



ENGINEERING WORKERS

Engineering workers in the Forest Products Sector develop and maintain equipment and processes that facilitate the transformation of raw forest products into value-added goods and materials ranging from wood pellets, construction lumber, to finished products like cabinets and furniture. According to employers, the most in-demand engineering occupations within the sector include:

- ⬆ Chemical Engineers
- ⬆ Materials Engineers
- ⬆ Electrical and Electronic Engineering Technologists and Technicians



ENGINEERING WORKERS

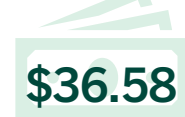
Current Jobs
in Maine,
across all sectors
(2022)



Job Openings per
Year in Maine,
across all sectors
(average 2022 -32)



Median Hourly
Wages
across all sectors
(2022)



Typical Entry Points

An Associate's or Bachelor's degree is typically required for this occupation. Summer internships or cooperative learning is often required for graduation.

Career & Tech. Education

- ↑ Electrical Tech
- ↑ Pre-Engineering
- ↑ Electronics & Adv. Mfg.
- ↑ Precision Machining Tech



Associate's or Bachelor's Degree

- ↑ Chemical Engineering
- ↑ Materials Science Engineering
- ↑ Engineering Technology

Experience in Related Occupations

- ↑ Industrial Production Managers
- ↑ Chemical Technicians
- ↑ Electricians



Engineering Tech / Intern

Depending on the entry point, workers will likely be able to bring value to the role right away, while gaining the education and experience required to move towards becoming a licensed engineer.



Licensed Engineers

Career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. To advance, workers need several years of experience and to demonstrate leadership, experience, and capabilities in one or more of the following areas.



Specialization

- ↑ Chemical
- ↑ Materials
- ↑ Process
- ↑ Design
- ↑ Quality



Management

- ↑ Team Lead
- ↑ Supervisor
- ↑ Manager
- ↑ Area Manager



Cross Training

- ↑ Project Management
- ↑ Product Management



Education and Training Providers

The following institutions provide training for *Engineering Workers*:

Type	Institution	Location	Program	Relevant Industry Credentials & Certifications	Length
Career & Technical Education Programs	Biddeford Regional Center of Technology	Biddeford	Electrical Technology	State of Maine Journeyman's Electrician's License	1-2 years
	Capital Area Technical Center	Augusta	Electrical Technology	OSHA-10; Journeyman License Classroom & Working Hours; National Association of Home Builders Certification; Maine State Electrician Helper License; NOCTI	
	Foster CTE Center	Farmington	Pre-Engineering	OSHA-10; CPR/First Aid None listed	
	Lewiston Regional Technical Center	Lewiston	Precision Machining Technology	OSHA-10; Journeyman License Classroom Hours None listed	
	Presque Isle Tech Center	Presque Isle	Engineering Technology	None listed	
	Mid-Coast School of Technology	Rockland	Pre-Engineering	None listed	
	Somerset Career & Technical Center	Skowhegan	Pre-Engineering	None listed	
Community College	United Technologies Center	Bangor	Electronics & Advanced Manufacturing	OSHA-10; CompTIA A+	1 - 2 years
	Eastern Maine Community College	Bangor	Electrical & Automation Technology	Associate's Degree	
	Washington County Community College	Calais	Electromechanical Instrumentation Technology	Associate's Degree	
	Kennebec Valley Community College	Fairfield	Electrical Technology	Certificate Associate's Degree	
	Central Maine Community College	Auburn	Electromechanical Technology	Certificate Associate's Degree	
	York County Community College	Wells	Electrician Technology	Certificate	
	Southern Maine Community College	South Portland	Electrical Engineering	Certificate Associate's Degree	
University	University of Maine	Orono	Chemical Engineering	Undergraduate Certificate Bachelor's Degree Master's Degree Ph.D.	4+ years
		Machias	Engineering Pathways	1+3 Engineering Pathways	
		Farmington	Engineering Pathways	1+3 Engineering Pathways	
		Augusta	Engineering Pathways	1+3 Engineering Pathways	

Engineering Workers



Typical Entry Points

An Associate's or Bachelor's degree is typically required for this occupation. Summer internships or cooperative learning is often required for graduation. Examples of entry points include (but are not limited to):

Career & Tech. Education

- † Electrical Tech
- † Pre-Engineering
- † Electronics & Adv. Mfg.
- † Precision Machining Tech



Associate's or Bachelor's Degree

- † Chemical Engineering
- † Materials Science Engineering
- † Engineering Technology

Experience in Related Occupations

- † Industrial Production Managers
- † Chemical Technicians
- † Electricians



ENGINEERING TECH / INTERN

Depending on the entry point, workers will likely be able to bring value to the role right away, while gaining the education and experience required to move towards becoming a licensed engineer.

Behavioral Skills

- † Willingness to learn
- † Work ethic
- † Problem Solving
- † Critical Thinking

Technical Skills

- † Basic electrical experience and knowledge
- † Computer skills
- † Experience with analytical and scientific software
- † CAD experience



ENGINEERS

Avg. Hourly Salary Range:
\$22.94 - \$58.45

With a Bachelor's degree and 4-8 years of experience, workers can become certified by the State of Maine as a Licensed Engineer. From there, career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. To advance, workers need 5+ years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas.

Behavioral Skills

- † Work ethic
- † Effective communication skills
- † Ability to effectively manage others
- † Ability to work in remote or disconnected areas

Technical Skills

- † Industrial code experience
- † Network understanding
- † Professional Licensure



Specialization

- † Chemical
- † Materials
- † Industrial
- † Process
- † Design
- † Quality



Management

- † Team Lead
- † Supervisor
- † Manager
- † Area/District Manager



Related Fields

- † Project Management



CHEMICAL ENGINEERS

17-2041

Design chemical plant equipment and devise processes for manufacturing chemicals and products, such as gasoline, synthetic rubber, plastics, detergents, cement, paper, and pulp, by applying principles and technology of chemistry, physics, and engineering.

Skills

- ♣ Science
- ♣ Complex Problem Solving
- ♣ Critical Thinking
- ♣ Judgment and Decision Making
- ♣ Mathematics

Typical Work Activities

- ♣ Processing Information
- ♣ Analyzing Data or Information
- ♣ Getting Information
- ♣ Working with Computers
- ♣ Making Decisions and Solving Problems

Typical Work Context

- ♣ Email
- ♣ Face-to-Face Discussions
- ♣ Telephone
- ♣ Work with Group or Team
- ♣ Typical Work Week Longer than 40 Hours



Chemical Engineers



Maine Employment Outlook 2022 - 2032

- 📌 Current Jobs (2022): **62**
- 📌 Projected Growth:
 - 📌 **25% in Maine**
 - 📌 **13% in the US**
- 📌 Hires (2022): **21**
- 📌 Near-Term Retirements: **16 (25%)**
- 📌 Average Annual Openings: **6***
- 📌 Graduates in Maine (2021): **109**

**Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation*

Job Preparation Needed: High

Typical requirements for entry:

- 📌 Bachelor's degree
- 📌 No on-the-job training
- 📌 No work experience required

Workforce Demographics

- 📌 26% of workers are over the age of 55
- 📌 7% BIPOC workers
- 📌 16% female workers
- 📌 National education attainment:
 - 📌 59% Bachelor's degree
 - 📌 22% Master's degree
 - 📌 7% Doctoral or professional degree



Jobs Postings for Chemical Engineers in Maine

Top Job Titles: Process Engineers | Process Control Engineers | Chemical Engineers

Specialized Skills:

- 📌 Process Engineering
- 📌 Process Improvement
- 📌 New Product Development
- 📌 Statistical Process Controls

Qualifications:

- 📌 Professional Engineer (PE) License
- 📌 Six Sigma Green Belt
- 📌 Lean Manufacturing Certification

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median
Hourly Wage:
\$46.57



Top Compatible Occupations

The following occupations have comparable skills to *Chemical Engineers* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- ♣ Nuclear Engineers
- ♣ Materials Engineers
- ♣ Water/Wastewater Engineers
- ♣ Mining and Geological Engineers, Including Mining Safety Engineers
- ♣ Automotive Engineers



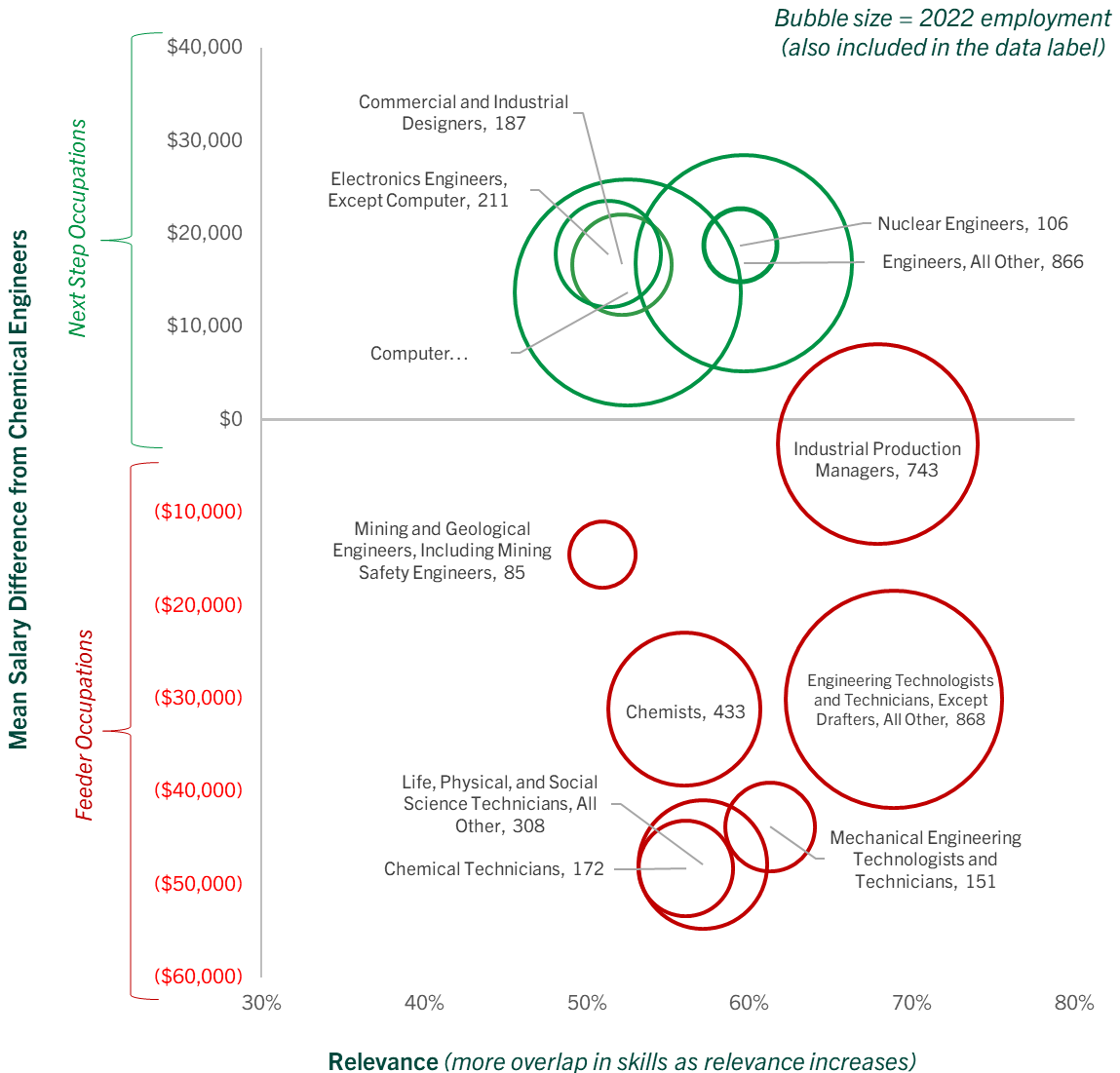
Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Chemical Engineers* (the x axis) and their salary difference (the y axis, with \$0 indicating the occupation has the same salary as *Chemical Engineers*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Chemical Engineers*; therefore, becoming a *Chemical Engineers* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.



Next Step Occupations have higher wages than *Chemical Engineers* and present opportunities for advancement with minimal upskilling.





MATERIALS ENGINEERS

17-2131

Evaluate materials and develop machinery and processes to manufacture materials for use in products that must meet specialized design and performance specifications. Develop new uses for known materials. Includes those engineers working with composite materials or specializing in one type of material, such as graphite, metal and metal alloys, ceramics and glass, plastics and polymers, and naturally occurring materials. Includes metallurgists and metallurgical engineers, ceramic engineers, and welding engineers.

Skills

- ✦ Active Listening
- ✦ Complex Problem Solving
- ✦ Reading Comprehension
- ✦ Science
- ✦ Critical Thinking

Typical Work Activities

- ✦ Analyzing Data or Information
- ✦ Making Decisions and Solving Problems
- ✦ Getting Information
- ✦ Updating and Using Relevant Knowledge
- ✦ Identifying Objects, Actions, and Events

Typical Work Context

- ✦ Email
- ✦ Face-to-Face Discussions
- ✦ Indoors, Environmentally Controlled
- ✦ Work with Group or Team
- ✦ Wear Common Protective or Safety Equipment such as Safety Shoes, Glasses, Gloves, Hearing Protection, or Hard Hats



Materials Engineers



Maine Employment Outlook 2022 - 2032

- 📌 Current Jobs (2022): **83**
- 📌 Projected Growth:
 - 📌 **18% in Maine**
 - 📌 **11% in the US**
- 📌 Hires (2022): **34**
- 📌 Near-Term Retirements: **23 (28%)**
- 📌 Average Annual Openings: **8***
- 📌 Graduates in Maine (2021): **50**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: High

Typical requirements for entry:

- 📌 Bachelor's degree
- 📌 No on-the-job training
- 📌 No work experience required

Workforce Demographics

- 📌 28% of workers are over the age of 55
- 📌 7% BIPOC workers
- 📌 18% female workers
- 📌 National education attainment:
 - 📌 9% Associate's degree
 - 📌 51% Bachelor's degree
 - 📌 19% Master's degree



Jobs Postings for Materials Engineers in Maine

Top Job Titles: Engineers/Scientists | Plastics Engineers | Welding Engineers | Materials Engineers | Supervisory Chemists | Metallurgists

Specialized Skills:

- 📌 Physics
- 📌 Chemistry
- 📌 Project Management
- 📌 New Product Development
- 📌 Process Development

Qualifications:

- 📌 Engineer in Training
- 📌 Professional Engineer (PE) License

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

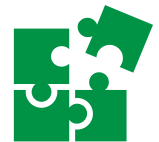
Overall Median Hourly Wage: \$46.76



Top Compatible Occupations

The following occupations have comparable skills to *Materials Engineers* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- ♣ Materials Scientists
- ♣ Nuclear Engineers
- ♣ Microsystems Engineers
- ♣ Chemical Engineers
- ♣ Fuel Cell Engineers



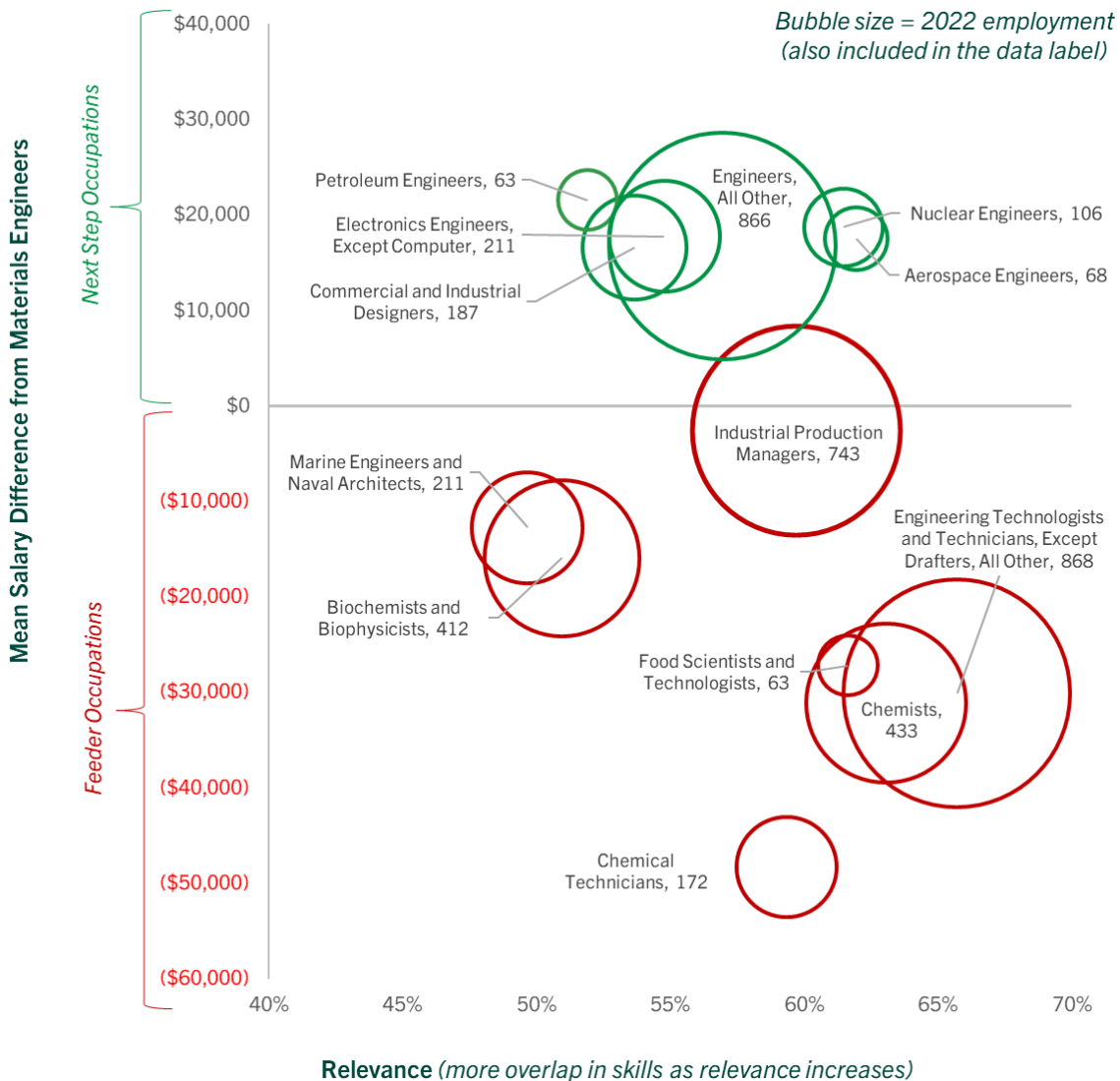
Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Materials Engineers* (the x axis) and their salary difference (the y axis, with \$0 indicating the occupation has the same salary as *Materials Engineers*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Materials Engineers*; therefore, becoming a *Materials Engineers* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.



Next Step Occupations have higher wages than *Materials Engineers* and present opportunities for advancement with minimal upskilling.





ELECTRICAL AND ELECTRONIC ENGINEERING TECHNOLOGISTS AND TECHNICIANS

17-3023

Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, adjust, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions..

Skills

- ✦ Critical Thinking
- ✦ Reading Comprehension
- ✦ Complex Problem Solving
- ✦ Active Listening
- ✦ Troubleshooting

Typical Work Activities

- ✦ Working with computers
- ✦ Making decisions & problem solving
- ✦ Getting information
- ✦ Communicating with supervisors, peers, or subordinates
- ✦ Evaluating information to determine compliance with standards

Typical Work Context

- ✦ Email
- ✦ Face-to-face discussions
- ✦ Indoors, environmentally controlled
- ✦ Freedom to make decisions
- ✦ Important to be exact or accurate





Maine Employment Outlook 2022 - 2032

📌 Current Jobs (2022): 366

📌 Projected Growth:

📌 7% in Maine

📌 7% in the US

📌 Hires (2022): 155

📌 Near-Term Retirements: 116 (32%)

📌 Average Annual Openings: 44*

📌 Graduates in Maine (2021): 92

**Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation*

Job Preparation Needed: Medium

Typical requirements for entry:

- 📌 Associate's degree
- 📌 No on-the-job training
- 📌 No work experience required

Workforce Demographics

- 📌 32% of workers are over the age of 55
- 📌 9% BIPOC workers
- 📌 15% female workers
- 📌 National education attainment:
 - 📌 18% high school graduates
 - 📌 33% some college, no degree
 - 📌 30% Associate's degree



Job Postings for Electrical and Electronic Engineering Techs in Maine

Top Job Titles: Electromechanical Techs | Building Automation Techs | Maintenance Electricians | Fiber Optic Techs | Electronics Techs

Specialized Skills:

- 📌 Electronics
- 📌 Electrical Systems
- 📌 Electromechanics

Qualifications:

- 📌 Valid Driver's License

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: \$34.98



Top Compatible Occupations

The following occupations have comparable skills to *Electrical and Electronic Engineering Techs* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- 🌲 Photonics Techs
- 🌲 Aerospace Engineering and Operations Technologists and Techs
- 🌲 Mechanical Engineering Technologists and Techs
- 🌲 Avionics Techs
- 🌲 Nanotechnology Engineering Technologists and Techs



Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Electrical and Electronic Engineering Techs* (the x axis) and their salary difference (the y axis, with \$0 indicating the occupation has the same salary as *Electrical and Electronic Engineering Techs*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Electrical and Electronic Engineering Techs*; therefore, becoming an *Electrical and Electronic Engineering Tech* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.



Next Step Occupations have higher wages than *Electrical and Electronic Engineering Techs* and present opportunities for advancement with minimal upskilling.

