



Canadian
Supply Chain
Sector Council

Conseil canadien
sectoriel de la chaîne
d'approvisionnement

OCCUPATIONAL STANDARD

(For use in the development of supply chain related job descriptions, performance evaluations, career development plans, etc.)

Position:	INDUSTRIAL ENGINEERING AND MANUFACTURING TECHNICIAN
Description of Position (As defined by the CSCSC Stakeholder Community)	<i>Industrial Engineering and Manufacturing Technicians provide technical support and services in the development of production methods, facilities and systems, and the planning, estimating, measuring and scheduling of work.</i>
Position Development	With experience, through the development of skill sets, and enrollment in specialized training, an Industrial Engineering and Manufacturing Technician may advance to progressively more responsible positions including supervisory and management roles. Mobility into related fields is possible.
Required Qualifications:	(Education, Training, Related Work Experience)
Education	Completion of post-secondary school in any of the following areas: science, manufacturing technology, engineering, industrial management, mathematics, or supply chain. Certification in industrial engineering or manufacturing technology or in a related field may be required.
Training	Individuals generally require some on-the-job training and in addition may require specialized knowledge in specific areas (e.g., the development of production processes, quality assurance programs, plans and schedules in a particular industrial area such as metal fabrication, plastics, pulp and paper, textile manufacturing, etc.
Related Work Experience	Previous work-related skill, knowledge, or experience may be helpful in these occupations.
Tasks:	
Industrial Engineering and Manufacturing Technicians perform some or all of the following tasks	<ul style="list-style-type: none"> • Implement physical processes, procedures, and variables (e.g., set machine or equipment controls, oversee production and inspection processes) • Collect and compile operational or test data and assist in the

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	<p>development of estimates, schedules, specifications and reports</p> <ul style="list-style-type: none"> • Study time, motion, methods, and speed involved in maintenance, production, and other operations to establish standard production rate and improve efficiency • Review or implement engineering drawings, schematic diagrams, or formulas and confer with management or engineering staff to determine quality and reliability standards • Aid in planning work assignments in accordance with worker performance, machine capacity, production schedules, and anticipated delays • Observe and report on workers using equipment to verify that equipment is being operated and maintained according to quality assurance standards • Recommend revision to methods of operation, material handling, equipment layout, or other changes to improve efficiencies or improve standards • Recommend modifications to existing quality or production standards to achieve optimum quality within limits of equipment capability • Assist or prepare charts, graphs, and diagrams to illustrate workflow, routing, floor layouts, material handling, production processes, and machine utilization • Evaluate data and write reports to validate or indicate deviations from existing standards and the physical unit (e.g., component/ equipment / product) being assessed • Review worker logs, product processing sheets, and specification sheets, to verify that records adhere to quality assurance specifications • Provide input in the design of physical or functional layouts • Train and / or mentor junior staff
Tools and Technology:	
	<ul style="list-style-type: none"> • Computer Hardware and Associated Software and Systems (i.e., spreadsheet, word processing, accounting, and Computer Aided Design (CAD) software, modeling tools, analytical or scientific software, data base user interface and query software, enterprise resource planning software, graphics, word processing, spreadsheet, electronic mail, internet browser) • Communication Devices • Physical equipment as required by the facility (e.g., production

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	equipment, lab equipment, etc.)
Required Competencies:	(Knowledge, Skills, Personal Attributes)
Knowledge	An Industrial Engineering and Manufacturing Technician should have knowledge of production and supply chain processes, engineering and technology, mathematics, English language (and other languages as appropriate), design, computers and electronics, mechanics, education and training, clerical, and administration and management processes.
Skills	An Industrial Engineering and Manufacturing Technician should have the following skill sets: mechanical aptitude, active listening, analytical thinking, critical thinking, judgment and decision making, reading comprehension, mathematics, complex problem solving, monitoring, speaking, systems analysis, and systems evaluation.
Personal Attributes	(Abilities, Work Values, Work Styles)
Abilities	The following abilities are important to the role of an Industrial Engineering and Manufacturing Technician: oral expression and comprehension, speech clarity, inductive and deductive reasoning, problem sensitivity, selective attention, category flexibility, information ordering / prioritization and near vision.
Work Values	Individuals who will succeed in this position are: <ul style="list-style-type: none"> • comfortable working independently and / or as part of a team; • comfortable following directions and making decisions; • respectful of policies and procedures; • continuous improvement oriented; and • results oriented and receive a feeling of accomplishment.
Work Styles	The following work styles are attributable to an Industrial Engineering and Manufacturing Technician: analytical thinking, dependability, attention to detail, achievement / effort, initiative, responsive / sense of urgency, persistence, adaptability / flexibility, stress tolerance, and innovation.
Essential Skills Profile:	Essential Skills are the skills needed for work, learning and life. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change. For more detailed essential skills profiles please refer to the HRSDC website: http://www.hrsdc.gc.ca/eng/workplaceskills/LES/index.shtml The Human Resources and Skills Development Canada (HRSDC)

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	<p>Essential Skills Research Project focused on occupations requiring a secondary school diploma or less and on-the-job training.</p> <p>The following section contains essential skills information for Industrial Engineering and Manufacturing Technicians and is classified using the nine Essential Skills categories. Note that the content is not associated with HRSDC and the Essential Skills Research Project.</p>
Reading Text	<ul style="list-style-type: none"> • Frequently read text in both print and non-print media <ul style="list-style-type: none"> ✓ trade magazines ✓ newsletters ✓ periodicals ✓ blueprints ✓ performance tables ✓ service disruptions / notices ✓ production schedules • Read and interpret dense and complex texts, and have ability to make high-level inferences using specialized knowledge <ul style="list-style-type: none"> ✓ policies and procedures ✓ scale drawings ✓ equipment performance reports ✓ quality specification forms • Frequently read paragraph length text in charts, tables and graphs
Document Use	<ul style="list-style-type: none"> • Documents produced and/or used may include forms, graphs, charts, lists, tables, schematics, drawings, schedules, reports, labels, warning signs, information signs, etcetera, in both print and non-print media • Must be able to read simple to complex documents in which considerable inference may be required • Must be able to read/interpret, and write/complete/produce documents • Specialized knowledge of the content of the document may be required; multiple pieces of information from multiple sources are synthesized; the quality of information may be evaluated for accuracy and omissions
Writing Skills	<ul style="list-style-type: none"> • Produce reports for supervisors and management (e.g. engineering reports, cost / time estimation reports, recommendation reports, etc.). • Write notes to supervisors and management to report on operational performance (e.g., productivity), operational problems requiring attention, etcetera • Write text to accompany and / or support drawings

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Numeracy	<ul style="list-style-type: none"> • Apply scheduling, budgeting and accounting math • Apply measurement and calculation math • Apply data analysis math • Utilize numerical estimation and money math
Oral Communication	<ul style="list-style-type: none"> • Provide clear and concise direction and instructions to staff and other departments • Professional communications with clients, customers, staff, and colleagues using a variety of communications devices and media • Communicate during high stress situations (e.g. service disruption notices, health and safety incidents, etc.) • Communicate with / consult suppliers, operators, and colleagues to obtain information relevant to executing job tasks
Thinking Skills	(Problem Solving, Decision Making, Job Task Planning and Organizing, Significant Use of Memory, Finding Information)
Problem Solving	<ul style="list-style-type: none"> • Apply broad knowledge of supply chain when problem solving • Investigate and solve production related problems • Ability to think and respond quickly, and adjust schedules and operating plans in response to unplanned events
Decision Making	<ul style="list-style-type: none"> • Adapt production and resource schedules to accommodate new circumstances or issues that arise • Make decisions that take into supply-chain problems such as equipment performance, material quality, supply of products and services, etc. • Make decisions about optimal staffing requirements related to production • Make decisions about suggestions for continuous improvement
Job Task Planning and Organizing	Industrial Engineering and Manufacturing Technicians typically plan their own daily activities and prioritize tasks to ensure maximum efficiency. There are frequent interruptions to their daily schedule and a high degree of integration of their own planning with the work plan of other departments.
Significant Use of Memory	<ul style="list-style-type: none"> • Remember the policies and procedures of the organization • Memorize familiar operation numbers, rates, and product types. • Remember applicable regulatory requirements
Finding Information	<ul style="list-style-type: none"> • Research alternate production methods, new equipment, and vendor information • Obtain information on regulations and standards

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	<ul style="list-style-type: none"> Find information for planning, efficiency, and budgeting purposes
Working with Others	Industrial Engineering and Manufacturing Technicians are members of the production team. However, in performing their tasks, they work independently, coordinating their work others and exchanging information. They participate in daily production meetings, monthly quality control meetings and quarterly, semi-annual or annual planning meetings.
Continuous Learning	Enhanced learning may be acquired as part of regular work activity, through training offered in-house, through reading or other forms of self-study, or through off-site training. Ongoing learning occurs through participation in professional organizations, seminars, and formal courses.
Additional Information	(Physical Aspects, Attitudes)
Physical Aspects	Industrial Engineering and Manufacturing Technicians work in a production environment as well as an office environment (sitting for long periods, repetitive computer and telephone use). However, Industrial Engineering and Manufacturing Technicians may also be required to travel between sites / facilities to satisfy the position function. Minimal lifting, bending, or stooping may be required.
Attitudes	An Industrial Engineering and Manufacturing Technician should have excellent interpersonal skills, and exhibit an awareness of and sensitivity to the goals and objectives of other departments. In addition, excellent planning and organizational abilities are required.
Future Trends Affecting Essential Skills:	Industrial Engineering and Manufacturing Technicians will be required to have enhanced computer skills in order to work with more complex software and optimize resource efficiencies. Furthermore, an understanding of the principles of environmental management as they relate to identifying energy efficiency opportunities from equipment performance and production related activities would be an asset.

<p>Government of Canada Defined - Related NOC Code & Description</p>	<p>2233 Industrial Engineering and Manufacturing Technologists and Technicians</p> <p>Industrial engineering and manufacturing technologists and technicians may work independently or provide technical support and services in the development of production methods, facilities and systems, and the planning, estimating, measuring and scheduling of work. They are employed by manufacturing and insurance companies, government departments, and establishments in other industries.</p>
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Document Management:				
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2	Document Modified	October 21, 2010	November 29, 2010	M. Cheddi (CSA)
3	Document Finalized	Nov 29, 2010	April 12, 2011	C. Sellar (CSA)
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***Activity Types:**

- ✓ Document Created
- ✓ Document Modified (Minor Corrections & Editorial Changes)
- ✓ Document Updated (Complete Review)
- ✓ Document Finalized
- ✓ Document Retired

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