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. Able to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. Able to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. Able to communicate effectively with a range of audiences.
4. Able to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. Able to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives..
6. Able to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. Able to acquire and apply new knowledge as needed, using appropriate learning strategies.
8. Able to solve problems through the multidisciplinary approach

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	CHAR6019037	Character Building: Pancasila	2	20
	MATH6082037	Calculus I	4	
	SCIE6057037	Chemistry and Biology	4	
	STAT6174037	Probability Theory and Applied Statistics	4	
	ISYE6187037	Engineering Economy and System Analysis	4	
	LANG6031037	Indonesian	2	
2	SCIE6056037	Physics	5/1	20
	MATH6094037	Calculus II	4	
	COMP6727037	Introduction to Programming	3/1	
	MATH6162037	Mathematics	6	
3	CHAR6020037	Character Building: Kewarganegaraan	2	20
	ENGR6094037	Technical Drawing	3/1	
	ENGL6163037	English Professional	4	
	ISYE6188037	Human-Integrated Systems	3/1	
	ISYE6189037	Deterministic Optimization & Stochastic Processes	6	
4	ISYE6180037	Leadership & Organizational Behavior	2	20
	ISYE6094037	Quality Engineering	4	
	ISYE6087037	Introduction to Manufacturing Processes	4	
	ISYE6090037	Supply Chain: Logistics	4	
	ISYE6178037	Systems Simulation & Engineering Data Analysis	6	
5	ISYE6096037	Production & Operation Analysis	4/2	20
	ISYE6190037	Facility Planning and Safety Engineering	4	
	CHAR6021037	Character Building: Agama	2	
	RSCH6497037	Research Methodology and Experimental Design	4	
	ISYE6127037	Warehouse Management Systems	4	
6	ISYE6194037	Environmental Engineering and Waste Management	4	20
	ENTR6081037	Entrepreneurship	4	
	ISYE6175037	E-Supply Chain Management	4	
	ISYE6195037	Human Interaction in Service Systems	4	
	ISYE6077037	Project Management	4	
7	Enrichment Program*			20
8	RSCH6494037	Thesis	6	6
				Total Credit 146 SCU

**Student will take one of enrichment program tracks. See enrichment appendix for the tracks detail.*

Enrichment Track Scheme
Track scheme for semester 7. Student will take one of enrichment program tracks.

Track	Semester 7			
	Minor	Free Electives	Internship	Entrepreneurship
1	v	-	-	-
2	-	v	-	-
3	-	-	v	-
4	-	-	-	v

Enrichment Minor Track

Course Code	Course Name	SCU	Total
ACCT6384039	Accounting for Small Medium Enterprise	4	20
MKTG6296038	Digital Marketing for Manager	4	
ISYS6619035	UX for Digital Business	4	
COMP6725036	Big Data Technologies	4	
ISYE6196037	Industrial Feasibility Analysis	4	

Student will take all courses from the list above.

Enrichment Free Electives Track

No.	Course Code	Course	SCU	Study Program
1	ACCT6174039	Introduction to Financial Accounting	4	SI-PJJ
2	ISYS6300035	Business Process Fundamental	4	SI-PJJ
3	ISYS6299035	Information System Concept	4	SI-PJJ
4	COMP6598036	Introduction to Programming	4	SI-PJJ
5	ISYS6307035	Data and Information Management	4	SI-PJJ
6	ISYS6597035	Introduction to Database Systems	4	SI-PJJ
7	ISYS6305035	Enterprise System	4	SI-PJJ
8	ISYS6515035	Research Methods in Information Systems	4	SI-PJJ
9	ISYS6507035	Testing and System Implementation	4	SI-PJJ
10	ISYS6310035	Information Systems Project Management	4	SI-PJJ
11	MGMT6072038	Introduction to Management and Business	4	MN-PJJ
12	ACCT6363039	Accounting for Business	4	MN-PJJ
13	MATH6102038	Business Mathematics	4	MN-PJJ
14	COMM6525038	Business Ethics & Communication	4	MN-PJJ
15	LAWS6183028	Legal Aspect in Business	4	MN-PJJ
16	ISYS6599035	Management Information Systems for Leader	4	MN-PJJ
17	RSCH6023038	Research Methodology	4	MN-PJJ

No.	Course Code	Course	SCU	Study Program
18	MKTG6113038	Marketing Management	4	MN-PJJ
19	FINC6046039	Financial Management	4	MN-PJJ
20	BUSS6189038	Business Sustainability	4	MN-PJJ
21	COMP6742036	Algorithm Design and Analysis	4	CS-PJJ
22	COMP6275036	Artificial Intelligence	4	CS-PJJ
23	COMP6804036	Software Engineering	4	CS-PJJ
24	COMP6276036	Compilation Techniques	4	CS-PJJ
25	COMP6600036	Operating System	4	CS-PJJ
26	MGMT6413038	Introduction to Business and Economics	4	ACCT-PJJ
27	ACCT6130039	Cost Accounting	4	ACCT-PJJ
28	ACCT6374039	Managerial Accounting & Strategic Planning	4	ACCT-PJJ
29	ACCT6194039	Ethics and Corporate Governance	4	ACCT-PJJ
30	ACCT6193039	Research Methodology in Accounting and Finance	4	ACCT-PJJ
31	ACCT6329039	Intermediate Accounting I	4	ACCT-PJJ
32	FINC6193039	Corporate Financial Management and Modelling	4	ACCT-PJJ
33	ACCT6331039	Accounting Information System and Internal Control	4	ACCT-PJJ
34	ACCT6334039	Intermediate Accounting II	4	ACCT-PJJ
35	ACCT6381039	Advanced Accounting	4	ACCT-PJJ
36	ELEC6046037	Free Elective Course 1: Business Analysis	4	PJJ
37	ELEC6047037	Free Elective Course 2: Problem Solving Skills	4	PJJ
38	ELEC6048037	Free Elective Course 3: Collaboration and Adaptation	4	PJJ
39	ELEC6049037	Free Elective Course 4: Creative and Critical Thinking	4	PJJ
40	ELEC6050037	Free Elective Course 5: IT Literacy	4	PJJ
41	ELEC6051037	Free Elective Course 6: Human Literacy	4	PJJ
42	ELEC6052037	Free Elective Course 7: Data Literacy	4	PJJ
43	ELEC6053037	Free Elective Course 8: Business Creative	4	PJJ

Student will take five courses (20 SCU) from the list above.

Enrichment Internship Track

Course Code	Course Name	SCU	Total
ISYE6221037	Working Experience in Industrial Engineering	6	20
ISYE6222037	Industrial Engineering in Practice	4	
ISYE6224037	Industrial Experience in Industrial Engineering	6	
ISYE6223037	Employability and Entrepreneurial Skills in Industrial Engineering Industry	4	

Student will take all courses from the list above.

Enrichment Entrepreneurship Track

Course Code	Course Name	SCU	Total
ENPR6041037	Business Start Up in Industrial Engineering	6	20
ENPR6042037	Business Model & Validation in Industrial Engineering	4	
ENPR6043037	Launching New Venture in Industrial Engineering	6	
ENPR6044037	Entrepreneurship and Managing New Business in Industrial Engineering	4	

Student will take all courses from the list above.

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

No	Course Code	Course Name	Minimal Grade
1	CHAR6019037	Character Building: Pancasila	B
2	ENTR6081037	Entrepreneurship	C
3	ISYE6188037	Human-Integrated Systems	C
4	ISYE6189037	Deterministic Optimization & Stochastic Processes	C
5	ISYE6094037	Quality Engineering	C
6	ISYE6096037	Production & Operation Analysis	C
7	ISYE6077037	Project Management	C
8	ISYE6175037	E-Supply Chain Management	C