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# Industrial Engineering

## **Duration**

Ten semesters

## **Degree**

Industrial Engineer

### **Occupational Field**

The Industrial Engineer has a systemic perspective of productive and service organizations, also with formal training in management and decision-making methods.

The complexity of modern industrial organizations and service companies and the recent emphasis on improving effectiveness and efficiency in the utilization of available resources, has increased the demand for professionals of this kind. Their versatility and quick response to the challenges and changes posed by the new dynamics of these times are highly valued. Currently, an industrial engineer engages in a wide range of productive and service activities, including transportation, manufacturing industries, consulting, essential service providers (electricity, gas, water, insurance, healthcare), financial institutions, retail companies, telecommunications, information technology companies, etc.

### **Professional Profile**

Industrial Engineering adopts an integral approach that emphasizes maximum rationality in the utilization of human, material, financial, and informational resources within an organization. Therefore, these professionals must be able to design, plan, and control systems for the production of goods and services.

The Industrial Engineer is a generalist within the functional area of production in companies that produce goods and services. A generalist is a professional capable of interpreting problems across various areas of the producing company, in harmonious collaboration with specialist engineers, while simultaneously considering all factors that affect their designs or operations, assigning the relative importance that each factor truly holds in a system that is, in reality, highly diverse and complex. Thereby, they must learn to think in situations with a variety of highly interrelated factors, understanding that such



situations are not repetitive and consequently, applying fixed solutions is not possible, and they must rely on creative, imaginative and intuitive efforts.

The Industrial Engineer interacts with systems composed of people, financial resources, materials, equipment, information, and energy. They acquire interdisciplinary training that extends beyond what is strictly related to Production, providing them with:

- Aptitudes that facilitate an integrative perspective in the analysis of situations.
- The capacity and flexibility to address problems under risky and uncertain conditions.
- Sensitivity to the political and environmental consequences of technology management and its implications for economic and social development.
- A geopolitical view of the country and the world to approach the comprehensive development of solutions to social demands.
- Ethical and humanistic sensibility to preserve the cultural and ecological heritage of the environment.
- Understanding of the natural and social world in which they operate.

### Study Plan

YEAR	SEM.	N°	SUBJECT	HOURLY CREDIT
1	1	1	Calculus I	6.00
1	1	2	Introduction to Professional Development	3.75
1	1	3	Algebra and Analytical Geometry	5.25
1	2	4	Computing	3.75
1	2	5	Physics I	7.5
1	2	6	Drawing and Representation Systems	3.75
1	2	7	Chemistry	3.75
2	3	8	Calculus II	6.00
2	3	9	Static and Material Resistance	4.5
2	3	10	Physics II	6.75
2	3	11	Statistics	4.5
2	4	12	Thermodynamic	5.25
2	4	13	Numerical Methods	3.75
2	4	14	Economy	4.5



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2	4	15	Electrotechnics and Electric Machines	4.5
2	4	16	English: Approval Required. Optional Course.	2.25
3	5	17	Energy Technique	4.5
3	5	18	Human Resources	4.5
3	5	19	Rational Mechanics and Mechanisms	4.5
3	5	20	Organic Chemistry	4.5
3	5	21	Physical Chemistry	4.5
3	6	22	Hygiene and Safety	3.75
3	6	23	Materials Science	5.25
3	6	24	Operative Investigation	5.25
3	6	25	Fluid Mechanics and Hydraulic Machines	4.5
4	7	26	Business Administration	4.5
4	7	27	Industrial Processes	4.5
4	7	28	Dynamics and Control of Industrial Processes	4.5
4	7	29	Legislation for Engineers	3.00
4	7	30	Electronics and Industrial Electrical Installations	4.5
4	8	31	Environmental Management	4.5
4	8	32	Production Management	4.5
4	8	33	Commercialization	4.5
4	8	34	Production Planning and Programming	3.75
4	8	35	Introduction to Project Formulation and Evaluation	3.75
5	9	36	Logistics	4.5
5	9	37	Quality Management	3.75
5	9	38	Business Finance	4.5
5	9	39	Use of Electricity	3.75
5	9	40	Optional I	3.75

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5	10	41	Courses	4.5
5	10	42	Optional II	3.75
5	10	43	Optional III	3.75
5	10	44	Professional Practice	16.5
5	10	45	Industrial Project (Annual)	13.5
				Total subjects: 45