

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	CHAR6019	Character Building: Pancasila	2	20
	MATH6082	Calculus I	4	
	SCIE6057	Chemistry and Biology	4	
	STAT6174	Probability Theory and Applied Statistics	4	
	ISYE6187	Engineering Economy and System Analysis	4	
	LANG6031	Indonesian	2	
2	SCIE6056	Physics	5/1	20
	MATH6094	Calculus II	4	
	COMP6727	Introduction to Programming	3/1	
	MATH6162	Mathematics	6	
3	CHAR6020	Character Building: Kewarganegaraan	2	20
	ENGR6094	Technical Drawing	3/1	
	ENGL6163	English Professional	4	
	ISYE6188	Human-Integrated Systems	3/1	
	ISYE6189	Deterministic Optimization & Stochastic Processes	6	
4	ISYE6180	Leadership & Organizational Behavior	2	20
	ISYE6094	Quality Engineering	4	
	ISYE6087	Introduction to Manufacturing Processes	4	
	ISYE6090	Supply Chain: Logistics	4	
	ISYE6178	Systems Simulation & Engineering Data Analysis	6	
5	ISYE6096	Production & Operation Analysis	4/2	20
	ISYE6190	Facility Planning and Safety Engineering	4	
	CHAR6021	Character Building: Agama	2	
	RSCH6497	Research Methodology and Experimental Design	4	
	ISYE6127	Warehouse Management Systems	4	
6	ISYE6194	Environmental Engineering and Waste Management	4	20
	ENTR6081	Entrepreneurship	4	
	ISYE6175	E-Supply Chain Management	4	

	ISYE6195	Human Interaction in Service Systems	4	
	ISYE6077	Project Management	4	
7	Enrichment Program			20
8	RSCH6494	Thesis	6	6
Total Credit 146 SCU				

Enrichment Program (7th Semester):

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

Enrichment appendix: Technopreneur Minor program

Course Code	Course Name	SCU	Total
ACCT6384	Accounting for Small Medium Enterprise	4	20
MKTG6296	Digital Marketing for Manager	4	
ISYS6619	UX for Digital Business	4	
COMP6725	Big Data Technologies	4	
ISYE6196	Industrial Feasibility Analysis	4	

Student will take all courses from the list above.

Enrichment appendix: Free Electives

No	Code	Course	SCU	Program
1	MGMT6413	Introduction to Business and Economics	4	ACCT-PJJ
2	ACCT6130	Cost Accounting	4	ACCT-PJJ
3	ACCT6374	Managerial Accounting & Strategic Planning	4	ACCT-PJJ
4	ACCT6194	Ethics and Corporate Governance	4	ACCT-PJJ
5	ACCT6193	Research Methodology in Accounting and Finance	4	ACCT-PJJ
6	ACCT6329	Intermediate Accounting I	4	ACCT-PJJ
7	FINC6193	Corporate Financial Management and Modelling	4	ACCT-PJJ
8	ACCT6331	Accounting Information System and Internal Control	4	ACCT-PJJ
9	ACCT6334	Intermediate Accounting II	4	ACCT-PJJ
10	ACCT6381	Advanced Accounting	4	ACCT-PJJ
11	MATH6077	Discrete Mathematics	4	CS-PJJ
12	MATH6156	Calculus and Linear Algebra	4	CS-PJJ
13	COMP6307	Human and Computer Interaction	4	CS-PJJ
14	COMP6742	Algorithm Design and Analysis	4	CS-PJJ
15	CPEN6214	Computer Networks	4	CS-PJJ
16	COMP6600	Operating System	4	CS-PJJ
17	COMP6275	Artificial Intelligence	4	CS-PJJ
18	COMP6740	Program Design Methods	4	CS-PJJ
19	COMP6276	Compilation Techniques	4	CS-PJJ
20	COMP6728	Research Methodology in Informatics	4	CS-PJJ
21	MGMT6072	Introduction to Management and Business	4	MN-PJJ
22	ACCT6363	Accounting for Business	4	MN-PJJ
23	MATH6102	Business Mathematics	4	MN-PJJ
24	COMM6525	Business Ethics & Communication	4	MN-PJJ
25	LAWS6183	Legal Aspect in Business	4	MN-PJJ
26	ISYS6599	Management Information Systems for Leader	4	MN-PJJ
27	RSCH6023	Research Methodology	4	MN-PJJ
28	MKTG6113	Marketing Management	4	MN-PJJ
29	FINC6046	Financial Management	4	MN-PJJ
30	BUSS6189	Business Sustainability	4	MN-PJJ
31	ACCT6174	Introduction to Financial Accounting	4	SI-PJJ
32	ISYS6300	Business Process Fundamental	4	SI-PJJ
33	ISYS6299	Information System Concept	4	SI-PJJ
34	COMP6598	Introduction to Programming	4	SI-PJJ
35	ISYS6307	Data and Information Management	4	SI-PJJ
36	ISYS6597	Introduction to Database Systems	4	SI-PJJ
37	ISYS6305	Enterprise System	4	SI-PJJ
38	ISYS6515	Research Methods in Information Systems	4	SI-PJJ
39	ISYS6507	Testing and System Implementation	4	SI-PJJ
40	ISYS6310	Information Systems Project Management	4	SI-PJJ
41	ELEC6021	Free Elective Course 1	4	PJJ
42	ELEC6022	Free Elective Course 2	4	PJJ
43	ELEC6023	Free Elective Course 3	4	PJJ

44	ELEC6024	Free Elective Course 4	4	PJJ
45	ELEC6025	Free Elective Course 5	4	PJJ

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

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	ISYE6188	Human-Integrated Systems	C
4	ISYE6189	Deterministic Optimization & Stochastic Processes	C
5	ISYE6094	Quality Engineering	C
6	ISYE6096	Production & Operation Analysis	C
7	ISYE6077	Project Management	C
8	ISYE6175	E-Supply Chain Management	C