Industrial Engineering

International Private Higher Polytechnic School of Sousse (EPI)

Industrial engineering training has an orientation or development council:

●Total number of members: 4

●Number of representatives from the economic world: 2

●Frequency of meetings: 2 to 3 meetings per semester

Training in engineering, specializing in industrial engineering, within the Multidisciplinary School International EPI-TEC Sousse concerns the design and management of processes and systems improving the quality and productivity of companies' supply chains. The appearance the more distinctive of this specialty East their flexibility what offer in terms of career.

An engineering student within this discipline mainly learns the tools and methods necessary the helper has eliminated the losses of time, silver, of materials, energy and others materials firsts of the organizations. The Industrial Engineering provided an approach systematic to streamline and improve the productivity and efficiency of organizations; in others terms, her assignment is of make profitable THE process at maximum.

This is a multidisciplinary training which aims to make improvements to a system manufacturer. She dowry the engineers of knowledge and skills wearing on evaluation and improvement of the productivity and quality of service companies. From this do, the name "industrial " encompasses Also businesses of service.

The fields of involvement of the engineer Industrial Engineering cover a wide paletteof activities professional:

- To plan of the activities of distribution of products and the organization of services;
- Design integrated management systems (quality, environment and health andsecurity;
- Watch has the app of the standards organizational and specific at product and or service;

- Organize And manage of the teams of work for their realization of a project technological, etc.

has this effect, the engineer industrial east a decision maker and can be qualified of architect of the businesses. he is equally interested in production systems, processes and services than to humans who y working. her motivation main east of constantly better reconcile the human, economic and technological aspects of private organizations or governmental. he is able of:

- Implement a "system" approach ensuring effective and efficient consideration optimal of all the parts of a system of an organization, including the aspects humans, economic and technological;
- Implement rigorous processes for continuous improvement of productivity aimed at to do more with less and maximize the profitability business organizations;
- Model and simulate production systems, processes and services; tools to visualize a problem in a structured way and determine manners of the solve;
- Develop of the methods analyzes and of measures quantitative proven;
- Assess the interactions and ensure the integration of the aspect's humans, economic andtechnological and of the various disciplines involved by a situation;
- Be in measurement of manage change;
- Apply the methods scientists for take of the decisions business.

Repository of Skills: what are the skills attested has the outcome of their training?

The Department of Industrial Engineering of EPI-TEC ensures a training of engineers multidisciplinary aimed at the acquisition and mastery of theoretical knowledge as well as practice. She accounts five semesters has base instead theoretical, comprising an internship initiation has their life professional and a project of End of year (PFA) At breast of a business, and one fifth practice: Project of End of study (PFE).

with the skills of training of base (mathematics, it, languages, management of the resources human, entrepreneurship, right of the man, …), we find the skills in the fields of Mechanics (Fluid Mechanics, Mechanics of solids, Mechanics of continuous media, Materials and structures, Resistance of materials, Vibration mechanics, Thermal, Thermal machines, Mechanical design, CAD, Structures metallic And Processes of welding, Techniques of production And MOCN, Systems hydraulic And tires, …); of Electricity (Circuits electric,

Electrical engineering, Automatic, Treatment of signal, Robotics And Micro controller , machine control, etc.) and Industrial (Quality - Certification - Standards, Organization and Production management, ERP / CAPM, Lean manufacturing , Control and reliability / CMMS, Tools of Maintenance, Safety installations industrial,...).

Basic skills

- Good skills and skills in mathematics;
- Skills scientists techniques diversified;
- Skills And SKILLS in management of time;
- Strong desire of organization and efficiency;
- Skills of direction and of leadership;
- Passion For improvement and innovation;
- Excellent skills of communication and listening;
- Skill And creativity in their resolution of problems;
- Skills of negotiation;
- Mastery of a Steps application of a together of concepts and of techniques Sciences applied;
- Mastery of an application approach based on notions of science fundamental relevant to engineering;
- Awareness of the techniques of prevention and maintenance;
- Socket of awareness of the impacts of her technology;
- Training economic and management of projects;
- Mastery languages;
- Diplomacy, patience;
- Big ability adaptation to changes;
- Desire continuous to learn, spirit curious;
- Sense of ethics.

Research scientist Skills:

- Be able to do A state of the art of works of research related has a thematic
- Se endows of the mind critical and of analysis of their literature
- lead well has term A project of research applied.
- To work in band

Specific industrial engineering skills:

- Operations Research: The ability to apply mathematical and analytical methods to optimize complex systems and decision-making processes.
- Statistical Analysis: Proficiency in statistical techniques and tools for data analysis, including regression analysis, hypothesis testing, and design of experiments.
- Quality Management: Understanding of quality control methods such as Six Sigma, Total Quality Management (TQM), Statistical Process Control (SPC), and Root Cause Analysis (RCA).
- Process Improvement: Expertise in identifying inefficiencies, analyzing workflows, and implementing solutions to streamline processes and eliminate waste (e.g., Lean Manufacturing, Kaizen).
- Supply Chain Management: Knowledge of supply chain principles, including inventory management, logistics, demand forecasting, and supplier relationship management.
- Production Planning and Scheduling: Skills in developing production schedules, capacity planning, material requirements planning (MRP), and optimizing production sequences.
- Facility Layout and Design: Ability to design efficient facility layouts, considering factors such as workflow, material handling, ergonomics, and space utilization.
- Simulation Modeling: Proficiency in using simulation software to model and analyze complex systems, such as manufacturing processes or transportation networks, to identify bottlenecks and optimize performance.
- Human Factors Engineering: Understanding of human capabilities and limitations to design workspaces, tools, and processes that enhance safety, productivity, and comfort for workers.
- Project Management: Competence in project planning, scheduling, budgeting, risk management, and coordination of resources to ensure successful implementation of

industrial engineering projects.

- Decision Analysis: Ability to evaluate alternatives and make data-driven decisions considering factors such as cost, risk, and performance objectives.
- Engineering Economics: Knowledge of economic principles and financial analysis techniques to evaluate the cost-effectiveness of projects, investments, and process improvements.
- Computer-Aided Design (CAD) and Manufacturing (CAM): Familiarity with CAD/CAM software for designing products, creating engineering drawings, and generating manufacturing instructions.
- Sustainability and Environmental Management: Understanding of sustainable practices and environmental regulations to minimize the environmental impact of industrial operations.

Objective Module Matrixes

Families of the SKILLS	SKILLS	Level	Matter
Science of the engineer	- Sizing And Design of the piece's mechanical; - Modulization of the mechanical systems; - Modulization of the automatic systems; - Master THE software of Design and Drawing Assisted by Computer	1	SI in Mechanics, DAO in engineering, Manufacturing process by machining,IF in Automatic, Embedded computing
Industrial	- Modulization And simulation digital of the systems industrial; - Mastery And integration of the software industrial; - Identification of the different parts of a system industrial; - Mastery of the techniques of treatment of the data and estimation of the indicators of reliability for their safety of functioning of a system industrial; - Knowledge of different monitoring and monitoring approaches diagnostic of industrial processes - Knowledge of the functionalities of supervision systems industrial - Implementation And management of the systems industrial.	3	Design of industrial systems, Simulation of production systemsManagement of information systems, industrial risk management Industry 4.0
Computer science	Mastery of the systems IT Mastery THE Software packages of Management Integrated PGI, EnterpriseResources ERP planning	2	Advanced Excel, Basics of data, ERP Odoo Embedded computing
Production	- Organization And layout of the positions of production and of thelines; - Planning And management of the operations of production; - Measure And improvement of their performance of production; - Design of the methods of production	2	Production management, CAPM, ERP Odoo Industry 4.0

	Mastery of different production processes Design THE ranges of manufacturing of the productsDevelop the files of manufacturing Establish the programs forecast of production Mastery THE software of Management of Production Assisted byComputer		
Quality	- Mastery of conventional and non-conventional methods conventional optimization Management of the resources and of the operations of control quality; Put in artwork and anticipate THE actions required foroptimize the use of means of production Implement a quality system Participate has evolution of the products Knowledge of different improvement approaches continuous Design And realize of the tools of follow up and analysis (paintings of edge, graphics…)	2	Value analysis, Engineering of their quality, QHSE, quality audit, Management of R&D and innovation, Lean Manufacturing Circuit electric; Electrical engineering; Thermal; CAD systems electric; Machinery thermal; Modulization Andmanagement of electrical networks; Systemshydraulics and tires;

Maintenance	- Perform THE procedures of maintenance; - Mastery of the different techniques and methods of maintenance industrial; - Management of resources and maintenance operations. Organize the company's maintenance function to limit costs Mastery THE software of Management of Maintenance assisted by computer		Maintenance management,CMMS, ERP Odoo Reliability and operational safety Diagnosis of production systems

Energy	- Choice And sizing of the facilities energetic; - Analysis of the machines thermal; - Study environmental; - Design of a balance sheet energetic.	1	Electric machine, Thermal machines, Energies renewable, QHSE.
Materials	- Characterization of the materials; - Treatments of surface	2	Metrology And Instrumentation, Science of the materials,
Logistics	- Identification of the different parts of a system logistics; - Organize the production circuit and associated logistics; - To optimize THE means has put in artwork, the organization of workAnd THE deadlines manufacturing - Design And realize of the tools of follow up and analysis (paintings ofedge, graphics…) - Master THE methods and tools of resolution of problems	3	Industrial logistics infrastructure ,Management industrial, Business organization, Quality control research, Supply and inventory management, Implementation of workshops, Supply Chain Management, ERP Odoo
Economy And management	Managerial abilities Study of project Management of budget	2	Economy for the GI, Management of the projects.
Mathematical	Interpret THE statistics Analyze the data	1	Mathematics, Probability And statistical,Analysis digital
SKILLS various	Communication in different LANGUAGES, Human Resource Management, Awareness of his rights in so much that employed,	2	English; French; Ergonomics ;

	Putting knowledge into practice, to have A spirit entrepreneurial,		Entrepreneursh ip;HRM; Right of work; Internship; PPE; PFA; PFE
Research Scientist	Be able to provide a state of the art of related research workhas a thematic Se endows of the mind critical and of analysis of their literatureGOOD carry out has term one project of research applied.	3	Scientific subjects Mathematics LANGUAGES PFA & PFE

Level 1: Elementary *Level 2: Intermediate* *Level 3: Advance*