INDUSTRIAL & MANUFACTURING SYSTEMS ENGINEER

What do they do?

Industrial & Manufacturing Systems Engineers optimize how machines, materials, and technology interact in production environments. They design efficient systems, streamline processes, and ensure productivity, safety, and quality in manufacturing and service industries.

Summary of Duties

- Design plant layouts, production processes, and workflows
- Select and integrate machinery, robotics, and automated systems
- Conduct cost, time, and resource optimization studies
- Improve supply chain logistics and materials handling
- Analyze system failures and recommend improvements

Employment, Wages & Skills

Starting	Average	Experienced
$30/hr	$44/hr	$60+/hr

Employment Requirements

- Bachelor’s degree in industrial, manufacturing, systems, or related engineering field
- Master’s or PhD may be required for advanced research or teaching roles
- Licensing by a provincial/territorial association of professional engineers (P.Eng.) is required to practice as a professional engineer
- Co-op or practical industry experience highly recommended

Skills You'll Build

- Process design and optimization
- Systems integration (machinery, robotics, automation)
- Quality assurance and reliability engineering
- Cost estimation, project scheduling, and resource allocation
- Lean manufacturing and Six Sigma practices
- Collaboration and leadership in cross-functional teams

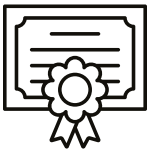
A Day in the Life

A typical day may include analyzing production, meeting with engineers and managers to discuss workflow improvements, reviewing plant layouts, or running simulations for new systems integration. Industrial engineers often balance time between office design work and on-site troubleshooting.

Why Choose This Career?

- **High demand** in manufacturing, automotive, aerospace, and logistics sectors
- Opportunities to integrate robotics, machining, and 3D printing into modern systems
- Strong wages and **career growth potential**
- Combines problem-solving, leadership, and innovation
- **Central role** in advancing sustainable and efficient production systems

Certification & Training



- **Bachelor's** in industrial/manufacturing engineering
- P.Eng. licensure **required** in Canada to practice as a professional engineer
- Advanced training or certifications in Lean Six Sigma, project management, or automation are valuable
- Graduate-level options (e.g., University of Windsor's PhD in Industrial & Manufacturing Systems Engineering) for research careers

Next Steps for High School Graduates:

- Build strong math, physics, and computer science foundations
- Seek co-op placements for practical, hands-on experience
- Enroll in an undergraduate program in industrial, systems, or manufacturing engineering

Industrial & Manufacturing Systems Engineer Education Pathway

Institution	Program	Credential & Duration	Key Focus Areas
University of Windsor	Honours Bachelor of Applied Science (BASc)– Industrial Engineering	4 years	Production systems, lean manufacturing, flexible manufacturing, co-op options
Fanshawe College (London)	Ontario College Diploma: Manufacturing Engineering Technician (Co-op)	~2 years (~60 weeks)	CNC programming, CAD/CAM, production planning and tool design
Conestoga College (Cambridge)	Ontario College Diploma: Mechanical Engineering Technology–Automated Manufacturing	2 years	Automated manufacturing, CAD/CAM, robotics, Industry 4.0
Ontario Tech University (Oshawa)	Bachelor of Engineering (Honours) – Manufacturing Engineering	4 years	Advanced manufacturing processes, materials, robotics, automation