Career Pathways in Engineering in Maryland

A Guide for Skilled Immigrant Professionals

2018

MARYLAND Skilled Immigrant *Task Force*

DHS MARYLAND DEPARTMENT OF HUMAN SERVICES

Maryland DEPARTMENT OF LABOR

Introduction

This guide provides a brief overview of some of the resources available to internationally-trained engineers in Maryland. The licensing process can be complex, costly, and time-consuming. In addition to sharing the process of becoming licensed to work as an engineer, this guide offers alternative careers and information about training and academic options. Your career pathway is made up of educational and professional decisions that can open doors to new opportunities. Even if you worked as an engineer in another country, you will need to obtain a license and credentials to work as an engineer in Maryland. This guide can help you choose the next step on your career pathway.

Disclaimer: This information is provided only as an overview. All programs, processes, and/or fees are subject to change. Please verify all information with the appropriate agency. *(Updated as of 2018.)*

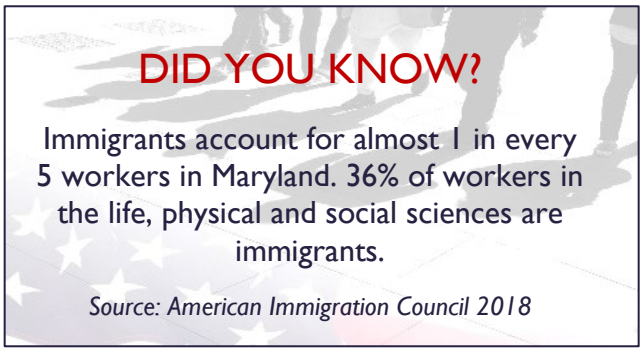
Overview of Engineering Jobs in Maryland

Maryland has many career opportunities in engineering, and the field is growing! The top in-demand job titles include *civil engineer*, *electrical engineer*, *electronics engineer*, and *mechanical engineer*.

The kinds of skills that engineers in Maryland are required to have include:

- Knowledge of job expectations in the United States;
- Punctuality, respect, and good communication skills;
- Computer Aided Design (CAD); and
- Strong math and science skills.

It is important to know the likelihood of getting a job as well as the probable wages. Labor market information for Maryland shows that over the next ten years, engineering jobs are projected to grow 14.8%, or 6,060 jobs in our state*.



The chart below shows average salaries and the number of job openings in 2017 for the top four in-demand types of engineers. When you first start an engineering job in the United States – even if you worked in engineering in a different country – you may start at an entry-level wage, which is usually lower than average. Other types of engineers can visit O*Net for additional information: https://www.onetonline.org

In-Demand Job Titles*	Average Wage	Open Jobs in 2017
Civil Engineers	$86,010	1,192
Electrical Engineers	$109,380	1,691
Electronics Engineers	$122,810	723
Mechanical Engineers	$104,250	1,756

It is also important to know that having United States citizenship may be required to work with any government agency or contractor. Find out more about how to become a citizen or about citizenship preparation resources in your community at https://www.uscis.gov/citizenship/learners/apply-citizenship.

**Source: Maryland Department of Labor*

Transferrable Skills for Alternative Careers

Because obtaining an engineering license takes time, money, and effort, it may not be the best step for you right now. As a trained engineer, you have many skills that you can use in different careers in the United States. Common transferrable skills that you can take with you to other jobs include:

- Project Planning
- Critical Thinking
- Complex Problem-Solving
- Numeracy and Math
- Communication and Teamwork
- Attention to Detail

With these transferrable skills, you can enter fields other than engineering, sometimes more quickly. The following is a list of **alternative careers or occupational fields** if you decide not to pursue engineering at this time. Some of these positions are entry-level jobs, but they could allow you to gain experience in the United States to include on your résumé and may help you network with other professionals.

Alternative Careers

Occupation or Field	Brief Details, Skills, and/or Educational Requirements
Computer Aided Design or CAD Technician/CAD Drafter	• Uses special software to create designs for manufactured products • Multiple areas of specialization: civil, mechanical, or electrical drafting • Typically requires a 2-year associate degree
Computer Numerical Control or CNC Programmer, Machinist, or Operator	• Programs, sets up, or operates a CNC machine to increase efficiency while maintaining quality • Training programs and Registered Apprenticeships available
Construction Management	• Plans and supervises new construction projects • Typically requires a bachelor's degree
Engineering Technician	• Jobs available primarily in the electrical and mechanical engineering fields • Works closely with licensed engineers to design and develop systems and processes • Typically requires at least a high school diploma, with some employers requiring a 2-year associate degree
Logistics, Operations, and Supply Chain Management	• Jobs that link the manufacturing, sales, and transport of products • *Entry-level* positions may include working at a distribution center or manufacturing plant and do not require a lot of education
Teaching	• Opportunities to instruct courses in high schools, community colleges, or colleges/universities • Typically requires a bachelor's degree or higher
Telecommunications	• Jobs available as *entry-level* cable installers or repairers to work on services related to laying or replacing cable lines • Typically requires a high school diploma and a certification that can be obtained at a community college
Web Development	• Opportunities in information technology may focus on creating web applications and websites through HTML, JavaScript, SQL, or Python • May require a bachelor's degree, but experience may be preferred over education

Training & Education

Registered Apprenticeships are "earn and learn" programs where you work and study at the same time. The goal of Registered Apprenticeships, which are offered in many different occupations, is to become an expert in your field of experience and study. Many Registered Apprenticeships take several years to complete. Once you finish a Registered Apprenticeship, you will be called a "journeyman" and will be at the top of your trade.

JOB SEARCH TIP

Use the *Maryland Workforce Exchange* to search for available jobs: www.mwejobs.maryland.gov/jobbanks/

There are Registered Apprenticeships in many fields, but some that may interest you include **electrician, electrical technician, electronics mechanic/technician, machinist, machine repairer, operating engineer, plumber, steamfitter,** and **telecommunications installer.** To see all Registered Apprenticeship options, visit https://www.labor.maryland.gov/employment/approcc/approcc.shtml.

You may also want to seek further training to improve your professional skills. Many internationally-trained engineers say that having experience at a United States educational institution helped them return to work in their career field. It can be a beneficial addition to your résumé.

Learning English is important to being part of the United States workforce. Many community colleges and local organizations offer English classes. Some courses are in-person and others are online. Visit this site to search for English classes in your area: http://www.labor.maryland.gov/gedmd/programs.shtml.

If you are interested in more information about training programs, such as opportunities to take CAD classes, consider enrolling at a community college. A list of all of Maryland's community colleges is available here: https://msa.maryland.gov/msa/mdmanual/01glance/html/colcom.html.

While it may not be necessary, if you decide you need to continue your studies in engineering, use this resource to search for colleges and universities that offer engineering degrees at the associate, bachelor's, master's, or doctorate level: http://educatingengineers.com/states/maryland.

Credential Evaluation

If you decide to work as an engineer in Maryland, one of the early steps in getting your engineering license might be to obtain a foreign credential evaluation. Credential evaluation is the way academic degrees in one country are compared to those in another. If you have a degree from outside of the United States, you *may* need to obtain a course-by-course evaluation.

When you apply for an engineering license, you *may* need to include a course-by-course evaluation from a company that receives your transcripts directly from your university. The course-by-course evaluation should be sent directly from the evaluation company to the Maryland Board for Professional Engineers (address on the last page of this guide).
The credential evaluation service preferred by the Maryland Board for Professional Engineers is:

NCEES
National Council of Examiners for Engineering and Surveying
Toll Free: 1-800-250-3196
https://ncees.org/

Licensing Process

Licensing information for working as an engineer in Maryland can be found through the Maryland Board for Professional Engineers at http://www.labor.maryland.gov/license/pe/.

In Maryland, there is one professional engineer license for all types of engineers. You should plan on at least 6-12 months to complete the licensing process. During this time, you will have to take and pass examinations, complete applications, consider credential evaluation, and pay fees.

Important Tips:

- You will need to know if your foreign university or educational institution is accredited by ABET, the Accreditation Board for Engineering and Technology. You can find a list of ABET-accredited programs online at http://main.abet.org/aps/Accreditedprogramsearch.aspx.

- Document your years of experience working as a professional engineer. Years of experience can be a combination of those in another country and the United States as long as you have worked under your own license or another licensed professional engineer.

- There are three ways to demonstrate your foreign education and engineering experience when applying for a license. These are explained on the following page. Carefully consider all three options and select the one that is best for you.

Option 1 — ABET accredited program and 4 years of experience

- If you attended an engineering program that is accredited by the Accreditation Board for Engineering and Technology and have 4 years of experience working under a professional engineer, you do not need to have a credential evaluation.

Option 2 — Non-ABET accredited program and 8 years of experience

- If you did not attend an engineering program that is accredited by the Accreditation Board for Engineering and Technology but have 8 years or more of professional experience under an engineer, you will need to have your education credential evaluated by NCEES.

Option 3 — No formal education and 12 years of experience

- If you were not formally trained at a university in engineering but have spent 12 or more years working with a licensed engineer, you may consider this option.

You may consider ANY of the options listed above when working towards your engineering license. If you, for example, have 20 years of experience from a non-ABET accredited university, it may be less expensive for you to select option 3 than option 2.

If you have questions about demonstrating your foreign professional experience, contact the Maryland Board for Professional Engineers. (Contact information is listed on the final page of this resource.)

Remember, patience and persistence will help you get your license. Use the Steps Toward Earning a Professional Engineer License in Maryland diagram on the next page to explore the steps for each option.

Steps Toward Earning a Professional Engineer License in Maryland

	Process Steps	OPTION 1	OPTION 2	OPTION 3
STEP 1	**Fundamentals of Engineering (FE) Exam*** • 6-hour, computer-based exam with 110 questions • May be taken three times in a 12-month period • https://ncees.org/ • Exam fee is $175	✓	✓	✓
STEP 2	**Educational Requirements** • Credential evaluation completed by NCEES • https://ncees.org/records/ncees-credentials-evaluations/	**Send university transcripts or evaluation directly to board**	✓	**Not applicable**
STEP 3	**Engineer-In-Training Certificate** • Apply to Maryland Board for Professional Engineers • http://www.labor.maryland.gov/license/pe/peapplyeit.shtml • Application fee is $15	**Optional**	**Optional**	**Optional**
STEP 4	**Professional Experience and Character References** • File a Report of Professional Experience with the Maryland board • Obtain the signature of five character references (three must be from licensed engineers in the United States)	✓	✓	✓
STEP 5	**Application for Professional Engineer License** • http://www.labor.maryland.gov/license/pe/peapply.shtml • Up front application fee is $50 (non-refundable) • License fee is $76	✓	✓	✓
STEP 6	**Principles and Practice of Engineering (PE) Exam*** • Delivery and details vary by discipline • Each discipline is offered two times per year • https://ncees.org/ • Exam fee up to $400	✓	✓	✓
TIME & COSTS	The amount of time and money spent to obtain a professional engineer license will vary based on which option you chose, evaluation and translations costs, and how many times you have to pay for exams. These figures are an approximation.	Time: 6-12+ months	Time: 12+ months	Time: 6-12+ months

**Note: The FE and PE exams administered by NCEES are only available in English.*

Helpful Links

Career and Employment Resources:

- University of Maryland's Engineering Career Services: http://www.careerengr.umd.edu/students/job-board
- Career and Labor Market Information on O*Net: https://www.onetonline.org/find/quick?s=engineer
- Join a professional association of engineers for networking and knowledge:
  - Association of Mechanical Engineers (Baltimore): https://community.asme.org/baltimore_section/b/weblog/default.aspx
  - Maryland Association of Engineers, Inc.: http://www.mdae.org/

Other Resources:

- Learn about scholarships and other financial resources
  - Quick Start Guide: Financial Education and Services for Maryland Immigrants: http://www.labor.maryland.gov/employment/wdskilledimmigrantfinance.pdf
  - Scholarship opportunities for New Americans: http://www.labor.maryland.gov/employment/newamereduc.shtml
- Maryland Department of Labor: http://www.labor.maryland.gov
- Maryland Office for Refugees and Asylees: https://dhs.maryland.gov/maryland-office-for-refugees-and-asylees/
- Maryland Refugee Resettlement Agencies
  - Ethiopian Community Development Council: http://www.ecdcus.org/
  - International Rescue Committee: https://www.rescue.org/
  - Lutheran Social Services (National Capital Area): http://lssnca.org/
- This guide can be used along with the World Education Services (WES) Global Talent Bridge Career Pathways in Engineering E-Guide: https://www.wes.org/advisor-e-guides/

Contact Information

Maryland Board for Professional Engineers
500 N. Calvert Street, Room 308
Baltimore, Maryland 21202
Phone: 410-230-6260
http://www.labor.maryland.gov/license/pe/
Email: DLOPLProfessionalEngineers-LABOR@maryland.gov

Maryland Department of Labor
New Americans Initiative
Phone: 410-767-3282
http://www.labor.maryland.gov/employment/newamerwrkforce.shtml

This guide was prepared by the Skilled Immigrant Task Force, a group co-sponsored by the Maryland Department of Labor and the Maryland Department of Human Services.

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