TORQ Analysis of Industrial Engineering Technicians to Commercial and Industrial Designers

ANALYSIS INPUT

Transfer	Title	O*NET	Filters		
From Title:	Industrial Engineering Technicians	17-3026.00	Abilities:	Importance LeveL: 50	Weight: 1
To Title:	Commercial and Industrial Designers	27-1021.00	Skills:	Importance LeveL: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS

Grand TORQ: 91

Ability TORQ		Skills TORQ		Knowledge TORQ	
Level	95	Level	88	Level	92

Gaps To Narrow if Possible

Ability	Level	Gap	Impt
Visual Color Discrimination	44	18	50
Finger Dexterity	41	16	56
Information Ordering	57	6	62
Originality	55	4	65
Far Vision	44	2	53

Upgrade These Skills

Skill	Level	Gap	Impt
Time Management	67	10	81
Reading Comprehension	69	6	72

Knowledge to Add

Knowledge	Level	Gap	Impt
Building and Construction	23	7	77

LEVEL and IMPT (IMPORTANCE) refer to the Target Commercial and Industrial Designers. GAP refers to level difference between Industrial Engineering Technicians and Commercial and Industrial Designers.

ASK ANALYSIS

Ability Level Comparison - Abilities with importance scores over 50

Description	Industrial Engineering Technicians	Commercial and Industrial Designers	Importance
Oral Comprehension	62	57	72
Oral Expression	62	57	68
Written Comprehension	62	57	65
Fluency of Ideas	55	55	65
Originality	51	55	65
Deductive Reasoning	57	55	65
Problem Sensitivity	55	50	62
Inductive Reasoning	55	50	62
Information Ordering	51	57	62

	Industrial Engineering Technicians	Commercial and Industrial Designers	
Near Vision	60	53	62
Speech Recognition	44	44	62
Visualization	51	51	59
Speech Clarity	48	46	59
Category Flexibility	51	48	56
Selective Attention	48	37	56
Finger Dexterity	25	41	56
Written Expression	57	50	53
Perceptual Speed	50	35	53
Far Vision	42	44	53
Mathematical Reasoning	51	41	50
Number Facility	60	42	50
Flexibility of Closure	41	39	50
Visual Color Discrimination	26	44	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Industrial Engineering Technicians	Commercial and Industrial Designers	Importance
Time Management	57	67	81
Reading Comprehension	63	69	72

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Industrial Engineering Technicians	Commercial and Industrial Designers	Importance
Building and Construction	16	23	77

Experience & Education Comparison

Related Work Experience Comparison

Description	Industrial Engineering Technicians	Commercial and Industrial Designers
10+ years	0%	0%
8-10 years	0%	0%
6-8 years	12%	30%
4-6 years	64%	21%
2-4 years	11%	9%
1-2 years	0%	12%
6-12 months	2%	9%
3-6 months	6%	6%
1-3 months	0%	9%
0-1 month	0%	0%
None	2%	0%

Required Education Level Comparison

Description	Industrial Engineering Technicians	Commercial and Industrial Designers
Doctoral	0%	0%
Professional Degree	0%	0%
Post-Masters Cert	0%	0%
Master's Degree	0%	7%
Post-Bachelor Cert	0%	6%
Bachelors	51%	55%
AA or Equiv	11%	18%
Some College	17%	0%
Post-Secondary Certificate	0%	9%
High Scool Diploma or GED	19%	2%
No HSD or GED	0%	0%

Industrial Engineering Technicians	Commercial and Industrial Designers

Most Common Educational/Training Requirement:

Associate degree	Bachelor's degree
Job Zone Comparison	
3 - Job Zone Three: Medium Preparation Needed	4 - Job Zone Four: Considerable Preparation Needed
Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.	A minimum of two to four years of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified.
Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.	Most of these occupations require a four - year bachelor's degree, but some do not.
Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.	Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training.

Tasks

Industrial Engineering Technicians

Core Tasks

Generalized Work Activities:

- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Identifying Objects, Actions, and Events - Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.
- Establishing and Maintaining Interpersonal Relationships - Developing constructive and cooperative working relationships with others, and maintaining them over time.
- Documenting/Recording Information - Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.
- Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.

Specific Tasks

Occupation Specific Tasks:

- Aid in planning work assignments in accordance with worker performance, machine capacity, production schedules, and anticipated delays.
- Compile and evaluate statistical data to determine and maintain quality and reliability of products.
- Evaluate data and write reports to validate or indicate deviations from existing standards.
- Interpret engineering drawings, schematic diagrams, or formulas and confer with management or engineering staff to determine quality and reliability standards.
- Observe worker using equipment to verify

Commercial and Industrial Designers

Core Tasks

Generalized Work Activities:

- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.
- Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.
- Thinking Creatively - Developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions.
- Updating and Using Relevant Knowledge - Keeping up-to-date technically and applying new knowledge to your job.
- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Identifying Objects, Actions, and Events - Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.

Specific Tasks

Occupation Specific Tasks:

- Advise corporations on issues involving corporate image projects or problems.
- Confer with engineering, marketing, production, or sales departments, or with customers, to establish and evaluate design concepts for manufactured products.
- Coordinate the look and function of product lines.
- Design graphic material for use as ornamentation, illustration, or advertising on manufactured materials and packaging or containers.
- Develop industrial standards and regulatory

that equipment is being operated and maintained according to quality assurance standards.

- Observe workers operating equipment or performing tasks to determine time involved and fatigue rate using timing devices.
- Prepare charts, graphs, and diagrams to illustrate workflow, routing, floor layouts, material handling, and machine utilization.
- Prepare graphs or charts of data or enter data into computer for analysis.
- Read worker logs, product processing sheets, and specification sheets, to verify that records adhere to quality assurance specifications.
- Recommend modifications to existing quality or production standards to achieve optimum quality within limits of equipment capability.
- Recommend revision to methods of operation, material handling, equipment layout, or other changes to increase production or improve standards.
- Record test data, applying statistical quality control procedures.
- Select products for tests at specified stages in production process, and test products for performance characteristics and adherence to specifications.
- Study time, motion, methods, and speed involved in maintenance, production, and other operations to establish standard production rate and improve efficiency.

Detailed Tasks

Detailed Work Activities:

- advise clients regarding engineering problems
- analyze effectiveness of safety systems or procedures
- analyze engineering design problems
- analyze technical data, designs, or preliminary specifications
- calculate engineering specifications
- communicate technical information
- compile numerical or statistical data
- conduct performance testing
- confer with engineering, technical or manufacturing personnel
- design manufacturing processes or methods
- develop safety regulations
- diagnose mechanical problems in machinery or equipment
- draw maps or charts
- estimate materials or labor requirements
- evaluate engineering data
- evaluate manufacturing or processing systems
- examine engineering documents for completeness or accuracy
- explain complex mathematical information

guidelines.

- Develop manufacturing procedures and monitor the manufacture of their designs in a factory to improve operations and product quality.
- Direct and coordinate the fabrication of models or samples and the drafting of working drawings and specification sheets from sketches.
- Evaluate feasibility of design ideas, based on factors such as appearance, safety, function, serviceability, budget, production costs/methods, and market characteristics.
- Fabricate models or samples in paper, wood, glass, fabric, plastic, metal, or other materials, using hand or power tools.
- Investigate product characteristics such as the product's safety and handling qualities, its market appeal, how efficiently it can be produced, and ways of distributing, using and maintaining it.
- Modify and refine designs, using working models, to conform with customer specifications, production limitations, or changes in design trends.
- Participate in new product planning or market research, including studying the potential need for new products.
- Prepare sketches of ideas, detailed drawings, illustrations, artwork, or blueprints, using drafting instruments, paints and brushes, or computer-aided design equipment.
- Present designs and reports to customers or design committees for approval, and discuss need for modification.
- Read publications, attend showings, and study competing products and design styles and motifs to obtain perspective and generate design concepts.
- Research production specifications, costs, production materials and manufacturing methods, and provide cost estimates and itemized production requirements.
- Supervise assistants' work throughout the design process.

Detailed Tasks

Detailed Work Activities:

- analyze market conditions
- analyze project proposal to determine feasibility, cost, or time
- analyze technical data, designs, or preliminary specifications
- communicate visually or verbally
- confer with client or staff regarding theme
- confer with other departmental heads to coordinate activities
- consult with customers concerning needs
- coordinate activities of assistants
- create art from ideas

- explain complex mathematical information
- follow statistical process control procedures
- improve test devices or techniques in manufacturing, industrial or engineering setting
- inspect facilities or equipment for regulatory compliance
- inspect manufactured products or materials
- perform safety inspections in industrial, manufacturing or repair setting
- prepare safety reports
- prepare technical reports or related documentation
- read blueprints
- read production layouts
- read technical drawings
- record test results, test procedures, or inspection data
- schedule employee work hours
- study time, motion, or work methods of workers
- test equipment as part of engineering projects or processes
- understand engineering data or reports
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use drafting or mechanical drawing techniques
- use mathematical or statistical methods to identify or analyze problems
- use spreadsheet software
- use technical information in manufacturing or industrial activities
- use technical regulations for engineering problems

Technology - Examples

Analytical or scientific software

- ProModel software
- Statistical software
- Wilcox Associates PC-DMIS

Computer aided design CAD software

- Autodesk AutoCAD software
- SolidWorks CAD software

Computer aided manufacturing CAM software

- Computer aided manufacturing CAM software

Data base user interface and query software

- Data entry software
- Microsoft Access

Graphics or photo imaging software

- distinguish details in graphic arts material
- draw designs, letters, or lines
- draw prototypes, plans, or maps to scale
- estimate production costs
- evaluate product design
- evaluate product quality for sales activities
- fabricate craft or art objects
- follow manufacturing methods or techniques
- identify color or balance
- identify problems or improvements
- maintain consistent production quality
- make presentations
- organize commercial artistic or design projects
- prepare artwork for camera or press
- read blueprints
- recommend improvements to work methods or procedures
- recommend solutions of administrative problems
- schedule work to meet deadlines
- sketch or draw subjects or items
- understand artistic crafts production methods
- use characteristics of graphic design materials
- use computer aided drafting or design software for design, drafting, modeling, or other engineering tasks
- use computer graphics design software
- use computers to enter, access or retrieve data
- use creativity in graphics
- use creativity in industrial artistry
- use creativity to art or design work
- use drafting or mechanical drawing techniques
- use graphic arts techniques
- use hand or power tools
- use marketing techniques
- use product knowledge to market goods

Technology - Examples

Computer aided design CAD software

- Ashlar-Vellum Cobalt
- Autodesk AliasStudio
- Autodesk AutoCAD software
- Autodesk Maya software
- Dassault Systemes CATIA software
- PTC Pro/ENGINEER software
- Siemens PLM Software UGS NX

- Graphics software

Industrial control software

- Computerized numerical control CNC machine software
- Kinematic Engineering MicroMeasure IV

Office suite software

- Microsoft Office

Presentation software

- Microsoft PowerPoint

Spreadsheet software

- Microsoft Excel
- Spreadsheet software

Word processing software

- Microsoft Word
- Word processing software

Tools - Examples

- Vernier calipers
- Optical comparators
- Coordinate measuring machines CMM
- Video cameras
- Forklifts
- Gauge blocks
- Dial indicators
- Computerized numerical control CNC lathes
- Computerized numerical control CNC milling machines
- Toolmakers' microscopes
- Personal computers
- Plotter printers
- Scissor lifts

- Siemens PLM Software UGS NX
- SolidWorks CAD software

Data base user interface and query software

- Microsoft Access

Desktop publishing software

- Adobe Systems Adobe InDesign
- Microsoft Publisher
- QuarkXpress

Document management software

- Adobe Systems Adobe Acrobat software

Electronic mail software

- Email software

Graphics or photo imaging software

- Adobe Systems Adobe FreeHand
- Adobe Systems Adobe Illustrator
- Adobe Systems Adobe Photoshop software
- Corel CorelDraw Graphics Suite
- Corel Painter
- McNeel Rhino software
- Xara Xtreme

Internet browser software

- Web browser software

Office suite software

- Microsoft Office

Presentation software

- Microsoft PowerPoint

Spreadsheet software

- Microsoft Excel

Video creation and editing software

- Autodesk 3ds Max
- Chaos Group V-Ray
- MAXON CINEMA 4D
- Softimage XSI

Word processing software

- Microsoft Word

Tools - Examples

- Desktop computers

	• Compact digital cameras
	• Universal serial bus USB flash drives
	• Liquid crystal display LCD video projectors
	• Laptop computers
	• Personal computers

Labor Market Comparison

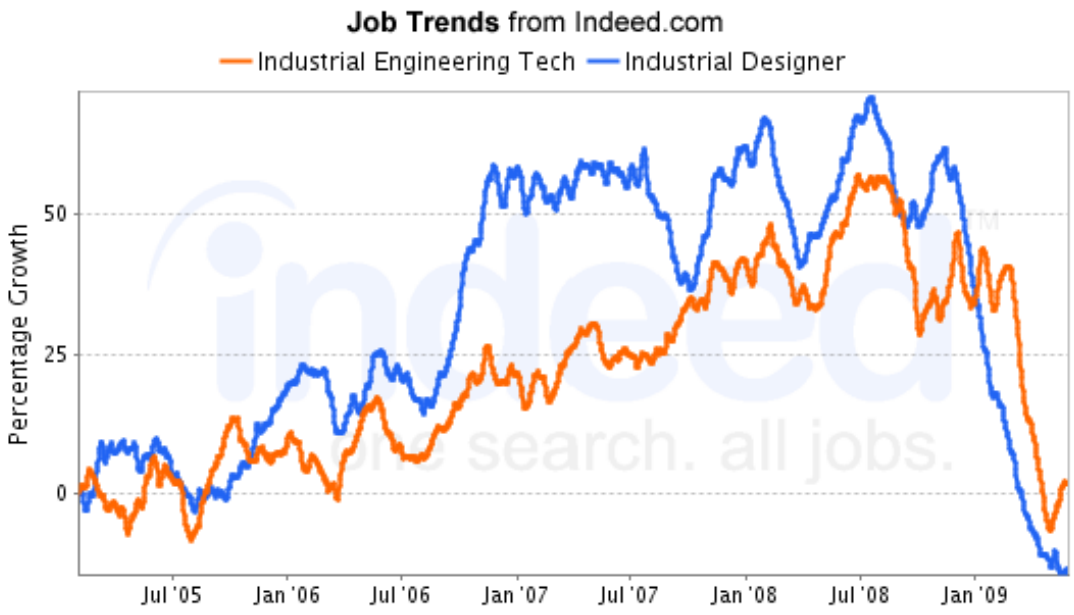
Maine Department of Labor.

Description	Industrial Engineering Technicians	Commercial and Industrial Designers	Difference
Median Wage	$ 51,700	$ 49,170	$(2,530)
10th Percentile Wage	$ 29,250	$ 29,790	$ 540
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	$ 75,190	$ 72,210	$(2,980)
90th Percentile Wage	$ 84,130	$ 81,030	$(3,100)
Mean Wage	$ 55,990	$ 53,870	$(2,120)
Total Employment - 2104	370	140	-230
Employment Base - 2006	379	153	-226
Projected Employment - 2113	400	160	-240
Projected Job Growth - 2006-2113	5.5 %	4.6 %	-1.0 %
Projected Annual Openings - 2006-2113	9	5	-4
Special			

Special Occupations:

National Job Posting Trends

Trend for Industrial Engineering Technicians and Commercial and Industrial Designers



Data from Indeed

Programs

Related Programs

Commercial and Advertising Art

Commercial and Advertising Art. A program in the applied visual arts that prepares individuals to use artistic techniques to effectively communicate ideas and information to business and consumer audiences via illustrations and other forms of digital or printed media. Includes instruction in concept design, layout, paste-up, and techniques such as engraving, etching, silkscreen, lithography, offset, drawing and cartooning, painting, collage, and computer graphics.

No information on schools for the program

Design and Applied Arts, Other

Design and Applied Arts, Other. Any instructional program in design and applied arts not listed above.

No information on schools for the program

Design and Visual Communications

Design and Visual Communications, General. A program in the applied visual arts that focuses on the general principles and techniques for effectively communicating ideas and information, and packaging products, in digital and other formats to business and consumer audiences, and that may prepare individuals in any of the applied art media.

Institution	Address	City	URL
Maine College of Art	97 Spring St	Portland	www.meca.edu
York County Community College	112 College Drive	Wells	www.yccc.edu

Fashion Design and Illustration

Fashion/Apparel Design. A program that prepares individuals to apply artistic principles and techniques to the professional design of commercial fashions, apparel, and accessories, and the management of fashion development projects. Includes instruction in apparel design; accessory design; the design of men's', women's', and children's' wear; flat pattern design; computer-assisted design and manufacturing; concept planning; designing in specific materials; labor and cost analysis; history of fashion; fabric art and printing; and the principles of management and operations in the fashion industry.

No information on schools for the program

Industrial Design

Industrial Design. A program in the applied visual arts that prepares individuals to use artistic techniques to effectively communicate ideas and information to business and consumer audiences via the creation of effective forms, shapes, and packaging for manufactured products. Includes instruction in designing in a wide variety of plastic and digital media, prototype construction, design development and refinement, principles of cost saving, and product structure and performance criteria relevant to aesthetic design parameters.

No information on schools for the program

Technical Theater/Theater Design and Stagecraft

Technical Theatre/Theatre Design and Technology. A program that prepares individuals to apply artistic, technical and dramatic principles and techniques to the communication of dramatic information, ideas, moods, and feelings through technical theatre methods. Includes instruction in set design, lighting design, sound effects, theatre acoustics, scene painting, property management, costume design, and technical direction and production and use of computer applications to support these functions above.

No information on schools for the program

Maine Statewide Promotion Opportunities for Industrial Engineering Technicians

O*NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
17-3026.00	Industrial Engineering Technicians	100	3	370	$51,700.00	$0.00	6%	9	☆
17-2112.00	Industrial Engineers	90	4	580	$68,350.00	$16,650.00	11%	22	
11-3051.00	Industrial Production Managers	88	4	690	$72,560.00	$20,860.00	-12%	24	
15-1061.00	Database Administrators	86	4	300	$60,260.00	$8,560.00	20%	11	
17-2141.00	Mechanical Engineers	86	4	620	$67,210.00	$15,510.00	-9%	14	
17-2131.00	Materials Engineers	86	4	40	$70,250.00	$18,550.00	-7%	1	
13-2053.00	Insurance Underwriters	85	3	460	$56,090.00	$4,390.00	-1%	12	
17-2121.02	Marine Architects	85	4	60	$75,520.00	$23,820.00	-9%	1	
17-2072.00	Electronics Engineers, Except Computer	85	4	210	$76,420.00	$24,720.00	-26%	4	
13-2031.00	Budget Analysts	85	4	170	$57,290.00	$5,590.00	3%	5	
13-2061.00	Financial Examiners	85	4	120	$55,110.00	$3,410.00	3%	2	
11-3071.02	Storage and Distribution Managers	85	3	710	$62,270.00	$10,570.00	5%	25	☆

11-9131.00	Postmasters and Mail Superintendents	85	3	420	$55,200.00	$3,500.00	-5%	10	
15-1051.00	Computer Systems Analysts	85	4	1,650	$69,340.00	$17,640.00	20%	78	
27-1022.00	Fashion Designers	84	3	60	$71,370.00	$19,670.00	19%	1	

Special Occupations:

Top Industries for Commercial and Industrial Designers

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Self-employed workers, primary job	000601	25.29%	12,136	12,929	6.54%
Specialized design services	541400	8.84%	4,243	5,678	33.81%
Management of companies and enterprises	551100	5.03%	2,414	2,783	15.28%
Self-employed workers, secondary job	000602	4.50%	2,158	2,148	-0.45%
Motor vehicle parts manufacturing	336300	2.70%	1,296	1,032	-20.39%
Employment services	561300	2.16%	1,038	1,314	26.56%
Plastics product manufacturing	326100	1.90%	910	965	6.00%
Miscellaneous durable goods merchant wholesalers	423900	1.40%	674	774	14.80%
Advertising and related services	541800	1.37%	657	741	12.83%
Navigational, measuring, electromedical, and control instruments manufacturing	334500	1.13%	541	518	-4.26%
Research and development in the physical, engineering, and life sciences	541710	1.11%	533	569	6.69%
Other general purpose machinery manufacturing	333900	0.94%	452	408	-9.73%
Medical equipment and supplies manufacturing	339100	0.91%	437	447	2.29%
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	333400	0.90%	430	396	-8.01%
Household appliance manufacturing	335200	0.86%	410	311	-24.33%

Top Industries for Industrial Engineering Technicians

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Aerospace product and parts manufacturing	336400	9.68%	7,251	8,124	12.03%
Navigational, measuring, electromedical, and control instruments manufacturing	334500	5.69%	4,266	4,493	5.31%
Motor vehicle parts manufacturing	336300	5.60%	4,194	3,673	-12.42%
Data processing, hosting, and related services	518200	4.09%	3,062	4,554	48.71%

Pharmaceutical and medicine manufacturing	325400	3.14%	2,355	3,265	38.63%
Employment services	561300	2.17%	1,628	2,266	39.22%
Management of companies and enterprises	551100	2.03%	1,517	1,924	26.81%
Computer and peripheral equipment manufacturing	334100	1.97%	1,475	1,062	-28.00%
Research and development in the physical, engineering, and life sciences	541710	1.81%	1,354	1,589	17.36%
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	333400	1.80%	1,349	1,365	1.19%
Other general purpose machinery manufacturing	333900	1.72%	1,286	1,277	-0.70%
Plastics product manufacturing	326100	1.67%	1,251	1,459	16.60%
Federal government, excluding postal service	919999	1.59%	1,194	1,241	3.99%
Commercial and service industry machinery manufacturing	333300	1.29%	967	933	-3.51%
Agriculture, construction, and mining machinery manufacturing	333100	1.28%	959	985	2.71%

TORQ Analysis of Industrial Engineering Technicians to Production, Planning, and Expediting Clerks

ANALYSIS INPUT

Transfer	Title	O*NET	Filters		
From Title:	Industrial Engineering Technicians	17-3026.00	Abilities:	Importance LeveL: 50	Weight: 1
To Title:	Production, Planning, and Expediting Clerks	43-5061.00	Skills:	Importance LeveL: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS

Grand TORQ: 91

Ability TORQ		Skills TORQ		Knowledge TORQ	
Level	97	Level	88	Level	88

Gaps To Narrow if Possible

Ability	Level	Gap	Impt
No Critical Gaps Recorded!			

Upgrade These Skills

Skill	Level	Gap	Impt
Negotiation	58	13	74
Writing	62	7	79
Speaking	62	4	70
Reading Comprehension	65	2	78

Knowledge to Add

Knowledge	Level	Gap	Impt
Telecommunications	20	5	70

LEVEL and IMPT (IMPORTANCE) refer to the Target Production, Planning, and Expediting Clerks. GAP refers to level difference between Industrial Engineering Technicians and Production, Planning, and Expediting Clerks.

ASK ANALYSIS

Ability Level Comparison - Abilities with importance scores over 50

Description	Industrial Engineering Technicians	Production, Planning, and Expediting Clerks	Importance
Written Comprehension	62	51	72
Oral Comprehension	62	55	68
Oral Expression	62	53	68
Written Expression	57	50	68
Near Vision	60	50	65
Problem Sensitivity	55	46	62
Speech Recognition	44	44	62
Inductive Reasoning	55	44	59
Speech Clarity	48	44	59
Deductive Reasoning	57	48	56
Information Ordering	51	44	56

Category Flexibility	51	41	50
Selective Attention	48	37	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Industrial Engineering Technicians	Production, Planning, and Expediting Clerks	Importance
Writing	55	62	79
Reading Comprehension	63	65	78
Negotiation	45	58	74
Speaking	58	62	70

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Industrial Engineering Technicians	Production, Planning, and Expediting Clerks	Importance
Telecommunications	15	20	70

Experience & Education Comparison

Related Work Experience Comparison

Description	Industrial Engineering Technicians	Production, Planning, and Expediting Clerks
10+ years	0%	5%
8-10 years	0%	0%
6-8 years	12%	4%
4-6 years	64%	21%
2-4 years	11%	19%
1-2 years	0%	9%
6-12 months	2%	34%
3-6 months	6%	1%
1-3 months	0%	1%
0-1 month	0%	0%
None	2%	2%

Required Education Level Comparison

Description	Industrial Engineering Technicians	Production, Planning, and Expediting Clerks
Doctoral	0%	0%
Professional Degree	0%	0%
Post-Masters Cert	0%	0%
Master's Degree	0%	4%
Post-Bachelor Cert	0%	0%
Bachelors	51%	12%
AA or Equiv	11%	20%
Some College	17%	10%
Post-Secondary Certificate	0%	7%
High Scool Diploma or GED	19%	44%
No HSD or GED	0%	0%

Industrial Engineering Technicians	Production, Planning, and Expediting Clerks
Most Common Educational/Training Requirement:	
Associate degree	Short-term on-the-job training
Job Zone Comparison	
3 - Job Zone Three: Medium Preparation Needed	2 - Job Zone Two: Some Preparation Needed
Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.	Some previous work-related skill, knowledge, or experience may be helpful in these occupations, but usually is not needed. For example, a teller might benefit from experience working directly with the public, but an inexperienced person could still learn to be a teller with little difficulty.
Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.	These occupations usually require a high school diploma and may require some vocational training or job-related course work. In some cases, an associate's or bachelor's degree could be needed.

Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.	Employees in these occupations need anywhere from a few months to one year of working with experienced employees.

Tasks

Industrial Engineering Technicians

Core Tasks

Generalized Work Activities:

- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Identifying Objects, Actions, and Events - Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.
- Establishing and Maintaining Interpersonal Relationships - Developing constructive and cooperative working relationships with others, and maintaining them over time.
- Documenting/Recording Information - Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.
- Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.

Specific Tasks

Occupation Specific Tasks:

- Aid in planning work assignments in accordance with worker performance, machine capacity, production schedules, and anticipated delays.
- Compile and evaluate statistical data to determine and maintain quality and reliability of products.
- Evaluate data and write reports to validate or indicate deviations from existing standards.
- Interpret engineering drawings, schematic diagrams, or formulas and confer with management or engineering staff to determine quality and reliability standards.
- Observe worker using equipment to verify that equipment is being operated and maintained according to quality assurance standards.
- Observe workers operating equipment or performing tasks to determine time involved and fatigue rate using timing devices.
- Prepare charts, graphs, and diagrams to illustrate workflow, routing, floor layouts, material handling, and machine utilization.
- Prepare graphs or charts of data or enter data into computer for analysis.

Production, Planning, and Expediting Clerks

Core Tasks

Generalized Work Activities:

- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.
- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.
- Organizing, Planning, and Prioritizing Work - Developing specific goals and plans to prioritize, organize, and accomplish your work.
- Monitor Processes, Materials, or Surroundings - Monitoring and reviewing information from materials, events, or the environment, to detect or assess problems.

Specific Tasks

Occupation Specific Tasks:

- Arrange for delivery, assembly, and distribution of supplies and parts in order to expedite flow of materials and meet production schedules.
- Calculate figures such as required amounts of labor and materials, manufacturing costs, and wages, using pricing schedules, adding machines, calculators, or computers.
- Compile and prepare documentation related to production sequences, transportation, personnel schedules, and purchase, maintenance, and repair orders.
- Compile information, such as production rates and progress, materials inventories, materials used, and customer information, so that status reports can be completed.
- Confer with department supervisors and other personnel to assess progress and discuss needed changes.
- Confer with establishment personnel, vendors, and customers to coordinate production and shipping activities, and to resolve complaints or eliminate delays.
- Contact suppliers to verify shipment details.
- Distribute production schedules and work orders to departments.
- Establish and prepare product construction directions and locations, and information on

- Read worker logs, product processing sheets, and specification sheets, to verify that records adhere to quality assurance specifications.
- Recommend modifications to existing quality or production standards to achieve optimum quality within limits of equipment capability.
- Recommend revision to methods of operation, material handling, equipment layout, or other changes to increase production or improve standards.
- Record test data, applying statistical quality control procedures.
- Select products for tests at specified stages in production process, and test products for performance characteristics and adherence to specifications.
- Study time, motion, methods, and speed involved in maintenance, production, and other operations to establish standard production rate and improve efficiency.

Detailed Tasks

Detailed Work Activities:

- advise clients regarding engineering problems
- analyze effectiveness of safety systems or procedures
- analyze engineering design problems
- analyze technical data, designs, or preliminary specifications
- calculate engineering specifications
- communicate technical information
- compile numerical or statistical data
- conduct performance testing
- confer with engineering, technical or manufacturing personnel
- design manufacturing processes or methods
- develop safety regulations
- diagnose mechanical problems in machinery or equipment
- draw maps or charts
- estimate materials or labor requirements
- evaluate engineering data
- evaluate manufacturing or processing systems
- examine engineering documents for completeness or accuracy
- explain complex mathematical information
- follow statistical process control procedures
- improve test devices or techniques in manufacturing, industrial or engineering setting
- inspect facilities or equipment for regulatory compliance
- inspect manufactured products or materials
- perform safety inspections in industrial, manufacturing or repair setting

directions and locations, and information on required tools, materials, and equipment, numbers of workers needed, and cost projections.

- Examine documents, materials, and products, and monitor work processes, in order to assess completeness, accuracy, and conformance to standards and specifications.
- Maintain files such as maintenance records, bills of lading, and cost reports.
- Plan production commitments and timetables for business units, specific programs, and/or jobs, using sales forecasts.
- Provide documentation and information to account for delays, difficulties, and changes to cost estimates.
- Record production data, including volume produced, consumption of raw materials, and quality control measures.
- Requisition and maintain inventories of materials and supplies necessary to meet production demands.
- Review documents such as production schedules, work orders, and staffing tables to determine personnel and materials requirements, and material priorities.
- Revise production schedules when required due to design changes, labor or material shortages, backlogs, or other interruptions, collaborating with management, marketing, sales, production, and engineering.

Detailed Tasks

Detailed Work Activities:

- arrange delivery schedules
- compile equipment operational data
- complete record of production
- confer with customer representatives
- confer with engineering, technical or manufacturing personnel
- confer with vendors
- coordinate production materials, activities or processes
- direct and coordinate activities of workers or staff
- estimate materials or labor requirements
- examine documents for completeness, accuracy, or conformance to standards
- examine products or work to verify conformance to specifications
- fill out business or government forms
- maintain inventory of office forms
- maintain records, reports, or files
- manage inventories or supplies
- monitor materials or supplies
- operate business machines
- provide customer service
- read work order, instructions, formulas, or processing charts
- relay information to proper officials

- prepare safety reports
- prepare technical reports or related documentation
- read blueprints
- read production layouts
- read technical drawings
- record test results, test procedures, or inspection data
- schedule employee work hours
- study time, motion, or work methods of workers
- test equipment as part of engineering projects or processes
- understand engineering data or reports
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use drafting or mechanical drawing techniques
- use mathematical or statistical methods to identify or analyze problems
- use spreadsheet software
- use technical information in manufacturing or industrial activities
- use technical regulations for engineering problems

Technology - Examples

Analytical or scientific software

- ProModel software
- Statistical software
- Wilcox Associates PC-DMIS

Computer aided design CAD software

- Autodesk AutoCAD software
- SolidWorks CAD software

Computer aided manufacturing CAM software

- Computer aided manufacturing CAM software

Data base user interface and query software

- Data entry software
- Microsoft Access

Graphics or photo imaging software

- Graphics software

Industrial control software

- Computerized numerical control CNC machine software
- Kinematic Engineering MicroMeasure IV

Office suite software

- Microsoft Office

- relay information to proper officials
- requisition stock, materials, supplies or equipment
- use computers to enter, access or retrieve data
- use oral or written communication techniques

Technology - Examples

Accounting software

- Peachtree Premium Accounting for Manufacturing

Analytical or scientific software

- KAPES software
- Micro Estimating FabPlan
- MTI Systems Costimator JS

Calendar and scheduling software

- Workbrain Employee Scheduling

Data base reporting software

- InetSoft software
- Tuppas software

Enterprise resource planning ERP software

- Epicor Vantage
- Exact Software Macola ES
- Geac MPC Production
- Maynard PlanStaff Manager (enterprise resource planning ERP feature)
- MicroStrategy Report Services
- PRONTO XI
- SAP software
- SYSPRO software

Financial analysis software

- Cost estimation software

Human resources software

- Maynard PlanStaff Manager (human resources feature)
- Questek Humanis

Industrial control software

- Honeywell Wintress PACNet

Inventory management software

- Accvision ABMIS
- iCode Everest

- Microsoft Office

Presentation software

- Microsoft PowerPoint

Spreadsheet software

- Microsoft Excel
- Spreadsheet software

Word processing software

- Microsoft Word
- Word processing software

Tools - Examples

- Vernier calipers
- Optical comparators
- Coordinate measuring machines CMM
- Video cameras
- Forklifts
- Gauge blocks
- Dial indicators
- Computerized numerical control CNC lathes
- Computerized numerical control CNC milling machines
- Toolmakers' microscopes
- Personal computers
- Plotter printers
- Scissor lifts

- RyTech Inventory Control Software

Materials requirements planning logistics and supply chain software

- ABB Production Planning software
- ADi SmartBOL
- Applied Software Technologies Asset Maintenance and Materials Management System
- Asprova software
- Bills of lading software
- Concept 3000 software
- Creo Synapse Upfront
- DM2 Bills of Lading Software
- eLading Bill of Lading Software
- Enterprise Logix software
- ERP INDUSTRIOS Material Planning
- Factory Edge MRP
- Giraffe Production Systems software
- Ingenious ProPlan
- Ingenious ProSched
- InteProc Material Requirements Planning
- Interwave Technology RS Bizware Scheduler
- Lamar Info Net
- LSA Visual DBR
- LSA Visual Easy Lean
- Made2Manage Supply Chain Management
- Niku Clarity
- Oracle Flow Manufacturing
- Oracle Manufacturing Scheduling
- Pelion manufacturing process optimization MPO software
- Pivotal Z Prestige Scheduler
- PMC KanbanSIM
- Preactor APS
- Preactor Finite Capacity Scheduling

	• Production scheduling and planning software
	• RSS Solutions NaView
	• Sage MAS 90
	• Sage Timberline Office software
	• Stratford Group INMASS/MRP
	• Waterloo Hydrogeologic TACTIC
	Procurement software
	• Aestiva Purchase Order
	Spreadsheet software
	• Microsoft Excel
	Time accounting software
	• Work Technology WorkTech Time
	• Workbrain Time and Attendance
	Word processing software
	• Microsoft Word
	Tools - Examples
	• Desktop computers
	• Notebook computers
	• Personal computers
	• Scanners

Labor Market Comparison

Maine Department of Labor.

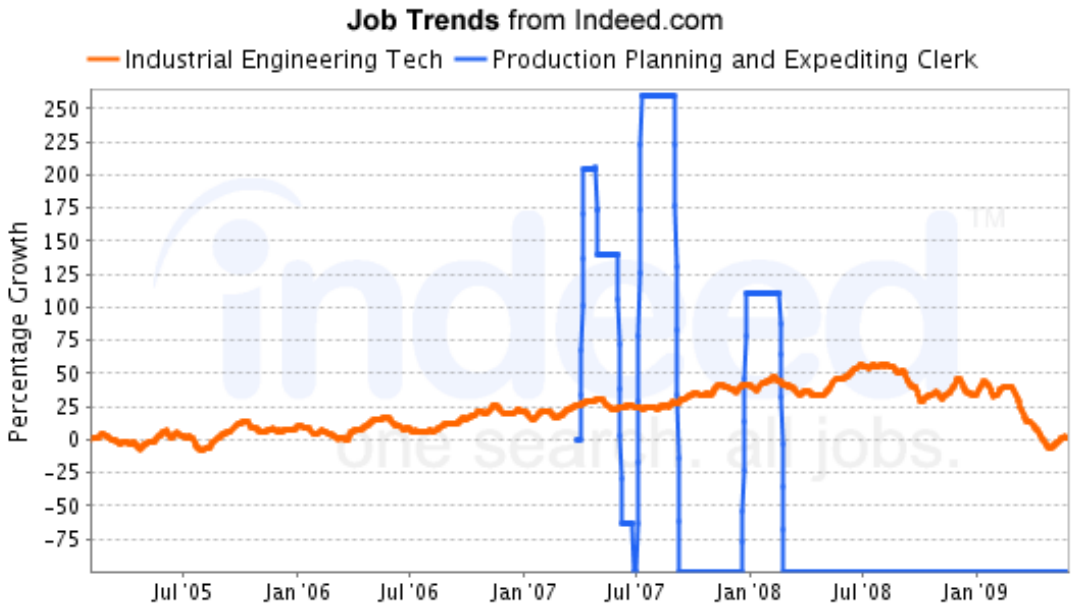
Description	Industrial Engineering Technicians	Production, Planning, and Expediting Clerks	Difference
Median Wage	$ 51,700	$ 38,490	$(13,210)
10th Percentile Wage	$ 29,250	$ 27,320	$(1,930)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	$ 75,190	$ 47,000	$(28,190)
90th Percentile Wage	$ 84,130	$ 57,580	$(26,550)
Mean Wage	$ 55,990	$ 40,730	$(15,260)
Total Employment - 2104	370	1,320	950
Employment Base - 2006	379	1,287	908
Projected Employment - 2113	400	1,279	879

Projected Job Growth - 2006-2113	5.5 %	-0.6 %	-6.2 %
Projected Annual Openings - 2006-2113	9	35	26
Special	★		

Special Occupations:

National Job Posting Trends

Trend for Industrial Engineering Technicians and Production, Planning, and Expediting Clerks



Data from Indeed

Programs

Related Programs

General Office/Clerical and Typing Services

General Office Occupations and Clerical Services. A program that prepares individuals to provide basic administrative support under the supervision of office managers, administrative assistants, secretaries, and other office personnel. Includes instruction in typing, keyboarding, filing, general business correspondence, office equipment operation, and communications skills.

Institution	Address	City	URL
Northern Maine Community College	33 Edgemont Dr	Presque Isle	www.nmcc.edu

Parts, Warehousing, and Inventory Management Operations

Parts, Warehousing, and Inventory Management Operations. A program that prepares individuals to provide administrative, technical, and managerial support in the operation of warehouses, control of inventory, parts identification, and the performance of counter services for customers. Includes instruction in record-keeping, equipment operation, database entry, supply logistics, shop operations and math, and customer and supplier relations.

No information on schools for the program

Maine Statewide Promotion Opportunities for Industrial Engineering Technicians

O*NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
17-3026.00	Industrial Engineering Technicians	100	3	370	$51,700.00	$0.00	6%	9	☆
17-2112.00	Industrial Engineers	90	4	580	$68,350.00	$16,650.00	11%	22	
11-3051.00	Industrial Production Managers	88	4	690	$72,560.00	$20,860.00	-12%	24	
15-1061.00	Database Administrators	86	4	300	$60,260.00	$8,560.00	20%	11	
17-2141.00	Mechanical Engineers	86	4	620	$67,210.00	$15,510.00	-9%	14	
17-2131.00	Materials Engineers	86	4	40	$70,250.00	$18,550.00	-7%	1	
13-2053.00	Insurance Underwriters	85	3	460	$56,090.00	$4,390.00	-1%	12	
17-2121.02	Marine Architects	85	4	60	$75,520.00	$23,820.00	-9%	1	
17-2072.00	Electronics Engineers, Except Computer	85	4	210	$76,420.00	$24,720.00	-26%	4	
13-2031.00	Budget Analysts	85	4	170	$57,290.00	$5,590.00	3%	5	
13-2061.00	Financial Examiners	85	4	120	$55,110.00	$3,410.00	3%	2	
11-3071.02	Storage and Distribution Managers	85	3	710	$62,270.00	$10,570.00	5%	25	☆
11-9131.00	Postmasters and Mail Superintendents	85	3	420	$55,200.00	$3,500.00	-5%	10	
15-1051.00	Computer Systems Analysts	85	4	1,650	$69,340.00	$17,640.00	20%	78	
27-1022.00	Fashion Designers	84	3	60	$71,370.00	$19,670.00	19%	1	

Special Occupations:

Top Industries for Production, Planning, and Expediting Clerks

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Management of companies and enterprises	551100	3.08%	9,023	10,402	15.28%
Aerospace product and parts manufacturing	336400	2.55%	7,452	7,590	1.84%
Warehousing and storage	493100	2.49%	7,296	9,745	33.57%
Motor vehicle parts manufacturing	336300	2.48%	7,273	5,790	-20.39%
Postal service	491100	2.25%	6,581	6,700	1.80%
Advertising and related services	541800	2.10%	6,149	6,938	12.83%
Printing and related support activities	323100	2.06%	6,024	4,773	-20.77%
General medical and surgical hospitals, public and private	622100	2.02%	5,909	6,541	10.71%
Semiconductor and other electronic component manufacturing	334400	1.89%	5,527	4,831	-12.59%
Wired telecommunications carriers	517100	1.75%	5,133	4,030	-21.49%
Navigational, measuring, electromedical, and control instruments manufacturing	334500	1.75%	5,130	4,912	-4.26%
Federal government, excluding postal service	919999	1.73%	5,061	4,784	-5.47%
Plastics product manufacturing	326100	1.67%	4,880	5,172	6.00%
Management, scientific, and technical consulting services	541600	1.63%	4,761	8,500	78.52%
Employment services	561300	1.27%	3,724	4,713	26.56%

Top Industries for Industrial Engineering Technicians

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Aerospace product and parts manufacturing	336400	9.68%	7,251	8,124	12.03%
Navigational, measuring, electromedical, and control instruments manufacturing	334500	5.69%	4,266	4,493	5.31%
Motor vehicle parts manufacturing	336300	5.60%	4,194	3,673	-12.42%
Data processing, hosting, and related services	518200	4.09%	3,062	4,554	48.71%
Pharmaceutical and medicine manufacturing	325400	3.14%	2,355	3,265	38.63%
Employment services	561300	2.17%	1,628	2,266	39.22%
Management of companies and enterprises	551100	2.03%	1,517	1,924	26.81%
Computer and peripheral equipment manufacturing	334100	1.97%	1,475	1,062	-28.00%
Research and development in the physical, engineering, and life sciences	541710	1.81%	1,354	1,589	17.36%
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	333400	1.80%	1,349	1,365	1.19%
Other general purpose machinery manufacturing	333900	1.72%	1,286	1,277	-0.70%

Plastics product manufacturing	326100	1.67%	1,251	1,459	16.60%
Federal government, excluding postal service	919999	1.59%	1,194	1,241	3.99%
Commercial and service industry machinery manufacturing	333300	1.29%	967	933	-3.51%
Agriculture, construction, and mining machinery manufacturing	333100	1.28%	959	985	2.71%

TORQ Analysis of Industrial Engineering Technicians to Industrial Engineers

ANALYSIS INPUT

Transfer	Title	O*NET	Filters		
From Title:	Industrial Engineering Technicians	17-3026.00	Abilities:	Importance LeveL: 50	Weight: 1
To Title:	Industrial Engineers	17-2112.00	Skills:	Importance LeveL: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS

Grand TORQ: 90

Ability TORQ	Skills TORQ	Knowledge TORQ
Level 92	Level 86	Level 92

Gaps To Narrow if Possible

Ability	Level	Gap	Impt
Information Ordering	69	18	72
Deductive Reasoning	71	14	81
Visualization	66	15	68
Mathematical Reasoning	64	13	75
Inductive Reasoning	66	11	72
Oral Expression	69	7	84
Written Expression	66	9	65
Problem Sensitivity	62	7	78
Written Comprehension	69	7	68
Oral Comprehension	67	5	78
Category Flexibility	57	6	53
Fluency of Ideas	60	5	59
Originality	55	4	59

Upgrade These Skills

Skill	Level	Gap	Impt
Management of Financial Resources	40	13	73
Writing	67	12	69
Installation	40	8	75
Reading Comprehension	71	8	72
Learning Strategies	60	3	76

Knowledge to Add

Knowledge	Level	Gap	Impt
Design	70	6	74
Mathematics	74	2	83

LEVEL and IMPT (IMPORTANCE) refer to the Target Industrial Engineers. GAP refers to level difference between Industrial Engineering Technicians and Industrial Engineers.

ASK ANALYSIS

Ability Level Comparison - Abilities with importance scores over 50

Description	Industrial Engineering Technicians	Industrial Engineers	Importance
Oral Expression	62	69	84
Deductive Reasoning	57	71	81
Oral Comprehension	62	67	78
Problem Sensitivity	55	62	78
Mathematical Reasoning	51	64	75
Inductive Reasoning	55	66	72
Information Ordering	51	69	72
Speech Clarity	48	39	72
Written Comprehension	62	69	68
Visualization	51	66	68
Written Expression	57	66	65
Near Vision	60	57	65
Fluency of Ideas	55	60	59
Originality	51	55	59
Speech Recognition	44	41	59
Category Flexibility	51	57	53

Skill Level Comparison - Abilities with importance scores over 69

Description	Industrial Engineering Technicians	Industrial Engineers	Importance
Learning Strategies	57	60	76
Installation	32	40	75
Management of Financial Resources	27	40	73
Reading Comprehension	63	71	72
Writing	55	67	69

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Industrial Engineering Technicians	Industrial Engineers	Importance
Mathematics	72	74	83
Design	64	70	74

Experience & Education Comparison

Related Work Experience Comparison	Required Education Level Comparison

Description	Industrial Engineering Technicians	Industrial Engineers
10+ years	0%	1%
8-10 years	0%	14%
6-8 years	12%	0%
4-6 years	64%	14%
2-4 years	11%	26%
1-2 years	0%	0%
6-12 months	2%	30%
3-6 months	6%	0%
1-3 months	0%	0%
0-1 month	0%	0%
None	2%	12%

Description	Industrial Engineering Technicians	Industrial Engineers
Doctoral	0%	0%
Professional Degree	0%	0%
Post-Masters Cert	0%	0%
Master's Degree	0%	0%
Post-Bachelor Cert	0%	1%
Bachelors	51%	85%
AA or Equiv	11%	0%
Some College	17%	12%
Post-Secondary Certificate	0%	0%
High Scool Diploma or GED	19%	0%
No HSD or GED	0%	0%

Industrial Engineering Technicians	Industrial Engineers
Most Common Educational/Training Requirement:	
Associate degree	Bachelor's degree
Job Zone Comparison	
3 - Job Zone Three: Medium Preparation Needed	4 - Job Zone Four: Considerable Preparation Needed
Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.	A minimum of two to four years of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified.
Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.	Most of these occupations require a four - year bachelor's degree, but some do not.
Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.	Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training.

Tasks

Industrial Engineering Technicians

Core Tasks

Generalized Work Activities:

- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Identifying Objects, Actions, and Events - Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.
- Establishing and Maintaining Interpersonal Relationships - Developing constructive and cooperative working relationships with others, and maintaining them over time.
- Documenting/Recording Information - Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.
- Interacting With Computers - Using

Industrial Engineers

Core Tasks

Generalized Work Activities:

- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Making Decisions and Solving Problems - Analyzing information and evaluating results to choose the best solution and solve problems.
- Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.
- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.
- Analyzing Data or Information - Identifying the underlying principles, reasons, or facts

computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.

Specific Tasks

Occupation Specific Tasks:

- Aid in planning work assignments in accordance with worker performance, machine capacity, production schedules, and anticipated delays.
- Compile and evaluate statistical data to determine and maintain quality and reliability of products.
- Evaluate data and write reports to validate or indicate deviations from existing standards.
- Interpret engineering drawings, schematic diagrams, or formulas and confer with management or engineering staff to determine quality and reliability standards.
- Observe worker using equipment to verify that equipment is being operated and maintained according to quality assurance standards.
- Observe workers operating equipment or performing tasks to determine time involved and fatigue rate using timing devices.
- Prepare charts, graphs, and diagrams to illustrate workflow, routing, floor layouts, material handling, and machine utilization.
- Prepare graphs or charts of data or enter data into computer for analysis.
- Read worker logs, product processing sheets, and specification sheets, to verify that records adhere to quality assurance specifications.
- Recommend modifications to existing quality or production standards to achieve optimum quality within limits of equipment capability.
- Recommend revision to methods of operation, material handling, equipment layout, or other changes to increase production or improve standards.
- Record test data, applying statistical quality control procedures.
- Select products for tests at specified stages in production process, and test products for performance characteristics and adherence to specifications.
- Study time, motion, methods, and speed involved in maintenance, production, and other operations to establish standard production rate and improve efficiency.

Detailed Tasks

Detailed Work Activities:

- advise clients regarding engineering problems
- analyze effectiveness of safety systems or procedures
- analyze engineering design problems

of information by breaking down information or data into separate parts.

Specific Tasks

Occupation Specific Tasks:

- Analyze statistical data and product specifications to determine standards and establish quality and reliability objectives of finished product.
- Apply statistical methods and perform mathematical calculations to determine manufacturing processes, staff requirements, and production standards.
- Communicate with management and user personnel to develop production and design standards.
- Complete production reports, purchase orders, and material, tool, and equipment lists.
- Confer with vendors, staff, and management personnel regarding purchases, procedures, product specifications, manufacturing capabilities, and project status.
- Coordinate quality control objectives and activities to resolve production problems, maximize product reliability, and minimize cost.
- Develop manufacturing methods, labor utilization standards, and cost analysis systems to promote efficient staff and facility utilization.
- Direct workers engaged in product measurement, inspection, and testing activities to ensure quality control and reliability.
- Draft and design layout of equipment, materials, and workspace to illustrate maximum efficiency using drafting tools and computer.
- Estimate production cost and effect of product design changes for management review, action, and control.
- Evaluate precision and accuracy of production and testing equipment and engineering drawings to formulate corrective action plan.
- Formulate sampling procedures and designs and develop forms and instructions for recording, evaluating, and reporting quality and reliability data.
- Implement methods and procedures for disposition of discrepant material and defective or damaged parts, and assess cost and responsibility.
- Plan and establish sequence of operations to fabricate and assemble parts or products and to promote efficient utilization.
- Recommend methods for improving utilization of personnel, material, and utilities.
- Record or oversee recording of information to ensure currency of engineering drawings and documentation of production problems.

- analyze technical data, designs, or preliminary specifications
- calculate engineering specifications
- communicate technical information
- compile numerical or statistical data
- conduct performance testing
- confer with engineering, technical or manufacturing personnel
- design manufacturing processes or methods
- develop safety regulations
- diagnose mechanical problems in machinery or equipment
- draw maps or charts
- estimate materials or labor requirements
- evaluate engineering data
- evaluate manufacturing or processing systems
- examine engineering documents for completeness or accuracy
- explain complex mathematical information
- follow statistical process control procedures
- improve test devices or techniques in manufacturing, industrial or engineering setting
- inspect facilities or equipment for regulatory compliance
- inspect manufactured products or materials
- perform safety inspections in industrial, manufacturing or repair setting
- prepare safety reports
- prepare technical reports or related documentation
- read blueprints
- read production layouts
- read technical drawings
- record test results, test procedures, or inspection data
- schedule employee work hours
- study time, motion, or work methods of workers
- test equipment as part of engineering projects or processes
- understand engineering data or reports
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use drafting or mechanical drawing techniques
- use mathematical or statistical methods to identify or analyze problems
- use spreadsheet software
- use technical information in manufacturing or industrial activities
- use technical regulations for engineering problems
- Regulate and alter workflow schedules according to established manufacturing sequences and lead times to expedite production operations.
- Review production schedules, engineering specifications, orders, and related information to obtain knowledge of manufacturing methods, procedures, and activities.
- Schedule deliveries based on production forecasts, material substitutions, storage and handling facilities, and maintenance requirements.
- Study operations sequence, material flow, functional statements, organization charts, and project information to determine worker functions and responsibilities.

Detailed Tasks

Detailed Work Activities:

- advise clients regarding engineering problems
- analyze effectiveness of safety systems or procedures
- analyze engineering design problems
- analyze scientific research data or investigative findings
- analyze technical data, designs, or preliminary specifications
- assign work to staff or employees
- calculate engineering specifications
- communicate technical information
- confer with engineering, technical or manufacturing personnel
- coordinate engineering project activities
- coordinate production materials, activities or processes
- design manufacturing processes or methods
- determine factors affecting production processes
- develop policies, procedures, methods, or standards
- develop safety regulations
- direct personnel in support of engineering activities
- establish production schedule
- estimate materials or labor requirements
- estimate production costs
- evaluate engineering data
- evaluate equipment for compliance with standards
- evaluate manufacturing or processing systems
- examine engineering documents for completeness or accuracy
- explain complex mathematical information
- follow manufacturing methods or techniques

Technology - Examples
Analytical or scientific software
• ProModel software
• Statistical software
• Wilcox Associates PC-DMIS
Computer aided design CAD software
• Autodesk AutoCAD software
• SolidWorks CAD software
Computer aided manufacturing CAM software
• Computer aided manufacturing CAM software
Data base user interface and query software
• Data entry software
• Microsoft Access
Graphics or photo imaging software
• Graphics software
Industrial control software
• Computerized numerical control CNC machine software
• Kinematic Engineering MicroMeasure IV
Office suite software
• Microsoft Office
Presentation software
• Microsoft PowerPoint
Spreadsheet software
• Microsoft Excel
• Spreadsheet software
Word processing software
• Microsoft Word
• Word processing software

Tools - Examples
• Vernier calipers
• Optical comparators
• Coordinate measuring machines CMM
• Video cameras
• Forklifts
• Gauge blocks
• Dial indicators

- follow statistical process control procedures
- improve test devices or techniques in manufacturing, industrial or engineering setting
- inspect facilities or equipment for regulatory compliance
- lead teams in engineering projects
- perform safety inspections in industrial, manufacturing or repair setting
- perform statistical modeling
- plan testing of engineering methods
- prepare safety reports
- prepare technical reports or related documentation
- read blueprints
- read production layouts
- read technical drawings
- record test results, test procedures, or inspection data
- resolve engineering or science problems
- study time, motion, or work methods of workers
- supervise quality control workers
- understand engineering data or reports
- use cost benefit analysis techniques
- use drafting or mechanical drawing techniques
- use hazardous materials information
- use library or online Internet research techniques
- use long or short term production planning techniques
- use mathematical or statistical methods to identify or analyze problems
- use project management techniques
- use quality assurance techniques
- use scientific research methodology
- use technical information in manufacturing or industrial activities
- use technical regulations for engineering problems
- use total quality management practices

Technology - Examples
Analytical or scientific software
• 3D Static Strength Prediction Program 3DSSPP software
• A mathematical programming language AMPL
• ABAQUS software
• Automatic dynamic incremental nonlinear analysis ADINA software
• Data acquisition software
• Dataxiom StatMost

- Computerized numerical control CNC lathes
- Computerized numerical control CNC milling machines
- Toolmakers' microscopes
- Personal computers
- Plotter printers
- Scissor lifts

- Design of experiments DOE software
- Discrete event simulation software
- ECHIP software
- ETA Dynaform
- Finite element method FEM software
- Human modeling software
- ILOG CPLEX
- MAGMA MAGMASOFT
- Maplesoft Maple
- MAYA I-DEAS
- Minitab software
- Modular arrangement of predetermined time standards software MODAPTS
- Neural network modeling software
- NeuralWare software
- Optimization software
- PMC KanbanSIM
- Production flow analysis software
- ProModel software
- Robotic simulation software
- Rockwell Automation Arena
- SAS software
- StatGraphics software
- Statistical software
- Stratasys FDM MedModeler
- Task analysis software
- The Mathworks MATLAB
- Three-dimensional simulation translation software
- Time and motion analysis software
- UGS Jack
- Windward Technologies GRG2
- Wolfram Research Mathematica

- Workcell simulation software

Charting software

- Microsoft Office Visio

Computer aided design CAD software

- Autodesk AutoCAD software
- Electronic breadboard software
- Facilities design software
- Facilities planning software
- International TechneGroup IGESworks
- Main Injector Neutrino Oscillation Search MINOS software
- Mathsoft Mathcad
- PTC Pro/ENGINEER software
- SolidWorks CAD software
- UGS Solid Edge

Computer aided manufacturing CAM software

- Computer aided manufacturing CAM software
- EGS FeatureCAM

Development environment software

- Extensible markup language XML
- Microsoft Visual Basic
- Microsoft Visual Basic Scripting Edition VBScript
- Microsoft Visual Studio
- National Instruments LabVIEW

Expert system software

- Decision support software

Industrial control software

- Allen Bradley PanelView
- Assembly line balancing software
- Computer numerical control CNC software
- Human machine interface HMI software
- Numerical control software
- Nupro CastView
- Quality control software
- Robotic control software

Inventory management software

- Inventory management software
- Manhattan Associates PkMS Pickticket
- Oracle Retek
- Warehouse management software

Materials requirements planning logistics and supply chain software

- Capacity planning software
- Materials requirements planning MRP software
- Production scheduling and planning software

Object or component oriented development software

- C++
- Sun Microsystems Java

Presentation software

- Microsoft PowerPoint

Program testing software

- Logic programming software
- Rockwell RSLogix
- User interface design software

Project management software

- Microsoft Project
- Personnel scheduling software
- Process reengineering software
- Yield management systems

Spreadsheet software

- Microsoft Excel

Word processing software

- Microsoft Word

Tools - Examples

- Reverberant auditory test chambers
- Anechoic auditory test chambers
- Audiometers
- Camera controllers
- Heart rate monitors
- Audio tape recorders

- Computer servers
- Coordinate measuring machines CMM
- Digital cameras
- Pressure transducers
- Audio equalizers
- Fast Fourier transform FFT spectrum analyzers
- Environmental chambers
- Hydraulic power units
- Hydraulic presses
- Hardness testers
- Electrophysics infrared cameras
- Motion control systems
- Optical benches
- Environmental ovens
- Laser printers
- Load cells
- Pulsed width modulation PWM drives
- Inverted metallurgical microscopes
- Microcontrollers
- Recording microphones
- Variable frequency drives VFD
- Multimeters
- Audio amplifiers
- Oxygen uptake measurement devices
- Personal computers
- Photometers
- Electrogoniometers
- Potentiometers
- Force plates
- Radiometers
- Time delay relay panel boxes
- Signal generators

	• Noise-logging dosimeters
	• Tensile testing machines
	• Thermocouples
	• Anthropometers
	• Torsionmeters
	• Programmable logic controller PLC controlled turntables
	• Vibration tables

Labor Market Comparison

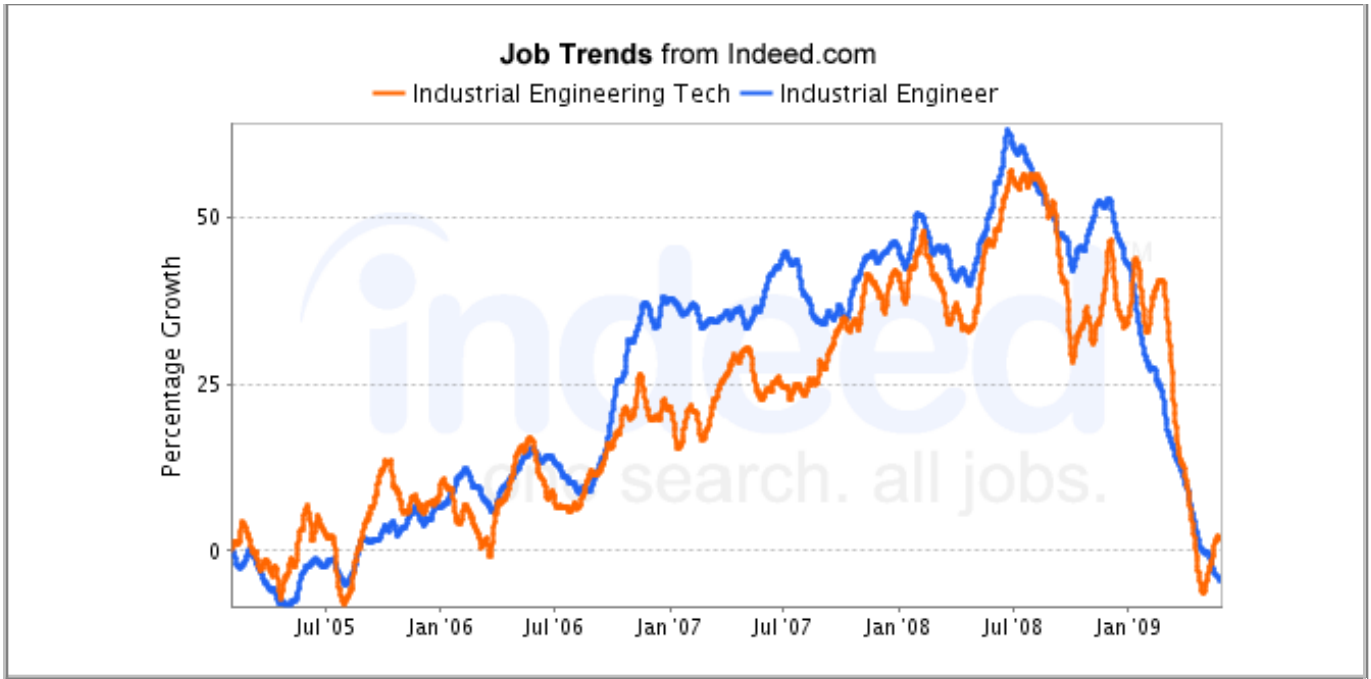
Maine Department of Labor.

Description	Industrial Engineering Technicians	Industrial Engineers	Difference
Median Wage	$ 51,700	$ 68,350	$ 16,650
10th Percentile Wage	$ 29,250	$ 45,510	$ 16,260
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	$ 75,190	$ 82,530	$ 7,340
90th Percentile Wage	$ 84,130	$ 97,510	$ 13,380
Mean Wage	$ 55,990	$ 69,240	$ 13,250
Total Employment - 2104	370	580	210
Employment Base - 2006	379	630	251
Projected Employment - 2113	400	701	301
Projected Job Growth - 2006-2113	5.5 %	11.3 %	5.7 %
Projected Annual Openings - 2006-2113	9	22	13
Special			

Special Occupations:

National Job Posting Trends

Trend for Industrial Engineering Technicians and Industrial Engineers



Data from Indeed

Programs

Related Programs

Industrial Engineering

Industrial Engineering. A program that prepares individuals to apply scientific and mathematical principles to the design, improvement, and installation of integrated systems of people, material, information, and energy. Includes instruction in applied mathematics, physical sciences, the social sciences, engineering analysis, systems design, computer applications, and forecasting and evaluation methodology.

Institution	Address	City	URL
University of Southern Maine	96 Falmouth St	Portland	www.usm.maine.edu

Maine Statewide Promotion Opportunities for Industrial Engineering Technicians

O*NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
17-3026.00	Industrial Engineering Technicians	100	3	370	$51,700.00	$0.00	6%	9	☆
17-2112.00	Industrial Engineers	90	4	580	$68,350.00	$16,650.00	11%	22	
11-3051.00	Industrial Production Managers	88	4	690	$72,560.00	$20,860.00	-12%	24	
15-1061.00	Database Administrators	86	4	300	$60,260.00	$8,560.00	20%	11	

17-2141.00	Mechanical Engineers	86	4	620	$67,210.00	$15,510.00	-9%	14	
17-2131.00	Materials Engineers	86	4	40	$70,250.00	$18,550.00	-7%	1	
13-2053.00	Insurance Underwriters	85	3	460	$56,090.00	$4,390.00	-1%	12	
17-2121.02	Marine Architects	85	4	60	$75,520.00	$23,820.00	-9%	1	
17-2072.00	Electronics Engineers, Except Computer	85	4	210	$76,420.00	$24,720.00	-26%	4	
13-2031.00	Budget Analysts	85	4	170	$57,290.00	$5,590.00	3%	5	
13-2061.00	Financial Examiners	85	4	120	$55,110.00	$3,410.00	3%	2	
11-3071.02	Storage and Distribution Managers	85	3	710	$62,270.00	$10,570.00	5%	25	☆
11-9131.00	Postmasters and Mail Superintendents	85	3	420	$55,200.00	$3,500.00	-5%	10	
15-1051.00	Computer Systems Analysts	85	4	1,650	$69,340.00	$17,640.00	20%	78	
27-1022.00	Fashion Designers	84	3	60	$71,370.00	$19,670.00	19%	1	

Special Occupations:

Top Industries for Industrial Engineers

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Aerospace product and parts manufacturing	336400	7.28%	14,651	18,120	23.68%
Motor vehicle parts manufacturing	336300	6.73%	13,549	13,100	-3.31%
Semiconductor and other electronic component manufacturing	334400	5.71%	11,490	12,196	6.15%
Navigational, measuring, electromedical, and control instruments manufacturing	334500	5.51%	11,093	12,897	16.27%
Management of companies and enterprises	551100	4.04%	8,127	11,377	40.00%
Research and development in the physical, engineering, and life sciences	541710	3.81%	7,671	9,939	29.57%
Plastics product manufacturing	326100	3.06%	6,168	7,941	28.73%
Other fabricated metal product manufacturing	332900	2.49%	5,019	5,401	7.61%
Medical equipment and supplies manufacturing	339100	2.29%	4,604	5,719	24.22%
Management, scientific, and technical consulting services	541600	2.03%	4,085	8,857	116.81%

Other general purpose machinery manufacturing	333900	1.80%	3,626	3,975	9.63%
Communications equipment manufacturing	334200	1.79%	3,600	4,406	22.41%
Computer and peripheral equipment manufacturing	334100	1.76%	3,534	2,809	-20.51%
Employment services	561300	1.55%	3,112	4,783	53.70%
Computer systems design and related services	541500	1.34%	2,701	4,429	63.97%

Top Industries for Industrial Engineering Technicians

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Aerospace product and parts manufacturing	336400	9.68%	7,251	8,124	12.03%
Navigational, measuring, electromedical, and control instruments manufacturing	334500	5.69%	4,266	4,493	5.31%
Motor vehicle parts manufacturing	336300	5.60%	4,194	3,673	-12.42%
Data processing, hosting, and related services	518200	4.09%	3,062	4,554	48.71%
Pharmaceutical and medicine manufacturing	325400	3.14%	2,355	3,265	38.63%
Employment services	561300	2.17%	1,628	2,266	39.22%
Management of companies and enterprises	551100	2.03%	1,517	1,924	26.81%
Computer and peripheral equipment manufacturing	334100	1.97%	1,475	1,062	-28.00%
Research and development in the physical, engineering, and life sciences	541710	1.81%	1,354	1,589	17.36%
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	333400	1.80%	1,349	1,365	1.19%
Other general purpose machinery manufacturing	333900	1.72%	1,286	1,277	-0.70%
Plastics product manufacturing	326100	1.67%	1,251	1,459	16.60%
Federal government, excluding postal service	919999	1.59%	1,194	1,241	3.99%
Commercial and service industry machinery manufacturing	333300	1.29%	967	933	-3.51%
Agriculture, construction, and mining machinery manufacturing	333100	1.28%	959	985	2.71%

TORQ Analysis of Industrial Engineering Technicians to First-Line Supervisors/Managers of Production and Operating Workers

ANALYSIS INPUT

Transfer	Title	O*NET	Filters		
From Title:	Industrial Engineering Technicians	17-3026.00	Abilities:	Importance LeveL: 50	Weight: 1
To Title:	First-Line Supervisors/Managers of Production and Operating Workers	51-1011.00	Skills:	Importance LeveL: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS

Grand TORQ: 89

Ability TORQ		Skills TORQ		Knowledge TORQ	
Level	87	Level	90	Level	91

Gaps To Narrow if Possible

Ability	Level	Gap	Impt
Flexibility of Closure	44	3	50
Speech Recognition	46	2	65

Upgrade These Skills

Skill	Level	Gap	Impt
Persuasion	60	12	70
Quality Control Analysis	68	12	69
Learning Strategies	64	7	72
Monitoring	72	6	75
Time Management	62	5	73
Active Listening	80	3	77

Knowledge to Add

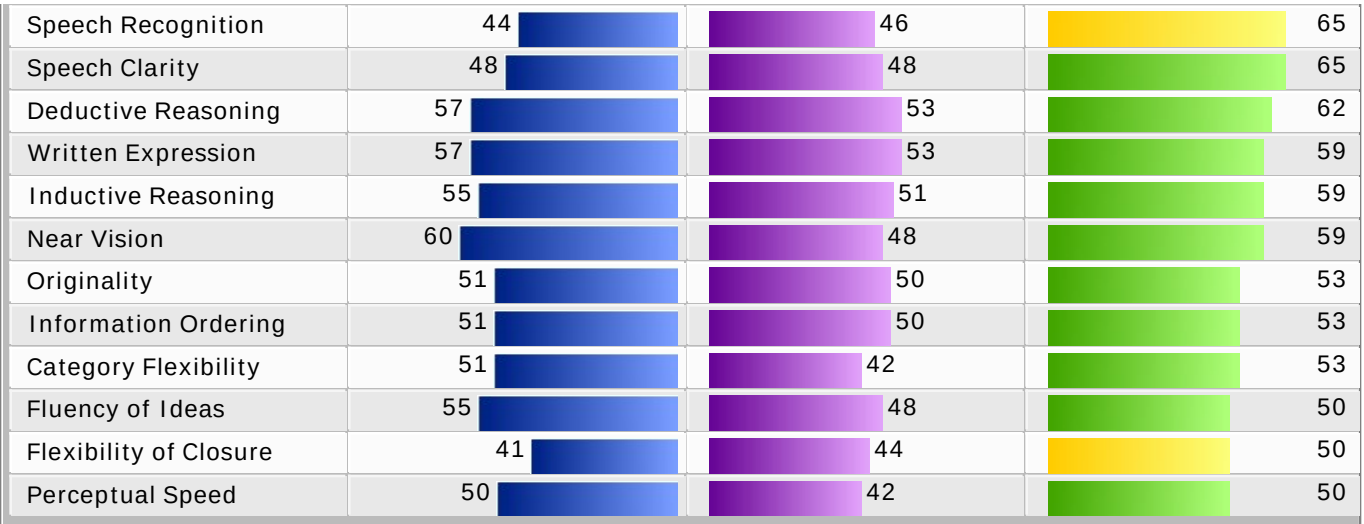
Knowledge	Level	Gap	Impt
Administration and Management	58	3	75

LEVEL and IMPT (IMPORTANCE) refer to the Target First-Line Supervisors/Managers of Production and Operating Workers. GAP refers to level difference between Industrial Engineering Technicians and First-Line Supervisors/Managers of Production and Operating Workers.

ASK ANALYSIS

Ability Level Comparison - Abilities with importance scores over 50

Description	Industrial Engineering Technicians	First-Line Supervisors/Managers of Production and Operating Workers	Importance
Oral Expression	62	57	78
Oral Comprehension	62	55	75
Problem Sensitivity	55	48	75
Written Comprehension	62	53	68



Skill Level Comparison - Abilities with importance scores over 69

Description	Industrial Engineering Technicians	First-Line Supervisors/Managers of Production and Operating Workers	Importance
Active Listening	77	80	77
Monitoring	66	72	75
Time Management	57	62	73
Learning Strategies	57	64	72
Persuasion	48	60	70
Quality Control Analysis	56	68	69

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Industrial Engineering Technicians	First-Line Supervisors/Managers of Production and Operating Workers	Importance
Administration and Management	55	58	75

Experience & Education Comparison

Related Work Experience Comparison

Description	Industrial Engineering Technicians	First-Line Supervisors/Managers of Production and Operating Workers
10+ years	0%	2%
8-10 years	0%	5%
6-8 years	12%	12%
4-6 years	64%	11%
2-4 years	11%	33%
1-2 years	0%	21%
6-12 months	2%	3%
3-6 months	6%	2%
1-3 months	0%	3%

Required Education Level Comparison

Description	Industrial Engineering Technicians	First-Line Supervisors/Managers of Production and Operating Workers
Doctoral	0%	0%
Professional Degree	0%	0%
Post-Masters Cert	0%	0%
Master's Degree	0%	0%
Post-Bachelor Cert	0%	1%
Bachelors	51%	13%
AA or Equiv	11%	17%

1-3 months	0%	3%
0-1 month	0%	0%
None	2%	4%

Some College	17%	17%
Post-Secondary Certificate	0%	20%
High Scool Diploma or GED	19%	26%
No HSD or GED	0%	3%

Industrial Engineering Technicians	First-Line Supervisors/Managers of Production and Operating Workers
Most Common Educational/Training Requirement:	
Associate degree	Work experience in a related occupation
Job Zone Comparison	
3 - Job Zone Three: Medium Preparation Needed	3 - Job Zone Three: Medium Preparation Needed
Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.	Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.
Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.	Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.
Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.	Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.

Tasks

Industrial Engineering Technicians

Core Tasks

Generalized Work Activities:

- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Identifying Objects, Actions, and Events - Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.
- Establishing and Maintaining Interpersonal Relationships - Developing constructive and cooperative working relationships with others, and maintaining them over time.
- Documenting/Recording Information - Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.
- Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.

Specific Tasks

First-Line Supervisors/Managers of Production and Operating Workers

Core Tasks

Generalized Work Activities:

- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Making Decisions and Solving Problems - Analyzing information and evaluating results to choose the best solution and solve problems.
- Coordinating the Work and Activities of Others- Getting members of a group to work together to accomplish tasks.
- Guiding, Directing, and Motivating Subordinates - Providing guidance and direction to subordinates, including setting performance standards and monitoring performance.
- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.

Specific Tasks

Occupation Specific Tasks:

- Calculate labor and equipment requirements

Occupation Specific Tasks:

- Aid in planning work assignments in accordance with worker performance, machine capacity, production schedules, and anticipated delays.
- Compile and evaluate statistical data to determine and maintain quality and reliability of products.
- Evaluate data and write reports to validate or indicate deviations from existing standards.
- Interpret engineering drawings, schematic diagrams, or formulas and confer with management or engineering staff to determine quality and reliability standards.
- Observe worker using equipment to verify that equipment is being operated and maintained according to quality assurance standards.
- Observe workers operating equipment or performing tasks to determine time involved and fatigue rate using timing devices.
- Prepare charts, graphs, and diagrams to illustrate workflow, routing, floor layouts, material handling, and machine utilization.
- Prepare graphs or charts of data or enter data into computer for analysis.
- Read worker logs, product processing sheets, and specification sheets, to verify that records adhere to quality assurance specifications.
- Recommend modifications to existing quality or production standards to achieve optimum quality within limits of equipment capability.
- Recommend revision to methods of operation, material handling, equipment layout, or other changes to increase production or improve standards.
- Record test data, applying statistical quality control procedures.
- Select products for tests at specified stages in production process, and test products for performance characteristics and adherence to specifications.
- Study time, motion, methods, and speed involved in maintenance, production, and other operations to establish standard production rate and improve efficiency.

Detailed Tasks

Detailed Work Activities:

- advise clients regarding engineering problems
- analyze effectiveness of safety systems or procedures
- analyze engineering design problems
- analyze technical data, designs, or preliminary specifications
- calculate engineering specifications
- communicate technical information
- compile numerical or statistical data

and production specifications, using standard formulas.

- Confer with management or subordinates to resolve worker problems, complaints, or grievances.
- Confer with other supervisors to coordinate operations and activities within or between departments.
- Demonstrate equipment operations and work and safety procedures to new employees, or assign employees to experienced workers for training.
- Determine standards, budgets, production goals, and rates, based on company policies, equipment and labor availability, and workloads.
- Direct and coordinate the activities of employees engaged in the production or processing of goods, such as inspectors, machine setters, and fabricators.
- Enforce safety and sanitation regulations.
- Inspect materials, products, or equipment to detect defects or malfunctions.
- Interpret specifications, blueprints, job orders, and company policies and procedures for workers.
- Maintain operations data such as time, production, and cost records, and prepare management reports of production results.
- Observe work, and monitor gauges, dials, and other indicators to ensure that operators conform to production or processing standards.
- Plan and develop new products and production processes.
- Plan and establish work schedules, assignments, and production sequences to meet production goals.
- Read and analyze charts, work orders, production schedules, and other records and reports, in order to determine production requirements and to evaluate current production estimates and outputs.
- Recommend or implement measures to motivate employees and to improve production methods, equipment performance, product quality, or efficiency.
- Recommend personnel actions such as hirings and promotions.
- Requisition materials, supplies, equipment parts, or repair services.
- Set up and adjust machines and equipment.

Detailed Tasks

Detailed Work Activities:

- adjust production equipment/machinery setup
- analyze operational or management reports or records
- assign work to staff or employees
- communicate technical information

- conduct performance testing
- confer with engineering, technical or manufacturing personnel
- design manufacturing processes or methods
- develop safety regulations
- diagnose mechanical problems in machinery or equipment
- draw maps or charts
- estimate materials or labor requirements
- evaluate engineering data
- evaluate manufacturing or processing systems
- examine engineering documents for completeness or accuracy
- explain complex mathematical information
- follow statistical process control procedures
- improve test devices or techniques in manufacturing, industrial or engineering setting
- inspect facilities or equipment for regulatory compliance
- inspect manufactured products or materials
- perform safety inspections in industrial, manufacturing or repair setting
- prepare safety reports
- prepare technical reports or related documentation
- read blueprints
- read production layouts
- read technical drawings
- record test results, test procedures, or inspection data
- schedule employee work hours
- study time, motion, or work methods of workers
- test equipment as part of engineering projects or processes
- understand engineering data or reports
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use drafting or mechanical drawing techniques
- use mathematical or statistical methods to identify or analyze problems
- use spreadsheet software
- use technical information in manufacturing or industrial activities
- use technical regulations for engineering problems

Technology - Examples

Analytical or scientific software

- ProModel software
- Statistical software

- compute production, construction, or installation specifications
- conduct or attend staff meetings
- confer with other departmental heads to coordinate activities
- consult with managerial or supervisory personnel
- coordinate production materials, activities or processes
- demonstrate or explain assembly or use of equipment
- determine factors affecting production processes
- develop maintenance schedules
- direct and coordinate activities of workers or staff
- establish employee performance standards
- estimate materials or labor requirements
- examine products or work to verify conformance to specifications
- explain rules, policies or regulations
- explain work orders, specifications, or work techniques to workers
- maintain file of job openings
- maintain inventory of office equipment or furniture
- maintain job descriptions
- maintain production or work records
- maintain records, reports, or files
- manage inventories or supplies
- modify work procedures or processes to meet deadlines
- monitor production machinery/equipment operation to detect problems
- monitor worker performance
- motivate workers to achieve work goals
- orient new employees
- oversee work progress to verify safety or conformance to standards
- prepare or maintain employee records
- prepare reports
- read blueprints
- read technical drawings
- read work order, instructions, formulas, or processing charts
- recommend improvements to work methods or procedures
- requisition stock, materials, supplies or equipment
- resolve or assist workers to resolve work problems
- resolve personnel problems or grievances
- schedule activities, classes, or events
- schedule employee work hours
- set up production equipment or machinery
- understand second language

- Wilcox Associates PC-DMIS

Computer aided design CAD software

- Autodesk AutoCAD software
- SolidWorks CAD software

Computer aided manufacturing CAM software

- Computer aided manufacturing CAM software

Data base user interface and query software

- Data entry software
- Microsoft Access

Graphics or photo imaging software

- Graphics software

Industrial control software

- Computerized numerical control CNC machine software
- Kinematic Engineering MicroMeasure IV

Office suite software

- Microsoft Office

Presentation software

- Microsoft PowerPoint

Spreadsheet software

- Microsoft Excel
- Spreadsheet software

Word processing software

- Microsoft Word
- Word processing software

Tools - Examples

- Vernier calipers
- Optical comparators
- Coordinate measuring machines CMM
- Video cameras
- Forklifts
- Gauge blocks
- Dial indicators
- Computerized numerical control CNC lathes
- Computerized numerical control CNC milling machines
- Toolmakers' microscopes
- understand technical operating, service or repair manuals
- use oral or written communication techniques

Technology - Examples

Data base user interface and query software

- Database software
- Oracle software

Electronic mail software

- Email software
- IBM Lotus Notes
- Microsoft Outlook

Enterprise resource planning ERP software

- Bowen & Groves M1 ERP
- Capterra Enterprise Resource Planning
- Encompix ERP
- Epicor Vantage ERP
- Epicor Vista ERP
- Giraffe Production Systems software
- Intacct ERP software
- Made2Manage software
- Microsoft Axapta
- NetSuite NetERP
- Resource planning software
- Retain Resource Planning
- SAP Business One
- SAP software
- SYSPRO software
- Technology Group International Enterprise 21 ERP

Human resources software

- GHG electronic employee management suite eEMS software

Internet browser software

- Netscape software

Inventory management software

- Inventory management software

Materials requirements planning logistics and supply chain software

- Personal computers
- Plotter printers
- Scissor lifts

- Integrated materials management systems
- Materials management software
- QA Software QMS Materials Management

Office suite software

- Microsoft Office

Presentation software

- Microsoft PowerPoint

Project management software

- Microsoft Total Quality Control Management
- Total quality management TQM software

Spreadsheet software

- Microsoft Excel
- Spreadsheet software

Time accounting software

- Kronos Workforce Timekeeper
- Timekeeping software
- Work Technology WorkTech Time

Word processing software

- Microsoft Word
- Word processing software

Tools - Examples

- Desktop computers
- Personal protective clothing
- Laser printers
- Notebook computers
- Personal computers
- Respirators
- Safety glasses
- Protective shoes
- Laser scanners
- Operator terminals

Labor Market Comparison

Maine Department of Labor.

Description	Industrial Engineering Technicians	First-Line Supervisors/Managers of Production and Operating Workers	Difference

Median Wage	$ 51,700	$ 45,510	$(6,190)
10th Percentile Wage	$ 29,250	$ 28,000	$(1,250)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	$ 75,190	$ 58,890	$(16,300)
90th Percentile Wage	$ 84,130	$ 73,810	$(10,320)
Mean Wage	$ 55,990	$ 48,010	$(7,980)
Total Employment - 2104	370	3,750	3,380
Employment Base - 2006	379	3,893	3,514
Projected Employment - 2113	400	3,745	3,345
Projected Job Growth - 2006-2113	5.5 %	-3.8 %	-9.3 %
Projected Annual Openings - 2006-2113	9	65	56
Special			

Special Occupations:

National Job Posting Trends

Trend for Industrial Engineering Technicians and First-Line Supervisors/Managers of Production and Operating Workers

Data from Indeed

Programs

Related Programs

Operations Management and Supervision

Operations Management and Supervision. A program that prepares individuals to manage and direct the physical and/or technical functions of a firm or organization, particularly those relating to development, production, and manufacturing. Includes instruction in principles of general management, manufacturing and production systems, plant management, equipment maintenance management, production control, industrial labor relations and skilled trades supervision, strategic manufacturing policy, systems analysis, productivity analysis and cost control, and materials planning.

No information on schools for the program

Maine Statewide Promotion Opportunities for Industrial Engineering Technicians

O*NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
17-3026.00	Industrial Engineering Technicians	100	3	370	$51,700.00	$0.00	6%	9	
17-2112.00	Industrial Engineers	90	4	580	$68,350.00	$16,650.00	11%	22	
11-3051.00	Industrial Production Managers	88	4	690	$72,560.00	$20,860.00	-12%	24	
15-1061.00	Database Administrators	86	4	300	$60,260.00	$8,560.00	20%	11	
17-2131.00	Materials Engineers	86	4	40	$70,250.00	$18,550.00	-7%	1	
17-2141.00	Mechanical Engineers	86	4	620	$67,210.00	$15,510.00	-9%	14	
13-2031.00	Budget Analysts	85	4	170	$57,290.00	$5,590.00	3%	5	
13-2061.00	Financial Examiners	85	4	120	$55,110.00	$3,410.00	3%	2	
17-2072.00	Electronics Engineers, Except Computer	85	4	210	$76,420.00	$24,720.00	-26%	4	
13-2053.00	Insurance Underwriters	85	3	460	$56,090.00	$4,390.00	-1%	12	
17-2121.02	Marine Architects	85	4	60	$75,520.00	$23,820.00	-9%	1	
11-3071.02	Storage and Distribution Managers	85	3	710	$62,270.00	$10,570.00	5%	25	
11-9131.00	Postmasters and Mail Superintendents	85	3	420	$55,200.00	$3,500.00	-5%	10	
15-1051.00	Computer Systems Analysts	85	4	1,650	$69,340.00	$17,640.00	20%	78	
27-1022.00	Fashion Designers	84	3	60	$71,370.00	$19,670.00	19%	1	

Special Occupations:

Top Industries for First-Line Supervisors/Managers of Production and Operating Workers

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Plastics product manufacturing	326100	4.03%	28,154	29,844	6.00%
Printing and related support activities	323100	3.61%	25,224	19,985	-20.77%
Motor vehicle parts manufacturing	336300	3.08%	21,518	17,131	-20.39%
Architectural and structural metals manufacturing	332300	2.52%	17,595	18,792	6.80%
Self-employed workers, primary job	000601	2.40%	16,779	17,876	6.54%
Grocery stores	445100	2.37%	16,559	18,067	9.11%
Animal slaughtering and processing	311600	2.24%	15,642	17,851	14.13%
Local government, excluding education and hospitals	939300	2.07%	14,471	16,257	12.34%
Machine shops	332710	1.99%	13,948	11,538	-17.28%
Converted paper product manufacturing	322200	1.89%	13,212	11,088	-16.08%
Semiconductor and other electronic component manufacturing	334400	1.88%	13,126	11,473	-12.59%
Drycleaning and laundry services	812300	1.75%	12,216	12,217	0.01%
Other wood product manufacturing	321900	1.64%	11,463	10,802	-5.77%
Other fabricated metal product manufacturing	332900	1.57%	10,950	9,702	-11.39%
Other general purpose machinery manufacturing	333900	1.41%	9,879	8,918	-9.73%

Top Industries for Industrial Engineering Technicians

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Aerospace product and parts manufacturing	336400	9.68%	7,251	8,124	12.03%
Navigational, measuring, electromedical, and control instruments manufacturing	334500	5.69%	4,266	4,493	5.31%
Motor vehicle parts manufacturing	336300	5.60%	4,194	3,673	-12.42%
Data processing, hosting, and related services	518200	4.09%	3,062	4,554	48.71%
Pharmaceutical and medicine manufacturing	325400	3.14%	2,355	3,265	38.63%
Employment services	561300	2.17%	1,628	2,266	39.22%
Management of companies and enterprises	551100	2.03%	1,517	1,924	26.81%
Computer and peripheral equipment manufacturing	334100	1.97%	1,475	1,062	-28.00%
Research and development in the physical, engineering, and life sciences	541710	1.81%	1,354	1,589	17.36%

Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	333400	1.80%	1,349	1,365	1.19%
Other general purpose machinery manufacturing	333900	1.72%	1,286	1,277	-0.70%
Plastics product manufacturing	326100	1.67%	1,251	1,459	16.60%
Federal government, excluding postal service	919999	1.59%	1,194	1,241	3.99%
Commercial and service industry machinery manufacturing	333300	1.29%	967	933	-3.51%
Agriculture, construction, and mining machinery manufacturing	333100	1.28%	959	985	2.71%

TORQ Analysis of Industrial Engineering Technicians to Cost Estimators

ANALYSIS INPUT

Transfer	Title	O*NET	Filters		
From Title:	Industrial Engineering Technicians	17-3026.00	Abilities:	Importance LeveL: 50	Weight: 1
To Title:	Cost Estimators	13-1051.00	Skills:	Importance LeveL: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS

Grand TORQ: 89

Ability TORQ		Skills TORQ		Knowledge TORQ	
Level	96	Level	86	Level	83

Gaps To Narrow if Possible

Ability	Level	Gap	Impt
Information Ordering	60	9	72
Mathematical Reasoning	57	6	68
Near Vision	66	6	68
Oral Comprehension	67	5	81
Oral Expression	67	5	75
Inductive Reasoning	59	4	68
Speech Recognition	48	4	68
Deductive Reasoning	60	3	68
Written Comprehension	64	2	68
Category Flexibility	53	2	62

Upgrade These Skills

Skill	Level	Gap	Impt
Active Listening	73	7	88
Reading Comprehension	70	7	87
Persuasion	56	8	71
Active Learning	73	7	73
Writing	66	6	76
Mathematics	69	5	82
Speaking	61	3	72
Management of Personnel Resources	54	2	75

Knowledge to Add

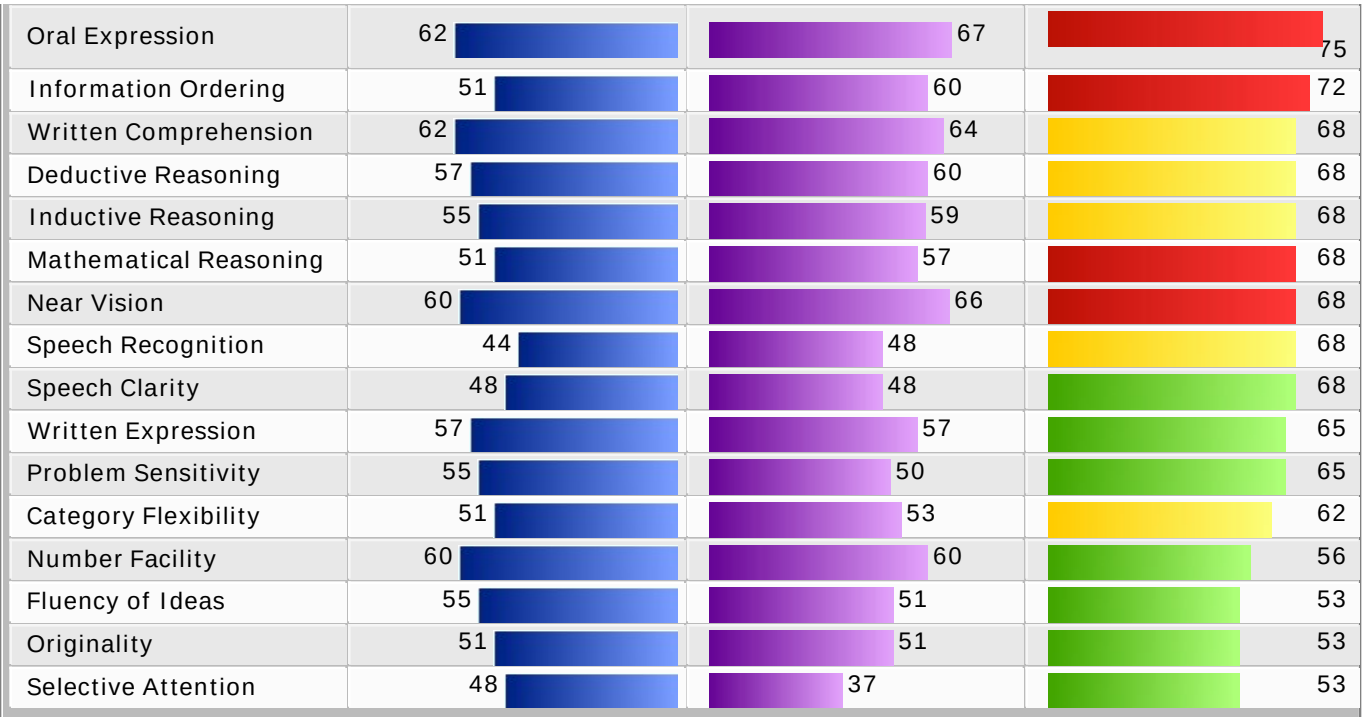
Knowledge	Level	Gap	Impt
No Knowledge Upgrades Required!			

LEVEL and IMPT (IMPORTANCE) refer to the Target Cost Estimators. GAP refers to level difference between Industrial Engineering Technicians and Cost Estimators.

ASK ANALYSIS

Ability Level Comparison - Abilities with importance scores over 50

Description	Industrial Engineering Technicians	Cost Estimators	Importance
Oral Comprehension	62	67	81



Skill Level Comparison - Abilities with importance scores over 69

Description	Industrial Engineering Technicians	Cost Estimators	Importance
Active Listening	66	73	88
Reading Comprehension	63	70	87
Mathematics	64	69	82
Writing	60	66	76
Management of Personnel Resources	52	54	75
Active Learning	66	73	73
Speaking	58	61	72
Persuasion	48	56	71

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Industrial Engineering Technicians	Cost Estimators	Importance

Experience & Education Comparison

Related Work Experience Comparison

Description	Industrial Engineering Technicians	Cost Estimators
10+ years	0%	8%
8-10 years	0%	4%
6-8 years	12%	9%
4-6 years	64%	4%
2-4 years	11%	15%

Required Education Level Comparison

Description	Industrial Engineering Technicians	Cost Estimators
Doctoral	0%	0%
Professional Degree	0%	0%
Post-Masters Cert	0%	0%
Master's Degree	0%	12%

1-2 years	0%	8%
6-12 months	2%	27%
3-6 months	6%	11%
1-3 months	0%	4%
0-1 month	0%	0%
None	2%	4%

Post-Bachelor Cert	0%	0%
Bachelors	51%	19%
AA or Equiv	11%	3%
Some College	17%	10%
Post-Secondary Certificate	0%	9%
High Scool Diploma or GED	19%	40%
No HSD or GED	0%	0%

Industrial Engineering Technicians	Cost Estimators
Most Common Educational/Training Requirement:	
Associate degree	Work experience in a related occupation
Job Zone Comparison	
3 - Job Zone Three: Medium Preparation Needed	4 - Job Zone Four: Considerable Preparation Needed
Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.	A minimum of two to four years of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified.
Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.	Most of these occupations require a four - year bachelor's degree, but some do not.
Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.	Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training.

Tasks

Industrial Engineering Technicians

Core Tasks

Generalized Work Activities:

- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Identifying Objects, Actions, and Events - Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.
- Establishing and Maintaining Interpersonal Relationships - Developing constructive and cooperative working relationships with others, and maintaining them over time.
- Documenting/Recording Information - Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.
- Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.

Specific Tasks

Cost Estimators

Core Tasks

Generalized Work Activities:

- Communicating with Persons Outside Organization - Communicating with people outside the organization, representing the organization to customers, the public, government, and other external sources. This information can be exchanged in person, in writing, or by telephone or e-mail.
- Scheduling Work and Activities - Scheduling events, programs, and activities, as well as the work of others.
- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.
- Establishing and Maintaining Interpersonal Relationships - Developing constructive and cooperative working relationships with others, and maintaining them over time.

Specific Tasks

Occupation Specific Tasks:

Occupation Specific Tasks:

- Aid in planning work assignments in accordance with worker performance, machine capacity, production schedules, and anticipated delays.
- Compile and evaluate statistical data to determine and maintain quality and reliability of products.
- Evaluate data and write reports to validate or indicate deviations from existing standards.
- Interpret engineering drawings, schematic diagrams, or formulas and confer with management or engineering staff to determine quality and reliability standards.
- Observe worker using equipment to verify that equipment is being operated and maintained according to quality assurance standards.
- Observe workers operating equipment or performing tasks to determine time involved and fatigue rate using timing devices.
- Prepare charts, graphs, and diagrams to illustrate workflow, routing, floor layouts, material handling, and machine utilization.
- Prepare graphs or charts of data or enter data into computer for analysis.
- Read worker logs, product processing sheets, and specification sheets, to verify that records adhere to quality assurance specifications.
- Recommend modifications to existing quality or production standards to achieve optimum quality within limits of equipment capability.
- Recommend revision to methods of operation, material handling, equipment layout, or other changes to increase production or improve standards.
- Record test data, applying statistical quality control procedures.
- Select products for tests at specified stages in production process, and test products for performance characteristics and adherence to specifications.
- Study time, motion, methods, and speed involved in maintenance, production, and other operations to establish standard production rate and improve efficiency.

Detailed Tasks

Detailed Work Activities:

- advise clients regarding engineering problems
- analyze effectiveness of safety systems or procedures
- analyze engineering design problems
- analyze technical data, designs, or preliminary specifications
- calculate engineering specifications
- communicate technical information
- compile numerical or statistical data

- Analyze blueprints and other documentation to prepare time, cost, materials, and labor estimates.
- Assess cost effectiveness of products, projects or services, tracking actual costs relative to bids as the project develops.
- Conduct special studies to develop and establish standard hour and related cost data or to effect cost reduction.
- Confer with engineers, architects, owners, contractors and subcontractors on changes and adjustments to cost estimates.
- Consult with clients, vendors, personnel in other departments or construction foremen to discuss and formulate estimates and resolve issues.
- Establish and maintain tendering process, and conduct negotiations.
- Prepare and maintain a directory of suppliers, contractors and subcontractors.
- Prepare cost and expenditure statements and other necessary documentation at regular intervals for the duration of the project.
- Prepare estimates for use in selecting vendors or subcontractors.
- Prepare estimates used by management for purposes such as planning, organizing, and scheduling work.
- Review material and labor requirements to decide whether it is more cost-effective to produce or purchase components.
- Set up cost monitoring and reporting systems and procedures.
- Visit site and record information about access, drainage and topography, and availability of services such as water and electricity.

Detailed Tasks

Detailed Work Activities:

- advise clients on financial matters
- analyze budgets
- analyze financial data
- analyze technical data, designs, or preliminary specifications
- bid engineering, construction or extraction projects
- compile data for financial reports
- compute cost estimates of construction or engineering projects
- compute financial data
- confer with vendors
- convert design specifications to cost estimates
- estimate cost for engineering projects
- estimate materials or labor requirements
- estimate production costs
- estimate time needed for project

- conduct performance testing
- confer with engineering, technical or manufacturing personnel
- design manufacturing processes or methods
- develop safety regulations
- diagnose mechanical problems in machinery or equipment
- draw maps or charts
- estimate materials or labor requirements
- evaluate engineering data
- evaluate manufacturing or processing systems
- examine engineering documents for completeness or accuracy
- explain complex mathematical information
- follow statistical process control procedures
- improve test devices or techniques in manufacturing, industrial or engineering setting
- inspect facilities or equipment for regulatory compliance
- inspect manufactured products or materials
- perform safety inspections in industrial, manufacturing or repair setting
- prepare safety reports
- prepare technical reports or related documentation
- read blueprints
- read production layouts
- read technical drawings
- record test results, test procedures, or inspection data
- schedule employee work hours
- study time, motion, or work methods of workers
- test equipment as part of engineering projects or processes
- understand engineering data or reports
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use drafting or mechanical drawing techniques
- use mathematical or statistical methods to identify or analyze problems
- use spreadsheet software
- use technical information in manufacturing or industrial activities
- use technical regulations for engineering problems

Technology - Examples

Analytical or scientific software

- ProModel software
- Statistical software

- estimate time or cost for installation, repair, or construction projects
- evaluate material specifications
- identify supplier with best bid
- interpret maps for architecture, construction, or engineering project
- monitor operational budget
- negotiate business contracts
- prepare cost estimates
- prepare financial reports
- prepare periodic reports comparing budgeted costs to actual costs
- read blueprints
- read specifications
- understand construction specifications
- understand engineering data or reports
- understand technical operating, service or repair manuals
- use computers to enter, access and retrieve financial data
- use cost benefit analysis techniques
- use spreadsheet software
- use statistical cost estimation methods

Technology - Examples

Accounting software

- Choice Job Cost
- Cost accounting software
- CPR International GeneralCOST Estimator
- Intuit QuickBooks
- National Job Cost software

Analytical or scientific software

- Construction Management Software ProEst
- QSM SLIM
- Resources Calculations Incorporated SoftCost
- WinEstimator WinEst

Data base reporting software

- Business Objects Crystal Reports
- Software AG software

Electronic mail software

- Microsoft Outlook

Financial analysis software

- Cost estimation software
- CPR International Visual Estimator

- Wilcox Associates PC-DMIS

Computer aided design CAD software

- Autodesk AutoCAD software
- SolidWorks CAD software

Computer aided manufacturing CAM software

- Computer aided manufacturing CAM software

Data base user interface and query software

- Data entry software
- Microsoft Access

Graphics or photo imaging software

- Graphics software

Industrial control software

- Computerized numerical control CNC machine software
- Kinematic Engineering MicroMeasure IV

Office suite software

- Microsoft Office

Presentation software

- Microsoft PowerPoint

Spreadsheet software

- Microsoft Excel
- Spreadsheet software

Word processing software

- Microsoft Word
- Word processing software

Tools - Examples

- Vernier calipers
- Optical comparators
- Coordinate measuring machines CMM
- Video cameras
- Forklifts
- Gauge blocks
- Dial indicators
- Computerized numerical control CNC lathes
- Computerized numerical control CNC milling machines
- Toolmakers' microscopes
- IBM Costimater
- Softstar Costar COCOMO II

Project management software

- Assured Software JPP
- Galorath SEER-SEM
- Sage Software Sage Master Builder
- Xactware Xactimate

Spreadsheet software

- Apple AppleWorks
- Corel QuattroPro
- IBM Lotus 1-2-3
- Microsoft Excel
- Spreadsheet software

Word processing software

- Microsoft Word

Tools - Examples

- Desktop computers
- Notebook computers
- Personal computers
- Personal digital assistants PDA
- Scanners
- Tablet computers

- Personal computers
- Plotter printers
- Scissor lifts

Labor Market Comparison

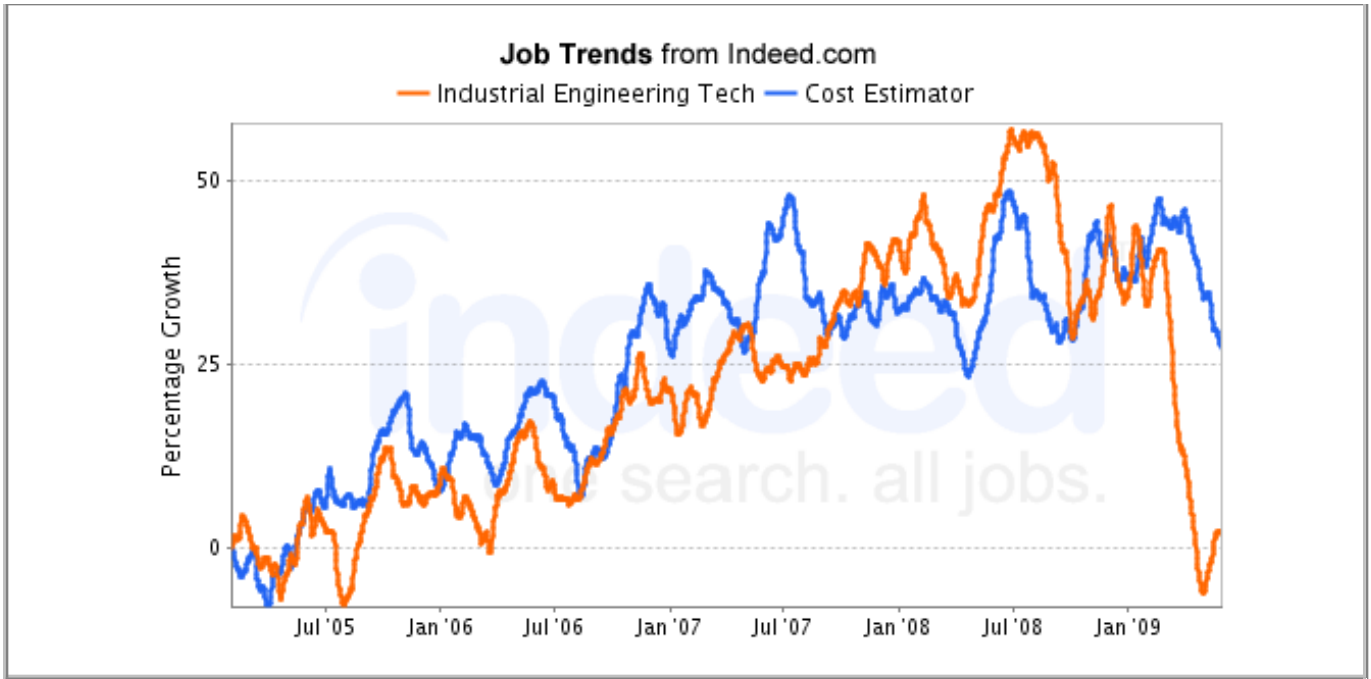
Maine Department of Labor.

Description	Industrial Engineering Technicians	Cost Estimators	Difference
Median Wage	$ 51,700	$ 44,990	$(6,710)
10th Percentile Wage	$ 29,250	$ 30,880	$ 1,630
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	$ 75,190	$ 58,820	$(16,370)
90th Percentile Wage	$ 84,130	$ 76,320	$(7,810)
Mean Wage	$ 55,990	$ 49,830	$(6,160)
Total Employment - 2104	370	750	380
Employment Base - 2006	379	751	372
Projected Employment - 2113	400	853	453
Projected Job Growth - 2006-2113	5.5 %	13.6 %	8.0 %
Projected Annual Openings - 2006-2113	9	25	16
Special			

Special Occupations:

National Job Posting Trends

Trend for Industrial Engineering Technicians and Cost Estimators



Data from Indeed

Programs

Related Programs

Business Administration and Management, General

Business Administration and Management, General. A program that generally prepares individuals to plan, organize, direct, and control the functions and processes of a firm or organization. Includes instruction in management theory, human resources management and behavior, accounting and other quantitative methods, purchasing and logistics, organization and production, marketing, and business decision-making.

Institution	Address	City	URL
Central Maine Community College	1250 Turner St	Auburn	www.cmcc.edu
Central Maine Community College	1250 Turner St	Auburn	www.cmcc.edu
University of Maine at Augusta	46 University Dr	Augusta	www.uma.maine.edu/
University of Maine at Augusta	46 University Dr	Augusta	www.uma.maine.edu/
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Husson College	One College Circle	Bangor	www.husson.edu
Husson College	One College Circle	Bangor	www.husson.edu
Husson College	One College Circle	Bangor	www.husson.edu
Beal College	99 Farm Road	Bangor	bealcollege.edu
University of New England	11 Hills Beach Rd	Biddeford	WWW.UNE.EDU
Wasington County Community College	One College Drive	Calais	www.wccc.me.edu
University of Maine at Machias	9 O'Brien Ave	Machias	www.umm.maine.edu
University of Maine		Orono	www.umaine.edu/

University of Maine		Orono	www.umaine.edu/
University of Maine		Orono	www.umaine.edu/
Andover College	901 Washington Ave	Portland	WWW.ANDOVERCOLLEGE.edu
University of Southern Maine	96 Falmouth St	Portland	www.usm.maine.edu
University of Southern Maine	96 Falmouth St	Portland	www.usm.maine.edu
University of Southern Maine	96 Falmouth St	Portland	www.usm.maine.edu
University of Southern Maine	96 Falmouth St	Portland	www.usm.maine.edu
Northern Maine Community College	33 Edgemont Dr	Presque Isle	www.nmcc.edu
Southern Maine Community College	2 Fort Road	South Portland	www.smccME.edu
Southern Maine Community College	2 Fort Road	South Portland	www.smccME.edu
Saint Josephs College	278 Whites Bridge Rd	Standish	www.sjcme.edu
Saint Josephs College	278 Whites Bridge Rd	Standish	www.sjcme.edu
Saint Josephs College	278 Whites Bridge Rd	Standish	www.sjcme.edu
Thomas College	180 W River Rd	Waterville	www.thomas.edu
Thomas College	180 W River Rd	Waterville	www.thomas.edu
Thomas College	180 W River Rd	Waterville	www.thomas.edu
York County Community College	112 College Drive	Wells	www.yccc.edu

Business/Commerce, General

Business/Commerce, General. A program that focuses on the general study of business, including the processes of interchanging goods and services (buying, selling and producing), business organization, and accounting as used in profit-making and nonprofit public and private institutions and agencies. The programs may prepare individuals to apply business principles and techniques in various occupational settings.

Institution	Address	City	URL
Beal College	99 Farm Road	Bangor	bealcollege.edu
University of Maine at Farmington	224 Main St	Farmington	www.umf.maine.edu
University of Maine at Fort Kent	23 University Drive	Fort Kent	www.umfk.maine.edu
University of Maine at Presque Isle	181 Main St	Presque Isle	www.umpi.maine.edu
University of Maine at Presque Isle	181 Main St	Presque Isle	www.umpi.maine.edu
Thomas College	180 W River Rd	Waterville	www.thomas.edu

Construction Engineering

Construction Engineering. A program that prepares individuals to apply scientific, mathematical, and management principles to the planning, design, and building of facilities and structures. Includes instruction in civil engineering, structural principles, site analysis, computer-assisted design, geology, evaluation and testing, materials, contracting, project management, graphic communications, and applicable laws and regulations.

No information on schools for the program

Construction Engineering Technology/Technician

Construction Engineering Technology/Technician. A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers, engineering contractors and other professionals engaged in the construction of buildings and related structures. Includes instruction in basic structural engineering principles and construction techniques, building site inspection, site supervision, construction personnel supervision, plan and specification interpretation, supply logistics and procurement, applicable building codes, and report preparation.

Institution	Address	City	URL
Central Maine Community College	1250 Turner St	Auburn	www.cmcc.edu
Central Maine Community College	1250 Turner St	Auburn	www.cmcc.edu
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
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Manufacturing Engineering

Manufacturing Engineering. A program that prepares individuals to apply scientific and mathematical principles to the design, development, and implementation of manufacturing systems. Includes instruction in materials science and engineering, manufacturing processes, process engineering, assembly and product engineering, manufacturing systems design, and manufacturing competitiveness.

No information on schools for the program

Materials Engineering

Materials Engineering. A program that prepares individuals to apply mathematical and materials science principles to the design, development and operational evaluation of materials and related processes used in manufacturing in a wide variety of settings; the synthesis of new industrial materials, including marrying and bonding composites; analysis of materials requirements and specifications; and related problems of system design dependent on materials factors.

No information on schools for the program

Mechanical Engineering

Mechanical Engineering. A program that prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of physical systems used in manufacturing and end-product systems used for specific uses, including machine tools, jigs and other manufacturing equipment; stationary power units and appliances; engines; self-propelled vehicles; housings and containers; hydraulic and electric systems for controlling movement; and the integration of computers and remote control with operating systems.

Institution	Address	City	URL
University of Maine		Orono	www.umaine.edu/
University of Maine		Orono	www.umaine.edu/
University of Maine		Orono	www.umaine.edu/
University of Maine		Orono	www.umaine.edu/

Purchasing, Procurement and Contracts Management

Purchasing, Procurement/Acquisitions and Contracts Management. A program that prepares individuals to manage and/or administer the processes by which a firm or organization contracts for goods and services to support its operations, as well as contracts it to sell to other firms or organizations. Includes instruction in contract law, negotiations, buying procedures, government contracting, cost and price analysis, vendor relations, contract administration, auditing and inspection, relations with other firm departments, and applications to special areas such as high-technology systems, international purchasing, and construction.

No information on schools for the program

Maine Statewide Promotion Opportunities for Industrial Engineering Technicians

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11-3071.01	Transportation Managers	84	3	710	$62,270.00	$10,570.00	5%	25	☆

Special Occupations:

Top Industries for Cost Estimators

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Nonresidential building construction	236200	9.42%	20,828	25,214	21.06%
Residential building construction	236100	8.88%	19,639	23,893	21.66%
Plumbing, heating, and air-conditioning contractors	238220	7.50%	16,592	20,243	22.00%
Electrical contractors	238210	7.22%	15,964	18,085	13.29%
Other specialty trade contractors	238900	5.27%	11,641	13,900	19.41%
Automotive body, paint, interior, and glass repair	811120	3.78%	8,358	10,543	26.14%
Drywall and insulation contractors	238310	3.11%	6,882	7,931	15.24%
Printing and related support activities	323100	2.68%	5,921	5,068	-14.40%
Architectural and structural metals manufacturing	332300	2.56%	5,662	6,533	15.39%
Roofing contractors	238160	2.41%	5,338	6,735	26.16%
Highway, street, and bridge construction	237300	2.38%	5,266	6,125	16.32%
Painting and wall covering contractors	238320	2.03%	4,489	5,397	20.22%
Building material and supplies dealers	444100	1.92%	4,252	5,870	38.06%
Automobile dealers	441100	1.49%	3,290	4,032	22.56%
Poured concrete foundation and structure contractors	238110	1.46%	3,228	3,932	21.79%

Top Industries for Industrial Engineering Technicians

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Aerospace product and parts manufacturing	336400	9.68%	7,251	8,124	12.03%
Navigational, measuring, electromedical, and control instruments manufacturing	334500	5.69%	4,266	4,493	5.31%
Motor vehicle parts manufacturing	336300	5.60%	4,194	3,673	-12.42%
Data processing, hosting, and related services	518200	4.09%	3,062	4,554	48.71%
Pharmaceutical and medicine manufacturing	325400	3.14%	2,355	3,265	38.63%
Employment services	561300	2.17%	1,628	2,266	39.22%
Management of companies and enterprises	551100	2.03%	1,517	1,924	26.81%
Computer and peripheral equipment manufacturing	334100	1.97%	1,475	1,062	-28.00%
Research and development in the physical, engineering, and life sciences	541710	1.81%	1,354	1,589	17.36%

Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	333400	1.80%	1,349	1,365	1.19%
Other general purpose machinery manufacturing	333900	1.72%	1,286	1,277	-0.70%
Plastics product manufacturing	326100	1.67%	1,251	1,459	16.60%
Federal government, excluding postal service	919999	1.59%	1,194	1,241	3.99%
Commercial and service industry machinery manufacturing	333300	1.29%	967	933	-3.51%
Agriculture, construction, and mining machinery manufacturing	333100	1.28%	959	985	2.71%

Industry & Occupational Data Sources

TORQ Results: The TORQ Scores is based upon an proprietary algorithm applied against Knowledge, Skills and Ability levels and importance derived from O*NET 12.

ASK Analysis, Experience & Education Levels and Tasks: O*Net 12

Labor Market Comparisons Occupational Projections data from Maine Department of Labor

National Posting Trends Indeed.com

Labor Pool & Promotions Opportunities: Occupational Projections data from Maine Department of Labor

Top Industries: Occupational Employment Statistics program (U.S. Bureau of Labor Statistics)

