



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.)

<b>Position:</b>	<b>INDUSTRIAL ENGINEERING AND MANUFACTURING TECHNICIAN</b>
<b>Description of Position (As defined by the CSCSC Stakeholder Community)</b>	<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>
<b>Position Development</b>	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.
<b>Required Qualifications:</b>	<b>(Education, Training, Related Work Experience)</b>
<b>Education</b>	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.
<b>Training</b>	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.
<b>Related Work Experience</b>	Previous work-related skill, knowledge, or experience may be helpful in these occupations.
<b>Tasks:</b>	
<b>Industrial Engineering and Manufacturing Technicians</b>	<ul style="list-style-type: none"> <li>Implement physical processes, procedures, and variables (e.g., set machine or equipment controls, oversee production and inspection)</li> </ul>

\*Note the OS addresses alternative position titles including Machine operators and related workers in mineral and metal products processing and manufacturing (NOC Code #941), Machining, metal forming, shaping and erecting trades (NOC Code #723), Chemical Technologists and Technicians (NOC Code #2211), etc.

<p><b>perform some or all of the following tasks</b></p>	<p>processes)</p> <ul style="list-style-type: none"> <li>• Collect and compile operational or test data and assist in the development of estimates, schedules, specifications and reports</li> <li>• Study time, motion, methods, and speed involved in maintenance, production, and other operations to establish standard production rate and improve efficiency</li> <li>• Review or implement engineering drawings, schematic diagrams, or formulas and confer with management or engineering staff to determine quality and reliability standards</li> <li>• Aid in planning work assignments in accordance with worker performance, machine capacity, production schedules, and anticipated delays</li> <li>• Observe and report on workers using equipment to verify that equipment is being operated and maintained according to quality assurance standards</li> <li>• Recommend revision to methods of operation, material handling, equipment layout, or other changes to improve efficiencies or improve standards</li> <li>• Recommend modifications to existing quality or production standards to achieve optimum quality within limits of equipment capability</li> <li>• Assist or prepare charts, graphs, and diagrams to illustrate workflow, routing, floor layouts, material handling, production processes, and machine utilization</li> <li>• Evaluate data and write reports to validate or indicate deviations from existing standards and the physical unit (e.g., component/ equipment / product) being assessed</li> <li>• Review worker logs, product processing sheets, and specification sheets, to verify that records adhere to quality assurance specifications</li> <li>• Provide input in the design of physical or functional layouts</li> <li>• Train and / or mentor junior staff</li> </ul>
<p><b>Tools and Technology:</b></p>	
	<ul style="list-style-type: none"> <li>• 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</li> </ul>

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	<p>resource planning software, graphics, word processing, spreadsheet, electronic mail, internet browser)</p> <ul style="list-style-type: none"> <li>• Communication Devices</li> <li>• Physical equipment as required by the facility (e.g., production equipment, lab equipment, etc.)</li> </ul>
<b>Required Competencies:</b>	<b>(Knowledge, Skills, Personal Attributes)</b>
<b>Knowledge</b>	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.
<b>Skills</b>	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.
<b>Personal Attributes</b>	<b>(Abilities, Work Values, Work Styles)</b>
<b>Abilities</b>	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.
<b>Work Values</b>	Individuals who will succeed in this position are: <ul style="list-style-type: none"> <li>• comfortable working independently and / or as part of a team;</li> <li>• comfortable following directions and making decisions;</li> <li>• respectful of policies and procedures;</li> <li>• continuous improvement oriented; and</li> <li>• results oriented and receive a feeling of accomplishment.</li> </ul>
<b>Work Styles</b>	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.

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<b>Essential Skills Profile:</b>	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 ESDC website: <a href="http://www.esdc.gc.ca/eng/jobs/les/index.shtml">http://www.esdc.gc.ca/eng/jobs/les/index.shtml</a>
<b>Reading Text</b>	<ul style="list-style-type: none"> <li>• Read notes on production orders, reporting forms and drawings</li> <li>• Observe hazard, warning and caution signs and labels on equipment, walls, components and containers and review Material Safety Data Sheets (MSDS)</li> <li>• Read explanations and recommendations in quality and production reports, logbooks and production files to track product and manufacturing concerns and deficiencies</li> <li>• Read trade magazines and association newsletters, government legislation, regulations, bulletins and addenda</li> <li>• Read and refer to materials such as health and safety policies, internal procedures and production specifications</li> <li>• Read and compare the company's and customer's production specifications</li> </ul>
<b>Document Use</b>	<ul style="list-style-type: none"> <li>• Scan a variety of labels and tags to get specific information such as material codes and product types and handling procedures</li> <li>• Verify, take and information from and complete tracking and quality control forms, tags and labels</li> <li>• Refer to assembly drawings and diagrams to follow installation and calibration procedures</li> <li>• Scan schematics to complete operations and inspections and quality control tables and graphs on computer screens and printouts to verify manufacturing tolerances and specifications are within established ranges</li> </ul>
<b>Writing Skills</b>	<ul style="list-style-type: none"> <li>• Write brief notes and e-mail to co-workers and managers to request clarification about product updates and modifications and to production or quality control managers to highlight safety and production concerns</li> <li>• Write notes on inspection forms or production job files to maintain records of equipment malfunctions, product deficiencies and corrective actions</li> <li>• Write detailed procedures using standard formats and templates and integrate information from a variety of sources</li> </ul>

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	<ul style="list-style-type: none"> <li>• Complete quality control forms such as non-compliance, or non-conformance</li> <li>• Write training materials, production and quality reports, new sections and updates for company policy and procedures manuals</li> </ul>
<b>Numeracy</b>	<ul style="list-style-type: none"> <li>• Apply scheduling, budgeting and accounting math</li> <li>• Apply measurement and calculation math</li> <li>• Apply data analysis math</li> <li>• Utilize numerical estimation and money math</li> </ul>
<b>Oral Communication</b>	<ul style="list-style-type: none"> <li>• Interact with co-workers to coordinate work and share information</li> <li>• Interact with suppliers and service providers to get detailed technical information about equipment, supplies and materials</li> <li>• Lead and participate in various safety, quality and production committee meetings</li> <li>• Discuss planning and lead implementation of process and production improvements, as well as training sessions</li> <li>• Facilitate meetings with clients and managers to propose modifications to production drawings and system upgrades</li> </ul>
<b>Thinking Skills</b>	<b>(Problem Solving, Decision Making, Job Task Planning and Organizing, Significant Use of Memory, Finding Information)</b>
<b>Problem Solving</b>	<ul style="list-style-type: none"> <li>• Find that suppliers have sent incorrect supplies and materials</li> <li>• Discover quality control errors such as inaccurate entries in logbooks and reporting forms</li> <li>• Experience equipment breakdowns and malfunctions and production deficiencies</li> </ul>
<b>Decision Making</b>	<ul style="list-style-type: none"> <li>• Decide when to issue 'non-compliance' or incident reports</li> <li>• Decide what company policies and procedures to update or rewrite in response to regulatory and production standard changes</li> <li>• Decide to repair, refurbish or replace production equipment</li> <li>• Make equipment layout and manufacturing process decisions</li> </ul>
<b>Job Task Planning and Organizing</b>	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.
<b>Significant Use of Memory</b>	<ul style="list-style-type: none"> <li>• Remember similar production deficiencies and equipment</li> </ul>

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	<p>malfunctions, and the steps taken to overcome them as well as which content experts to call to deal with different production problems</p> <ul style="list-style-type: none"> <li>Remember the sequenced steps of various procedures</li> <li>Remember production observations or changes to record the information afterwards</li> </ul>
<b>Finding Information</b>	<ul style="list-style-type: none"> <li>Reference manufacturing publications, industry websites and textbooks, talk with managers and plant technicians, and review production reports and maintenance histories</li> <li>Draw on information from acts, standards and regulations, and professional resource materials when developing or modifying policies and procedures relating to safety, production and quality control to ensure legislated requirements are met</li> </ul>
<b>Working with Others</b>	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.
<b>Continuous Learning</b>	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.
<b>Additional Information</b>	<b>(Physical Aspects, Attitudes)</b>
<b>Physical Aspects</b>	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.
<b>Attitudes</b>	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.
<b>Future Trends Affecting Essential Skills:</b>	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

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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.

**Government of Canada  
Defined - Related NOC Code &  
Description**

**2233 Industrial Engineering and Manufacturing Technologists  
and Technicians**

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.

**Document Management:**

Activity #	Activity Type*	Replaces	New Version Name	Responsible Individual
1	Document Created	Not Applicable	October 21, 2010	M. Cheddi (CSA)
2	Document Modified	October 21, 2010	November 29, 2010	M. Cheddi (CSA)
3	Document Finalized	Nov 29, 2010	April 12, 2011	C. Sellar (CSA)
4	Document Updated	April 12, 2011	June 19, 2014	I. Vasileski (CSA)

**\*Activity Types:**

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

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