences, engineering fundamentals, and electrical (Power) engineering and its automation expertise to solve complex engineering problems in the field of electrical engineering, and understand the broader ethical and multidisciplinary context of the engineering field.	Possess a solid foundation in mathematics, natural sciences, and engineering fundamentals. Demonstrate the ability to apply knowledge of mathematics, natural sciences, engineering basics, and professional disciplines to articulate technical problems appropriately, be capable of understanding and analyzing complex phenomena in the electrical engineering domain, as well as establishing and solving mathematical models for practical engineering problems. Be able to employ mathematical methods to observe, analyze, and resolve practical problems in engineering practice; apply engineering fundamentals, professional knowledge, and mathematical modeling approaches to address engineering problems in the field of electrical engineering; comprehend the complexity of engineering problems involving ethical implications and multidisciplinary contexts, and propose effective, contextually informed solutions through comprehensive consideration.	Module2: Mathematics and Natural Science Courses ● Advanced mathematics I –3 ● Linear Algebra II ● Complex function Module 3: Engineering Foundation Courses ● Electric Circuit Theory ● Analog electronic technology ● Digital Electronic Technology Module 4: Professional Foundation Courses ● Power System Analysis ● Power System Protective Relaying ● High Voltage Technique
Interdisciplinary Competences Graduates		

Be able to apply the fundamental principles and knowledge of mathematics, natural sciences, and relevant disciplines such as electrical engineering, control engineering, and computer science to identify and articulate complex engineering problems; and to analyze complex engineering problems in the field of electrical engineering through literature research, so as to obtain valid conclusions.	Possess a command of the fundamental principles and mathematical modeling methods of mathematics, natural sciences, and engineering sciences. Demonstrate the ability to precisely articulate complex engineering problems by leveraging the principles and mathematical modeling methods from interdisciplinary courses in electrical engineering, control engineering, computer science, and economics, identify and evaluate the critical components of complex engineering problems; and conduct rigorous analysis through the integration of interdisciplinary expertise. Apply interdisciplinary knowledge to analyze complex problems, examine the influencing factors of complex electrical engineering problems via literature analysis, data retrieval, and other scholarly methods to derive valid conclusions, and proactively explore alternative solutions.	Module 3: Engineering Foundation Courses ● Electric Circuit Theory Module 4: Professional Foundation Courses ● Power System Analysis ● Theory of Electrical Machine ● Power Electronics Technology ● Principles of Automatic Control ● Foundation and Application of Microcontroller ● PLC Principle and Application Module 5: Professional Courses ● Power System Protective Relaying ● Power Plant Electrical Engineering ● High Voltage Technique
Possess a spirit of teamwork and collaboration, and be able to assume the roles of individual, team member, or leader in multidisciplinary teams.	Possess a robust team-oriented mindset, enabling effective communication and collaborative work with members from diverse disciplinary backgrounds. Demonstrate the ability to fulfill technical tasks within a team context, and to perform work independently or in collaborative settings within a team. Be able of assuming the roles of an individual contributor, team member, and team leader in multi-disciplinary teams, and be able to organize, coordinate, and direct team efforts to achieve objectives.	Module 6: Engineering Practice and Graduation Project ● Electrical Production Practice ● Engineering Training ● Practice of PLC Control System Module 8: Comprehensive Competency Development ● Innovation and Entrepreneurship Practice ● Club activities

Understand and master the principles of engineering management and economic decision-making methods in the field of electrical engineering, and be able to apply them in a multidisciplinary environment.	Possess a comprehensive understanding and command of management and economic decision-making methodologies embedded in engineering project practices. Demonstrate a clear grasp of the cost structure spanning the full lifecycle and end-to-end processes of electrical energy production and control within the electrical engineering domain. Be able to apply engineering management principles and economic decision-making frameworks to the design and development of solutions in multi-disciplinary contexts.	Module7 : Interdisciplinary Courses ● Power Technology Economics and Management ● Electricity Market Module4 : Professional Foundation Courses ● Power System Analysis
Have an awareness of autonomous learning and lifelong learning, and possess the ability to continuously learn and adapt to career development.	Possess the awareness of self-directed learning and lifelong learning, and master the methodologies of self-directed learning. Demonstrate the ability to recognize the necessity of self-directed learning and lifelong learning within the context of social development. Possess self-directed learning capabilities, including the ability to comprehend technical issues, synthesize and summarize information, and formulate questions, among others, and be able to adapt to the requirements of career development.	Module 6: Engineering Practice and Graduation Project ● Design of Power System Analysis ● Graduation Project ● Comprehensive Practice of Electrical Engineering Module 8:Comprehensive Competency Development ● Social Practice
	Acquire foreign language knowledge relevant to professional practice.	Module 1: Humanities and Social Sciences Courses ● College English 1-3 ● Writing and Communication Module 6: Engineering Practice and Graduation Project

Possess foreign language knowledge relevant to professional practice; be able to communicate and exchange effectively with industry peers and the public on complex electrical engineering problems, including writing technical reports and design documents, delivering presentations, articulating ideas clearly, and responding to instructions; and have a certain international perspective, enabling communication and collaboration in cross-cultural contexts.	Possess linguistic and written communication competencies for cross-cultural interaction, enabling basic communication and exchange on professional issues in cross-cultural contexts. Demonstrate the ability to accurately articulate viewpoints, respond to inquiries, and recognize communication disparities between industry peers and the general public regarding complex engineering problems in electrical engineering, through oral presentations, written documents, and graphical representations.	● Training for Specialized English ● Graduation Project ● Professional Cognition Practice ● Design of Power System Analysis ● Design of Electrical Engineering Course for Power Plant Module 5: Professional Courses ● High Voltage Technique
Possess humanities and social science literacy, a sense of social responsibility, and professional ethical competence; be able to engage in electrical engineering practice with critical thinking, and contribute to shaping social processes with a sense of responsibility and a spirit of democracy.	Acquire knowledge pertaining to humanities and social sciences literacy, professional ethics, and occupational ethics; hold sound values; and possess robust physical and mental health. Comprehend engineering ethical norms and professional conduct centered on honesty, impartiality, integrity, and compliance, and demonstrate the ability to consciously adhere to these principles and fulfill corresponding responsibilities in engineering practice. In electrical engineering practice, be capable of shaping social processes through critical thinking, while upholding a sense of responsibility and a democratic ethos.	Module 1: Humanities and Social Sciences Courses ● Mental Health Education for College Students ● Ideological Moral Cultivation and Legal Basis ● Fundamentals of Marxism ● Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics ● Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Engineering Methodology Graduates		

In response to complex electrical engineering problems, develop, select, and apply appropriate technologies, resources, modern engineering tools, and information technology tools to achieve testing, analysis, prediction, simulation, and development of complex electrical engineering problems, and be able to understand their limitations.	Master the usage principles and methods of modern instruments and meters, information technology tools, engineering tools, and simulation software commonly used in the electrical engineering field. Be capable of selecting and using appropriate instruments and meters, information resources, engineering tools, and professional simulation software to test, analyze, calculate, and design complex engineering problems. Be able to develop or select modern tools that meet specific requirements for specific objects in the power system, simulate and predict professional issues in the electrical engineering field, and understand their limitations.	Module 6: Engineering Practice and Graduation Project ● Electrical CAD Application Training ● Power System Simulation Practice ● Electronics Technology Practical Training ● Engineering Training ● Practice of PLC Control System ● Comprehensive Practice of Electrical Engineering
Be able to conduct research on complex electrical engineering problems based on scientific principles and employing scientific methods such as testing, experimentation, data analysis, and interpretation, and obtain reasonable and valid conclusions through information synthesis.	Master the scientific methods of testing, experimentation, data analysis and interpretation based on scientific principles. Be capable of choosing research routes, designing experimental schemes, constructing experimental systems and conducting experiments safely according to the characteristics of the research objects of electronic circuits or power systems. Be able to analyze and interpret the experimental data of electronic circuits or power systems and draw reasonable and effective conclusions through information synthesis.	Module 3: Engineering Foundation Courses ● Electric Circuit Theory ● Simulate electronic technology ● Digital Electronic Technology Module 4: Professional Foundation Courses ● Power Electronics Technology ● Foundation and Application of Microcontroller Module 6: Engineering Practice and Graduation Project ● Comprehensive Practice of Electrical Engineering
Engineering Development Graduates		

In addressing solutions to complex engineering problems in the field of electrical engineering, design electrical systems, devices, or processes that meet specific needs, and demonstrate a spirit of innovation in the design process, while taking into account factors such as society, health, safety, law, culture, and the environment.	Master the basic design/development methods and techniques for the entire cycle and process of engineering design of electrical systems and development of electrical control and protection devices, and understand various factors that affect design goals and product technical solutions. Be capable of developing and designing electrical system products or process flows that meet requirements for complex engineering problems and specific needs in electrical engineering, and demonstrate innovative consciousness in the design. Be able to take into account social, health, safety, legal, cultural and environmental factors in the design of electrical engineering and the development and design of electrical products.	Module 4: Professional Foundation Courses ● Power Plant Electrical Engineering Module 6: Engineering Practice and Graduation Project ● Power Plant Electrical Engineering ● Practice of Single Chip Microcomputer Application Technology ● Design of Power System Analysis ● Design of Electrical Engineering Course for Power Plant ● Course Design of Power Electronics ● Graduation Project ● Comprehensive Practice of Electrical Engineering
Engineering Practice and Product Development Graduates		
Be able to analyze and evaluate the impact of professional engineering practices and solutions to complex engineering problems on society, health, safety, law, and culture, environmental and social sustainable development, based on relevant background knowledge in the field of electrical engineering, and understand the responsibilities entailed.	Acquire an understanding of the technical standards system, intellectual property rights, industrial policies, and relevant laws and regulations within the field of electrical engineering. Master the knowledge system and methodological frameworks pertaining to environmental protection and sustainable development. Comprehend the implications of diverse social and cultural contexts on engineering practice, the core concepts and inherent connotations of environmental protection and sustainable development. Demonstrate the ability to analyze and evaluate the impacts of professional engineering practices and solutions to complex engineering problems in	Module 6: Engineering Practice and Graduation Project ● Professional Cognition Practice ● Comprehensive Practice in Electrical Safety and Emergency Rescue ● Electrical Production Practice Module 2: Mathematics and Natural Science Courses ● Introduction to Environmental Science

	electrical (Power) engineering and Its automation on society, health, safety, law, culture and environmental protection and sustainable development, as well as the influence of these constraining factors on project implementation, and grasp the corresponding responsibilities to be borne.	
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