

MISE Program

The Master of Engineering in Industrial and System Engineering (MISE) is designed to provide researchers, scholars, and managers for the industrial and manufacturing engineering. Our proposed learners will be enhanced their knowledge, advanced analytic of industrial techniques, and systematic management both in and out of the industry fields. These are related to problem solving in regional, national and global aspects. Modern competencies, especially learning agility, are fostered to the learners who integrate information technology and engineering technology to create manufacturing innovation for Industry 4.0.

MISE Curriculum Collaboration

The MISE program has been developed following the project of Curriculum Development of Master's Degree Program in Industrial Engineering for Thailand Sustainable Smart Industry (MSIE4.0). The project is co-funded by **the Erasmus+ Programme of the European Union in part of Erasmus+ Capacity Building in Higher Education**. The MSIE4.0 focused on:

1. Modernization of the education of industrial engineering discipline in Thailand by the development of a curriculum for Master's degree in industrial engineering to support sustainable smart industry,
2. Development of courses, learning and teaching tools, delivery processes and platform for student-centered learning of the curriculum,
3. Implementation of modern ICT tools and methodologies for effective student-centered learning of the curriculum,

4. Introductions of quality assurance and of the EQF approach for the delivery of the curriculum meeting international accepted education requirements,
5. Establishment and continuation of partnerships among partner universities.



Curriculum Development of Master's Degree Program in Industrial Engineering for Thailand Sustainable Smart Industry

MISE Program Learning Outcomes

- Design smart production, co-create product design and development in efficiency.
- Analyze Big data for supporting production management and real-time product design and development.
- Apply the research methodology in project management and operation for industrial problem solving.
- Function effectively on a team both in the role of leader and follower.
- Communicate academically according to situations and work context.
- Recognize ethical and professional responsibilities, and public consciousness.

MSIE Program Courses

Compulsory

ID	MISE	MSIE4.0
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EN 427 110	Smart Operations Management	Smart Operations Management
EN 427 111	Digital Factory	Digital Factory
EN 427 210	Applied Data Analytics	Applied Data Analytics
EN 427 112	Advanced Optimization: Techniques and Industrial Applications	Advanced Optimization: Techniques and Industrial Applications

Elective

ID	MISE	MSIE4.0
EN 427 113	Enterprise Management in Digital Economy	Enterprise Management in Digital Economy
EN 427 114	Project Management for Industry 4.0	Project Management for Industry 4.0
EN 427 115	Quality Management for Extended Enterprise	Quality Management for Extended Enterprise
EN 427 116	Sustainable Supply Chain Management	Sustainable Supply Chain Management
EN 427 117	Intelligent Decision Support System	Intelligent Decision Support Systems
EN 427 118	Collaborative Manufacturing Systems	Collaborative Manufacturing Systems
EN 427 119	Additive Manufacturing in Industry 4.0	Additive Manufacturing in Industry 4.0
EN 427 120	Human-centric Design for Operator 4.0	Human-centric Design for Operator 4.0
EN 427 211	Cyber-physical Industrial Systems	Cyber-physical Industrial Systems
EN 427 311	Customer Experience-driven Design	Customer Experience-driven Design
EN 427 510	Innovative Product Design and Development	Innovative Product Design and Development
EN 427 101	Scheduling Theory	
EN 427 105	Advanced Computer Simulation	
EN 427 204	Six Sigma	
EN 427 300	Material Handling Systems	
EN 427 301	Plant Layout and Facility Planning	

EN 427 402	Marketing Management for Industrial Engineer
EN 427 403	Agricultural and Food Logistics and Supply Chain Management
EN 427 404	Green Manufacturing Management
EN 427 405	Enterprise Resource Planning
EN 427 406	Lean Manufacturing
EN 427 600	Supply Chain Cost and Economics Analysis
EN 427 894	Current Topics in Industrial Engineering

RECAP 4.0

A joint capacity building project between five universities and three EU partner universities that is proposed to enhance the capacity and ability of the non-university sector at the tertiary level in Thailand for the effective delivery of engineering and technology knowledge and skills related to Industry 4.0 support Thailand Sustainable Smart Industry and to strengthen a partnership among participating European and Thai universities as well as benefited non-university sector.

The training program will cover three major areas of competence development for teaching technology. The first area will be on Industry 4.0 knowledge extracted from some of the recently developed sixteen courses of MSIE 4.0 curriculum that is sufficient for our trainees to understand and to have a chance to experience hands-on activities. The second area will be teaching skills enhancement. The trainees will be introduced to innovative teaching and learning methods including project-based and problem-based learning and trained on mentoring and coaching as well as

communications. The last area will be curriculum development. They will learn an innovative learning experience-focused course design and development that has been developed in MSIE 4.0 project. The 10 modules will complete with innovative training materials.



Reinforcing Non-University Sector at t
Engineering and Technology to Support Thaila



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(หลักสูตรปรับปรุง พ.ศ. 2564)

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มหาวิทยาลัยขอนแก่น