Production Engineer

Bio-economy Skills At-a-Glance

BioTalent™ Canada

Building skills for Canada's bio-economy

About BioTalent Canada™

Helping Canada's Bio-economy thrive globally

Canada is a world leader in biotechnology—the application of living organisms to industrial, agricultural, medical and other processes and products. To maintain and build on this leadership, the sector needs highly skilled, job-ready people.

By acting as a national hub and central resource for employers, job seekers, students, educators and government agencies, BioTalent Canada helps make this happen.

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About the Bio-economy

The bio-economy involves the research, development, manufacturing and commercialization of technologies and products for such areas as:

- Agriculture
- Aquaculture
- Bioenergy
- Bioinformatics
- Bioproducts
- Biosciences
- Environment
- Food Processing
- Forestry
- Genomics
- Human and Animal Health
- Industrial
- Life Sciences
- Medical Devices
- Natural Resources
- Nanotechnology
- Nutraceuticals
- Pharmaceuticals

Components of the Bio-economy Skills At-a-Glance

The *Bio-economy Skills At-a-Glance* are built around *Key Competencies.* They are *not* complete *Bio-economy Skills Profiles*. They capture the key hard and soft skills required to successfully function in this position. Those key competencies require specific tasks be accomplished in order to attain the desired outcome. More often than not, those key activities are functional in nature and require the application of specific knowledge acquired by education, training or practical experience. In bio-economy companies, those functional competencies may be very broad and diversified, encompassing both scientific and business expertise. Some may refer to functional competencies as hard skills of the position.

The *Bio-economy Skills At-a-Glance* have been developed through secondary research and have NOT been validated by industry. As a result, industry feedback will be greatly appreciated. Please send any feedback to portfolios@biotalent.ca.

The *Bio-economy Skills-At-a-Glance* are useful for such activities as recruiting, professional development, coaching, self-assessment, and many other purposes.

Occupational Description

Industrial engineers focus on maximizing efficiencies. They are concerned with increasing productivity through the management of people, methods of business organization, and technology. They design production planning and control systems to coordinate activities and ensure product quality as well as optimizing the efficiency of the physical distribution of goods and services within a plant.

Potential Professional Background and Education/Bio-economy or Relevant Experience

Education/Certification

- University degree, industrial engineering (Some employers may require an advanced degree in engineering or related science field) and/or a Professional engineering licence (P.Eng.).

Professional Experience

- 5 - 8 years experience.
- Project management experience.
- Experience with Lean, ISO and Six-Sigma quality management systems.
- Knowledge of Occupational Safety and Health Administration (OSHA).
- Process Safety Management (PSM) procedures and requirements.

Competencies and Tasks

A Production Engineer must be able to:

A. Gather information

TASKS
1. Research new technologies, processes, regulations and legislation
2. Review production information reports / shift logs
3. Conduct technical feasibility studies
4. Conduct economic feasibility studies
5. Conduct risk analysis and hazard reviews
6. Conduct time studies

B. Analyze data or information

TASKS
1. Analyze production costs
2. Forecast production capacity
3. Perform cost analysis
4. Interpret schematics

C. Evaluate production

TASKS
1. Evaluate production capacity and capabilities
2. Evaluate production efficiency and effectiveness
3. Evaluate the reliability and performance of plant facilities and production
4. Evaluate suppliers
5. Evaluate health and safety programs

D. Report information

TASKS
1. Report on new technologies, processes, regulations and legislation
2. Design reporting forms
3. Provide regular and complete progress reports
4. Provide reports on evaluations

E. Develop new concepts and constructs

TASKS
1. Design process development strategies
2. Develop process development strategies
3. Develop manufacturing systems
4. Develop organizational and management systems
5. Develop maintenance programs
6. Develop health and safety programs

7. Develop work simplification programs

F. Document structures, devices, parts, and equipment

TASKS
1. Design plant and facility layouts
2. Determine production specifications
3. Develop maintenance standards
4. Develop process drawings
5. Develop preliminary process flow sheets

G. Monitor processes, materials, or surroundings

TASKS
1. Monitor adherence to quality assurance standards
2. Monitor industry trends
3. Monitor and manage timelines
4. Monitor budgets
5. Monitor output quality
6. Monitor production schedules
7. Monitor production timelines

H. Comply with policies and procedures

TASKS
1. Contribute to the development of policies and procedures
2. Contribute to the development of safety and security procedures
3. Develop policies and procedures
4. Develop work instructions
5. Implement policies and procedures
6. Implement quality standard procedures
7. Maintain policies and procedures
8. Maintain regulatory compliance

9. Follow current Good Manufacturing Practices (cGMP)

I. Coordinate the work of others

TASKS
1. Coordinate cross-functional teams
2. Coordinate project work
3. Implement organizational and management systems
4. Implement process development strategies
5. Supervise workers
6. Support regulatory submission process

J. Evaluate information to determine compliance with standards

TASKS
1. Perform verification and validation activities
2. Support process-related validation studies
3. Participate in quality audits

K. Schedule work and activities

TASKS
1. Schedule work assignments
2. Create production schedules
3. Develop maintenance schedules

L. Staff organizational units

TASKS
1. Recruit employees
2. Develop and maintain organizational chart
3. Discipline employees
4. Terminate employees' employment

M. Perform administrative activities

TASKS
1. Procure materials and supplies
2. Approve engineering drawings
3. Prepare supply and service requisitions

N. Coach and develop others

TASKS
1. Provide leadership
2. Mentor staff
3. Train staff
4. Encourage continuous learning and development of staff

O. Use computers

TASKS
1. Use email software as appropriate
2. Use Microsoft Office as appropriate
3. Use database software as appropriate
4. Use computer-assisted design (CAD) software as appropriate
5. Use ERP (SAP) computer software as appropriate
6. Use simulation and modelling software as appropriate
7. Use statistical analysis software as appropriate
8. Use the Internet as appropriate

P. Demonstrate personal competencies

TASKS
1. Lead with confidence
2. Demonstrate teamwork
3. Exhibit sensitivity to cultural and social diversity
4. Be customer service focused

TASKS
5. Work in a fast-paced environment
6. Follow company's policies and procedures
7. Demonstrate time management skills
8. Manage stress
9. Be a quick learner
10. Communicate effectively and clearly
11. Demonstrate professional attributes
12. Continuously update skills

Strong Board of Directors

The Board of Directors is composed of experts in the field of HR, CEOs, CFOs and CSOs from across Canada with extensive financial and industry experience representing companies and organizations in Canada's bio-economy. BioTalent Canada is not a membership organization and therefore relies on the guidance provided by its dedicated volunteer Board of Directors.

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Assistant Professor
Department of Chemistry
University of Saskatchewan
Saskatoon, SK

Michael D'Amico
SVP, Human Resources and Organizational Effectiveness
Iogen Corporation
Ottawa, ON

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