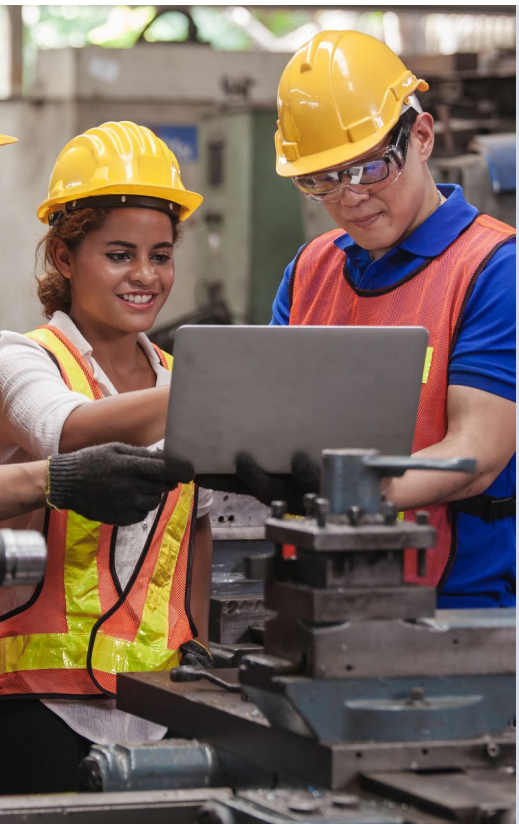
Electrical Engineers

These workers research, design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems. They may also oversee production efforts to ensure projects are completed on time and within budget. Their expertise enhances productivity, safety, and cost-effectiveness. Sample job titles include:

- Circuits Engineer
- Design Engineer
- Electrical Controls Engineer
- Instrumentation and Electrical Reliability Engineer
- Project Engineer
- Test Engineer

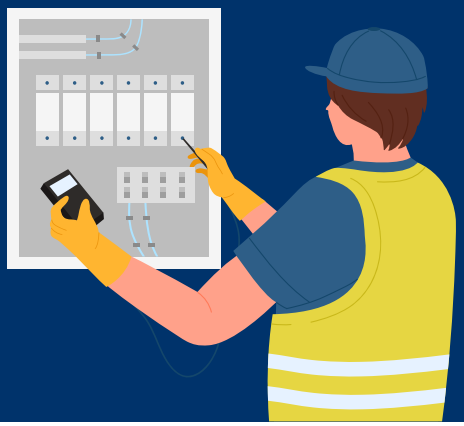


Is this job for you?

A person who thrives in this position typically fits the following description:

- Is thorough, with **strong attention to detail**
- Is **persistent** in the face of obstacles
- Can **analyze** information using logic to address challenges
- Has **initiative** and is willing to take on challenges
- Is **cooperative**, **maintains composure**, and keeps emotions in check during difficult situations.

Unsure but want to learn more? Click here.



Career Pathway

A Bachelor's degree or higher, often in electrical engineering or a closely related field of study, is typically required for engineering roles. However, there are still engineering-related jobs available for those without a Bachelor's degree. These jobs require less education and may be worth considering for those interested in electrical engineering but not ready to commit to a 4-year degree.

Less Education, More Experience

More Education, Less Experience

Apprenticeships, Associate's Degree, and/or Certifications

Bachelor's Degree or Higher

Professional Engineer (PE) License

Electrical Engineers

There are several entry points to becoming an electrical engineer, but most often this role requires college experience, either an Associate's or Bachelor's degree.

As a first step, this job will often take the form of an entry-level engineer. These engineers typically have a Bachelor's degree, or an Associate's degree if combined with years of related experience. Over time, electrical engineers can become more specialized, such as in power engineering, or become supervisors. Electrical engineers with a Bachelor's degree in an ABET-Accredited Program and at least 4 years of experience are eligible to get a Professional Engineer (PE) License. A PE license is required to approve engineering work, and thus, can lead to more senior roles.

Associate's Degree

- Engineer Technician
- Field or Service Engineer

Bachelor's Degree

- Junior Engineer
- Associate Engineer

Unlicensed Electrical Engineer

Electrical Engineer

Transmission Engineer

Power Engineer

Licensed Electrical Engineer

Senior Engineer

Engineering Manager

Entry-Level → Mid-Level → Senior-Level

**In some companies, the term 'engineer' is used more broadly. However, to become a licensed engineer, a Bachelor's degree is required.*

Occupation Characteristics

What is an Electrical Engineer?

Sample Job Description: Research, design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use.

Top Job Titles: Circuits Engineer | Design Engineer | Electrical Controls Engineer | Electrical Design Engineer | Instrumentation and Electrical Engineer | Electrical Engineer

Work Activities:

- Working with Computers
- Problem Solving
- Scheduling Work Activities
- Documenting Information
- Updating Relevant Knowledge

Source: O*NET

Skills

- Writing
- Critical Thinking
- Reading Comprehension
- Active Learning
- Active Listening

Knowledge

- Engineering and Technology
- Computers and Electronics
- Design of Electrical Equipment or Systems
- Mathematics

Work Environment

- Email
- Face-to-Face Discussions
- Telephone Conversations
- Environmentally Controlled
- Freedom to Determine Tasks, Priorities, and Goals
- Being Exact or Accurate

Related Occupations

The following occupations have comparable skills to Electrical Engineers based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could more easily transfer their competencies to work in engineering.

- Electronics Engineer
- Mechanical Engineer
- Systems Engineer
- Field Engineer
- Electrical and Electronic Engineering Technologists and Technicians

Sample Opportunities in Maine

→ Manufacturing Process Engineer | Enercon Technologies

→ Controls Engineer | IT Minds LLC

→ Technology Engineer | Fiber Materials Inc

→ Manufacturing Controls Engineer | ICONMA

This list is for illustrative purposes.

Occupation Summary

Electrical Engineers

Current Jobs in Maine in Manufacturing (2023)

260

Max. Projected Workforce Gap in Manufacturing (2023 -28)

~20

Median Hourly Wages across all sectors (2023)

$50.30

Typical Entry Points

A Bachelor's degree or higher is required for this occupation. Workers can use an Associate's Degree or other certification as an entry point but will need a Bachelor's degree to work in advanced engineering roles.

Pre-College Preparation

- Math
- Physics
- Calculus
- Computer Science
- CTE, Associate's, or Certificate Programs

College Degrees

- Engineering
- Electrical and Electronics Engineering

Relevant Certifications

- Professional Engineering (PE) License
- Specialized Certifications, such as Automation, Energy Management, or Project Management (Optional)

Career Progression

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 an advanced skill level.

Specializations

- Test Engineers
- Control Engineers
- Design Engineers
- Power Engineers
- Computer Engineers
- Transmission Engineer

Entry/Mid-Level

- Project Engineer or Technician
- Associate Engineer
- Junior Engineer

Senior-Level

- Senior Engineer
- Lead Engineer
- Engineering Manager
- Project Manager
- Research and Development

Training Opportunities

The programs listed here are for illustrative purposes. There are dozens of programs available for workers with any level of previous training or experience. Click here to learn more and find additional Maine-based training opportunities near you.

Maine-based institutions offer a range of training opportunities to learn more about Electrical Engineering.

Career and Technical Education

Audience and Outcome | These programs are typically available to high school students and provide an entry point into engineering. With additional education, such as a Bachelor's degree, graduates of CTE programs would be well-positioned to become Electrical Engineers.

- → **Drafting and Design Technology** | Biddeford Regional Center of Technology (York County)
- → **Energy Systems Technology** | Tri-County Technical Center (Penobscot County)
- → **Engineering Technology** | Lewiston Regional Tech Center (Androscoggin County)
- → **CAD/Design Technology** | Bath Regional Career and Technical Center (Sagadahoc County)

University Degree Programs

Audience and Outcome | A Bachelor's degree or higher typically enables graduates to start their careers as Electrical Engineers.

- → **Electrical Engineering |** University of Maine
- → **Electrical & Computer Engineering |** University of Southern Maine
- → **Electrical Engineering** | The Roux Institute
- → Not interested in a 4-year degree? Many community colleges offer Associate's or certificate programs that can lead to engineering-related jobs

Apprenticeship Programs

Audience and Outcome | Apprenticeships are typically offered by Maine-based employers. They combine an academic curriculum with on-the-job training.

- → General Dynamics, Bath Iron Works (Sagadahoc County)
- → Southern Maine Community College (Cumberland County)

Relevant Industry Credentials

Audience and Outcome | These support electrical engineers in advancing into senior technical/leadership roles, with expertise in systems, automation, and process optimization.

- → Professional Engineer (PE)
- → Lean Six Sigma
- → Society of Manufacturing Engineers (SME) Certified Manufacturing Engineer
- → Vendor-Specific PLC Programming Certifications (e.g. Siemens, Rockwell Automations)