

Objective Matrix of BME

Training Objectives	Expected Learning outcomes of the curriculum -Knowledge -Skills -Competences	Corresponding module/module goal
Master basic knowledge in mathematics, natural sciences, information technology, etc., laying a solid foundation for subsequent courses, and possessing the ability to use learned knowledge to solve complex engineering problems	Knowledge: Master basic knowledge of mathematics, natural sciences, information technology and computer-related knowledge. Master the basic knowledge of mathematics, natural sciences, information technology, and computer related fields. Skills: The ability to use mathematical knowledge to understand and appropriately express practical engineering problems; the ability to establish basic models to solve various practical problems in technology and engineering applications. Ability to apply mathematical, natural science knowledge, and information technology to understand and express engineering problems. Ability to solve practical engineering problems through modeling. Competencies:	Mathematics, Natural Sciences: Advanced Mathematics (1, 2) Linear Algebra Probability Theory and Mathematical Statistics College Physics (1, 2) College Physics Experiment Medical Chemistry (Organic) Medical Chemistry (Inorganic) Preclinical Medicine Theories (1, 2) Principal of Clinical Medicine Medical Statistics Informatics:

	Be able to observe, analyze and solve technical problems with mathematics and information viewpoints and ways of thinking. Be able to continuously analyze, synthesize, calculate, judge and reason about engineering phenomena according to the characteristics of mathematics and information technology to solve engineering problems. Ability to observe, analyze, and solve technical problems from a mathematical, informational, and cognitive perspective. Being able to continuously analyze, synthesize, calculate, judge, and reason about engineering phenomena based on the characteristics of mathematics and information technology, to solve engineering problems.	C Program Design Python Program Design
Master a wide range of basic engineering and professional knowledge and skills, laying a solid foundation for subsequent professional course learning.	Knowledge: Master basic engineering and professional knowledge in the fields of machinery, mechanics, circuit theory, electronic technology, and signals and systems. Master the basic engineering and professional knowledge of engineering, machinery, mechanics, circuit principles, electronic technology, signals and systems, etc. Skills: Possess relevant basic engineering and professional knowledge to analyze various engineering phenomena in Biomedical Engineering; master general engineering knowledge, methods and skills to solve practical problems in engineering applications.	Engineering Fundamentals: Introduction to Engineering Introduction to Biomedical Engineering Circuit Theory Engineering Mechanics Analog Electronic Technology Digital Electronic Technology Mechanical Drawing Signals and Systems

	Ability to apply engineering and professional knowledge to analyze various engineering phenomena in the field of biomedical engineering. Ability to apply engineering knowledge, methods, and skills to solve practical problems in engineering applications. Competencies: Master related concepts and basic principles of machinery, mechanics, electronics, signals and systems, etc. and have basic biomedical engineering knowledge. Be able to continuously analyze, summarize, judge and reason about engineering phenomena according to the characteristics of biomedical engineering to understand engineering problems. Master the concepts and basic principles related to mechanics, electronics, signals and systems, and biomedical engineering. Being able to continuously analyze, summarize, judge, and reason about engineering phenomena based on the characteristics of biomedical engineering, in order to understand engineering problems.	Practical Training: Fundamentals and Applications of MATLAB Comprehensive Experiment of Analog Electronic Technology Comprehensive Experiment of Digital Electronic Technology Electronic Comprehensive Design
Master the professional knowledge of solving complex engineering problems in the field of biomedical	Knowledge: Master the professional knowledge of solving complex engineering problems in the field of Biomedical Engineering, especially the aspects of requirement analysis, design,	Engineering Applications: Biomedical Engineering Research Norms and Ethics Biomedical Sensors

engineering, be able to investigate, design, develop, and analyze complex engineering problems in related fields, and propose solutions that meet the specific needs of biomedical engineering systems.	development and testing techniques for electronic or information systems and their applications. Master professional knowledge in solving complex engineering problems in the field of biomedical engineering, especially in the areas of requirement analysis, design, development, and testing techniques for electronic or information systems and their applications. Understand the development trends and application prospects of biomedical engineering technology. Skills: Ability to analyze and solve practical problems in the fields of Biomedical Engineering with professional knowledge and analysis, design and develop relevant hardware or software or application systems with developing tools. Ability to apply professional knowledge and analyze, design, and develop relevant hardware, software, or application system development tools to analyze and solve practical problems in the field of biomedical engineering. Has strong self-learning ability. Competencies: Acquire comprehensive competence of applying theoretical knowledge of Biomedical	Application Technique of Single Chip Microcomputer Artificial Intelligence and Medical Applications Digital Signal Processing Biomedical Electronics Principle and Application of Medical Instruments Intelligent Medical Control Technology Practical Training: Digital Signal Processing Course Design Biomedical Electronics Course Design Integrated Biomedical Engineering Design Undergraduate Graduation Project: Professional Internship Bachelor Thesis
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	Engineering to design and develop related systems and solutions. Be able to analyze and evaluate practical problems reasonably with engineering background knowledge and provide valuable solutions. Have the comprehensive ability to apply biomedical engineering theory knowledge to design and develop related systems and solutions. Be able to use engineering background knowledge to analyze and evaluate practical problems reasonably, and provide valuable solutions.	
Master interdisciplinary and cutting-edge professional knowledge and skills related to biomedical engineering. Being able to keep up with the development trends in professional fields to achieve further self-development.	Knowledge: Master the professional knowledge in the interdisciplinary, novel and frontier fields of Biomedical Engineering. Master interdisciplinary, innovative, and cutting-edge professional knowledge in the field of biomedical engineering Skills: Be able to expand professional knowledge, follow the development trend of the Program and related fields, accumulate knowledge and pursue in-depth learning. Ability to expand professional knowledge, keep up with the development trends of the profession and related fields, accumulate knowledge, and engage in deeper learning. Competencies:	Electives: Biomedical Optics Principles of Medical Imaging Medicine and Humanities Biomechanics Biomedical Ultrasound Technology Virtual Medical Instrument Design Mathematical Modeling Principle and Application of Embedded System Microcomputer Principle and Application Medical Image Processing and Analysis

	Obtain comprehensive qualities in interdisciplinary subjects related to the course; be able to apply the professional knowledge learned widely. Having interdisciplinary comprehensive qualities related to the course; Be able to widely apply the professional knowledge learned.	Medical Laboratory Instruments and Technology Medical Device Regulatory Science Biomedical Materials Biomedical Detection Technology Human body Function Replacement Device Introduction to Brain Science Practical Training: Innovation and entrepreneurship Undergraduate Graduation Project: Professional Internship Bachelor Thesis
Master cross-cultural communication and international cooperation skills, adapt to social development and internationalization.	Knowledge: Master of a foreign language; pass China's College English Test Band 4(CET-4); mastery of professional core knowledge in English. Skills:	Foreign Language: College English (1) College English (2) College English (3)

	Be able to read professional literature in English; be able to communicate and discuss professional issues with others in English. Competences: Possess comprehensive professional quality in English; be able to work in related fields across China; be able to conduct cross-cultural communication.	College English (4) Engineering Applications: Biomedical Electronics (bilingual) Electives: Virtual Medical Instrument Design (bilingual) Principle and Application of Embedded System (bilingual) Undergraduate Graduation Project: Bachelor Thesis (write the abstract of Bachelor thesis in English and read the literatures published in English)
Understand the current social model and norms in China, possess good social behavior ethics, team spirit,	Knowledge: Master the knowledge of modern Chinese history, the basic principles of Marxism, patriotism, humanistic spirit, physical education and military training.	General Courses: Morality and Law Outline of Modern Chinese History

and humanistic care, and develop comprehensively in morality, intelligence, physical fitness, aesthetics, and labor skills.	Skills: Understand social phenomena; pay attention to and adapt to social development; have the ability to communicate and collaborate with others; have team spirit; promote physical and mental health and self-improvement. Competences: Develop a sound personality and good psychological quality; have a correct outlook on life, values, ethics and law; have literacy in humanities and a sense of social responsibility.	Basic Principles 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 Situation and Policy Military Theory & Training Physical Education Mental health education for university students Career Planning and Employment Guidance College Chinese Public electives Social practice Labor education Innovation and entrepreneurship
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