

Objectives and Learning outcomes

1.Objectives

The Industrial Engineering major aims to cultivate students who are comprehensive development in moral, intellectual, physical, and aesthetic aspects, and who are capable of meeting the needs of the "Three Highs and Four New" development strategy of Hunan Province. They will systematically master the basic theories and professional knowledge of modern industrial engineering, possess professional attitudes, professional ethics, social responsibility, innovation and teamwork awareness, and be able to engage in systematic analysis, planning, design, management and operation in the field of industrial engineering and related interdisciplinary areas. They will be technical and management-oriented applied professionals.

After graduation, students will achieve the following goals through approximately 5 years of engineering practice:

Objective 1: Possess good humanistic scientific literacy and professional ethics, be familiar with the national laws and regulations of the industry they are engaged in, have environmental protection awareness and social responsibility, understand and be able to correctly evaluate the impact of the designed engineering objects and engineering practice activities on culture, health, safety, environment and social sustainable development.

Objective 2: Be able to apply mathematics, natural sciences, engineering basic theories and their related field professional knowledge and modern tools to solve practical complex engineering problems in the field of industrial engineering, and have the ability to engage in technical development, intelligent simulation and optimization design, experimental research and operation management in this professional field.

Objective 3: Be able to demonstrate independent work, teamwork and leadership abilities in professional practice and multidisciplinary teams, be proactive in adapting to social development and environmental changes, and have an international perspective, good communication and project management skills.

Objective 4: Have a lifelong learning awareness and ability, be able to continuously update knowledge and enhance capabilities through further education or other means, continuously track and understand new knowledge, new technologies,

new products, new standards and norms in this professional field, and apply them to professional practice.

2. Learning outcomes

R1. Engineering Knowledge: The ability to apply mathematics, natural sciences, engineering fundamentals, and professional knowledge to solve complex engineering problems in the field of industrial engineering .

R2. Problem Analysis: The ability to apply the basic principles of mathematics, natural sciences, and engineering science to identify, express, and analyze complex engineering problems in the field of industrial engineering through literature research to obtain effective conclusions.

R3. Design/Development of Solutions: The ability to design solutions for complex engineering problems in the field of industrial engineering , design systems, units (components), or processes that meet specific requirements, and demonstrate innovation consciousness, considering social, health, safety, legal, cultural, and environmental factors in the design process.

R4. Research: The ability to conduct research on complex engineering problems in the field of industrial engineering based on scientific principles and scientific methods, including designing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis.

R5. Use of Modern Tools: The ability to develop, select, and use appropriate technologies, resources, modern engineering tools, and information technology tools for complex engineering problems in the field of industrial engineering , including prediction and simulation of complex engineering problems in the field of industrial engineering , and understanding their limitations.

R6. Engineering and Society: The ability to analyze and evaluate the impact of professional engineering practices and solutions to complex engineering problems in the field of industrial engineering on society, health, safety, law, and culture based on engineering-related background knowledge, and understanding of responsibilities.

R7. Environment and Sustainable Development: The ability to understand and evaluate the impact of engineering practices on the environment and social sustainability in addressing complex engineering problems in the field of industrial engineering .

R8. Professional Ethics: Possession of humanistic and social science literacy, social responsibility, the ability to understand and comply with engineering professional ethics and norms, and fulfill responsibilities in engineering practice.

R9. Individual and Team: The ability to assume individual, team member, and leader roles in interdisciplinary teams.

R10. Communication: The ability to effectively communicate and interact with peers in the industry and the general public on complex engineering problems, including writing reports and designing documents, making presentations, clear expression, or responding to instructions. Also, possessing a certain international perspective and being able to communicate and interact in a cross-cultural context.

R11. Project Management: Understanding and mastering engineering management principles and economic decision-making methods, and applying them in a multidisciplinary environment.

R12. Lifelong Learning: Possession of awareness of independent learning and lifelong learning, and the ability to continuously learn and adapt to development.