Industrial Engineering

Introduction

Industrial Engineering program is a branch of engineering that engages in the study of how to describe, evaluate, design, modify, control, and improve the performance of integrated systems of people, materials, and technology, viewed over time and within their relevant context. Industrial engineering is unique in its blend of fundamental topics in mathematics, physical and engineering sciences knowledge with the principles and methods of engineering analysis and design. This field identifies human being as central contributors to the inherent complexity of such systems. Globalization has opened up more doors for service industries worldwide, which leads to an increased demand for industrial engineers. The Industrial Engineering curriculum at BINUS UNIVERSITY is structured to adapt the movement of globalization and tailored to the needs of the globalized world.

Industrial Engineering program emphasizes the application of engineering fundamentals with a balanced treatment of theory, design, and experience. Computer applications are integrated throughout the curriculum. This program allows flexibility to its students to study certain topics in breadth and depth by offering Supply Chain Engineering. The specialization of Supply Chain Engineering covers how modern production and operations management techniques can respond to the pressures of the competitive global marketplace by integrating all activities in the supply chain, adding flexibility to the system and reducing production cost.

Some of the core courses require the students to not only having a full grasp of the theoretical aspects but also on how to implement them in a time study analysis. The Industrial Engineering facilities are well-equipped in the areas of engineering graphics, industrial engineering systems design, and human-machine integration. The laboratories are available for students to use during their study are but not limited to: Physics Lab, Manufacturing Process Lab, Technical Drawing Lab, Simulation Lab, Work Design, and Ergonomics Lab.

Vision

To become the most excellent and innovative Distance Learning Program in Industrial Engineering.

Mission

The mission of Distance Learning Program in Industrial Engineering is to contribute to the global community through the provision of world-class education by:
1. Providing learning opportunities for the wider community with flexible, innovative, and information technology based learning methods
2. Supporting the students with Industrial Engineering disciplines to become global leaders
3. Recognition of talents and human resources that provides added value to the application of the science of Industrial Engineering.
4. Application of scientific Industrial techniques in solving problems and value-added in the community
5. Continuous and sustainable research in improving the quality of life in communities both nationally and internationally.

Program Objective

The objectives of the program are:

1. To prepare students with best practices in Industrial Engineering in order to prepare students for global competition and real contribution in the profession and community

2. To prepare students with advanced knowledge in Industrial Engineering for strategic advantage and commitment to professional standards and ethical practice

3. To provide equal education opportunities for higher education through distance learning mode and disseminate the knowledge in Industrial Engineering

Student Outcomes

After completing the study, graduates will have the following competencies an ability to:

1. Apply mathematics, science, and engineering principles to solve complex engineering problems in integrated systems (including human, material, equipment, energy, and information).

2. Find the source of complex engineering problems in integrated systems through process of investigation, analysis, interpretation of data and information based on analytical, computational, or experimental approach.

3. Conduct research that includes identification, formulation, and analysis of engineering problems in integrated systems.

4. Formulate alternative solutions to solve complex engineering problems in integrated systems taking into account the economic, health and safety factors of the public, cultural, social and environmental (environmental consideration).

5. Design and control integrated systems taking into account technical standards, performance aspects, reliability, ease of application, sustainability, and attention to economic, health and safety factors of public, cultural, social and environmental factors..

6. Select resources and utilizing design tools and engineering analysis based on appropriate information and computing technology to perform engineering activities in the field of integrated systems.

7. Integrate ICT into system integrated planning process in the service and supply chain areas.

Prospective Career of the Graduates

Industrial engineers are employed in manufacturing and service industries. Several career options for industrial engineers include, are but not limited to, the following:

1. Manufacturing Industry: Inventory Management, Logistics, Operation Management, Production Management, and Warehousing.

2. Research and Development: Data Analysis, Environmental Protection and Preservation, and Human Factors Engineering.

3. Service Industry: Client Management, Commercial Banking and Real Estate, Financial Consulting, Health Systems, and Human Resource Consulting.

4. Business and Management: Business Strategy, Investment Banking, Management Analysis, Project Management, and Business Development.

5. Education: Teaching and Research, consulting.
6. Information Technology: Computer Integration, Database Design, Telecommunication, and Web Development.

Curriculum

Industrial Engineering Program is about designing, modifying, controlling, and improving complex systems. Therefore, a strong basis in the "queen of the sciences", better known as mathematics, and computer science is a requirement in modeling and solving such complex systems. The Distance Learning Program in Industrial Engineering curriculum is structured in such a way that the students should master the following scientific fields: mathematics, physics, humanities/social sciences, computer science and management, general engineering sciences, industrial engineering core, lab sciences, professional engineering practice, and industrial engineering specialization.

Course Structure

Sem	Code	Course Name	SCU	Total
1	CHAR6019	Character Building: Pancasila	2	14
	SCIE6042	Physics I	4	
	SCIE6043	Industrial Chemistry	4	
	MATH6082	Calculus I	4	
2	CHAR6020	Character Building: Kewarganegaraan	2	16
	MATH6094	Calculus II	4	
	ECON6069	Engineering Economy	4	
	ECON6068	Managerial Economics and Accounting	4	
	LANG6031	Indonesian	2	
3	CHAR6021	Character Building: Agama	2	16
	MATH6121	Linear and Discrete Mathematics	4	
	MATH6122	Calculus III	4	
	MGMT6138	Leadership & Organizational Behavior	2	
	COMP6130	Introduction to Programming	2/2	
4	ARCH6102	Technical Drawing	2/2	14
	ISYE6091	Environmental Engineering	2	
	ENGL6163	English Professional	4	
	ENTR6081	Entrepreneurship	4	
5	STAT6126	Probability Theory	2	16
	SCIE6044	Physics II	4/2	
	ISYE6092	System Engineering & Analysis	4	
	ISYE6087	Introduction to Manufacturing Processes	4	
6	ISYE6093	Human-Integrated Systems	2/2	16
	STAT6128	Stochastic Processes	4	
	MATH6123	Deterministic Optimization	4	
	ISYE6090	Supply Chain: Logistics	4	
7	ISYE6096	Production & Operation Analysis	4/2	14
	RSCH6087	Research Methodology and Applied Statistic	4	

Sem	Code	Course Name	SCU	Total
	ISYE6094	Quality Engineering	4	
8	ISYE6149	Ethics & Technical Competencies in Industrial Engineering	8	16
	ISYE6150	Industrial Practice	8	
	ISYE6098	Supply Chain Risk & Negotiation	4	
9	ISYE6099	Systems Simulation	4	16
	ISYE6100	Health and Safety Engineering	4	
	ISYE6095	E-Supply Chain Management	2/2	
10	ISYE6128	Final Project	8	8
			Total Credit 146 SCU	

Students should pass all of these quality controlled courses as listed below:

No	Course Code	Course Name	Minimal Grade
1	CHAR6019	Character Building: Pancasila	B
2	ENTR6081	Entrepreneurship	C
3	MATH6123	Deterministic Optimization	C
4	ISYE6093	Human-Integrated Systems	C
5	STAT6128	Stochastic Processes	C
6	ISYE6096	Production & Operation Analysis	C
7	ISYE6095	E-Supply Chain Management	C
8	ISYE6098	Supply Chain Risk & Negotiation	C