



Industrial Engineering is concerned with the analysis, design, improvement, installation and management of integrated systems of human resources, data, finances, materials, equipment, and energy as safely as possible with minimum impact on the environment, delivered within a holistic methodology.

INDUSTRIAL ENGINEERING(IE)

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Industrial Engineering(IE) is concerned with the analysis, design, improvement, installation and management of integrated systems of human resources, finances, materials, equipment, energy and information and the synergy between them undertaking these processes as safely as possible with minimum impact on the environment.

It draws upon specialised knowledge and skills in the mathematical, physical, physiological, social and computer sciences together with the principles and methods of engineering analysis and design to specify, predict and evaluate the results to be obtained from such systems and measure achievement.

Industrial Engineering is that aspect of Engineering devoted to getting the best results from available resources, provided always that quality and human satisfaction are met.

Traditional analysis tools of Industrial Engineering include:-

- Time and Motion Study/Method Study/Work Study/Standards development
- Game Theory(Consensus Decision Making)
- Operations Research Techniques
- Critical Path Analysis/Project Evaluation and Review Techniques/Project management
- Optimal Data Analysis
- Numerical Methods/Linear Programming
- Scheduling and inventory control/Materials handling
- Business Process Re-Engineering
- Systems and Process Engineering
- Cost Benefit and Value Analysis
- Just In Time(JIT)/Kanban
- Quality Assurance(QA) and control
- Ergonomics/Safety and environmental control
- Process simulation/Logistical systems

Other techniques that are now pursued by Industrial Engineers include:-

- Continuous Improvement Methods
- Computer Aided Design(CAD)
- Computer Aided Manufacturing(CAM)
- Remote Aerial Vehicle(UAV) Solutions
- 3D Printing/Additive manufacturing solutions
- Lean Manufacturing(6 Sigma)
- Agile management
- Circular Manufacturing-optimal impact on the environment

It should be noted that the Lean Manufacturing/6 Sigma processes, Agile Management techniques, are aspects of IE. They draw on the concepts of identifying, focusing, quantifying, analysing, improving, organising and achieving improvements in various business processes by re-engineering.

IE Handbook- Maynard's Industrial Engineering Handbook (Zandin 2001).