CITY OF TULSA

New Tulsans Initiative

Shared Prosperity for All Tulsans

Tulsa Engineering Career Pathways Guide

for Internationally Trained Professionals

Acknowledgments

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About New Tulsans Initiative

The New Tulsans Initiative embodies the core belief that our city's greatest asset is our people. As Tulsa continues to grow as a diverse, world-class city, the New Tulsans Initiative Welcoming Plan provides pathways for immigrant integration and seeks out opportunities that benefit both native-born and immigrant residents of Tulsa.

About Flourish Tulsa

As part of the New Tulsans Initiative, the City of Tulsa launched Flourish Tulsa to support internationally trained immigrants in our community. Through community partnerships, we are developing strategies to connect immigrants with employment in fields in which they have experience in and are passionate about. Flourish Tulsa partners include City of Tulsa, Green Country Workforce, PartnerTulsa, Tulsa Community College, Tulsa Regional Chamber, Uma Center of Tulsa, inTulsa, and YWCA Tulsa.

Disclaimer

The information provided in this guide is for general informational purposes only. Please verify all information on official sites. For specific questions about the Professional Engineer (PE) licensing process, contact the Oklahoma State Board of Licensure for Professional Engineers & Land Surveyors at 405-521-2874. For questions or comments about the guide email resilient@cityoftulsa.org.

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Introduction

As an internationally trained immigrant in the United States, you can use your international training and education to advance in your career or pursue a new career that builds on your prior experience. In the United States, some engineering positions are strictly regulated and require a license. Since obtaining a Professional Engineer (PE) license can be costly and time consuming, it is important to consider your options and determine if it is necessary to obtain a license. Many internationally trained engineers pursue engineering positions or related careers that do not require a license. To help you better understand your options, this guide will bring awareness to the various pathways available for those interested in the field of engineering, navigate the licensing process, and highlight engineering careers that don't require a license.

Guide at Glance

Below is a brief description of each section in this guide.

The Engineering Profession in the United States section provides an overview of the engineering field in the U.S.

The Gaining Recognition for your International Education section explains how to determine the United States equivalency of a degree earned abroad to help you explore career pathways in education and other fields.

The Career Options in the Field of Engineering section provides examples of careers in engineering that may match your educational qualifications.

The Exploring the Engineering Profession in Oklahoma section shares resources to begin your employment search in Oklahoma.

The Common Engineering Occupations in Oklahoma and Wages section lists occupational employment and wage estimates in Oklahoma.

The Other Engineering Career Options section includes information about careers you can pursue that do not require a PE license yet utilize your transferable skills.

The Local Career Navigation Resources section includes information about local organizations who are ready to support your career and educational goals.

The Appendix section provides information on certifications, additional resources, and detailed steps of the Professional Engineer (PE) licensing process in Oklahoma.

The Engineering Profession in the United States

There are many pathways to working as an engineer in the United States and each pathway is different depending on education, experience, and future goals. As you consider your options and review this guide, ask yourself the following questions:

- What types of jobs do I want to apply for?
- Is a credential or license required for this job?
- What special skills or certifications are required?
- What level of English is required?
- Do I need to have my credentials evaluated before applying?
- What are my financial resources for paying for more education, training, or licensing—for example, application fees and exam preparation?
- What are alternative career pathways that I can explore?

In this guide, you will find resources to explore career pathways in the field of engineering for the state of Oklahoma. This guide is intended to accompany the World Education Services (WES) Global Talent Bridge Career Pathways in Engineering E-Guide that provides more general information.[1]

Most careers in the field of engineering do not require you to be licensed as an engineer. Many internationally trained engineers work in the United States without having a Professional Engineer (PE) license depending on the type and level of work. Many employers offer various engineering positions to degree holders from an internationally recognized college or university. It is important to first determine if a PE license is necessary for your desired job before starting the licensing process.

1 https://knowledge.wes.org/globaltalentbridge-eguide-career-pathways-in-engineering-using-your-foreign-education-in-the-united-states.html

Overview of the Professional Engineer (PE) license in the United States

In the United States, licensure for engineering and surveying professionals is regulated at the state level. A Professional Engineer (PE) or surveyor must be licensed separately in every state in which they practice. Only licensed engineers can call themselves Professional Engineers and certain tasks such as stamping and sealing designs or bidding for government contracts, are prohibited unless you hold this title.

According to the Oklahoma State Board of Licensure for Professional Engineers and Land Surveyors, there are advantages to pursuing and obtaining a PE license, which include more job opportunities, promotions, and job security.[2] Any engineering job that deals with any level of government or the public will likely require a PE license. Some examples would be civil engineers designing roads and bridges or managing water treatment facilities; electrical engineers designing power stations; or mechanical engineers designing Heating and Air Conditioning Systems. Obtaining the PE license requires a bachelor's or master's in engineering from an accredited program, passing exams, and achieving certain work experience.

Please determine if a PE license is a requirement for the engineering job you are applying for or wish to apply for. If a PE license is not necessary for the position, you may only need to have a qualifying degree from an internationally recognized college or university and relevant work experience.

Certifications

Certifications in engineering are voluntary credentials that you can earn to prove your proficiency in a given field. Certifications may help you secure employment. The requirements for engineering certifications vary: some are entry level, and some demonstrate the highest level of expertise and require licensure and many years of work experience in order to even take the certification exam. See Appendix 1 for more information on certifications.

2 https://www.ok.gov/pels/Future_Licensees/Engineering/index.html

Gaining Recognition for your International Education[3]

Do you have a university degree from another country? If you are exploring a new career in the U.S., it may be helpful to have an idea of the U.S. equivalency of your international credentials and your GPA. Grade Point Average or GPA is the average of a student's grades for a particular period, usually on a scale of 1 to 4.0, with 4.0 being the best.

- This free degree equivalency tool offered by the World Education Services (WES) allows you to preview the U.S. equivalency of your highest completed degree.[4]
- This free GPA calculator allows you to preview the U.S. equivalency of your GPA equivalency.[5]

Note: These previews do not replace a formal credential evaluation.

Credential Evaluations

Obtaining a credential evaluation is often the first step to gain access to educational and employment opportunities in the United States. A credential evaluation is an expert analysis of a foreign degree or diploma. This evaluation compares the education you received in your country to a similar degree or diploma in the United State and provides a degree equivalency. There is no single agency that completes credential evaluations in the U.S. The U.S. Department of State provides guidelines on how to get evaluation of foreign degrees.[6] Approved agencies for credential evaluations are listed by the National Association of Credential Evaluation Services (NACES).[7] Association of International Credentials Evaluators (AICE) is another option for credential evaluation services.[8]

Please consult with your employer or academic institution on what kind of evaluation and how much evaluation is needed before proceeding with your credential evaluation. This is because each institution – whether it be an employer, educational institution, or licensing board – has its own requirements for credential evaluations. Always contact the institution first before requesting a credential evaluation to ensure that you are meeting the correct requirements.

3 https://knowledge.wes.org/globaltalentbridge-eguide-career-pathways-in-education-using-your-foreign-education-in-the-united-states.html
4 https://applications.wes.org/degree-equivalency-tool/
5 https://applications.wes.org/igpa-calculator/igpa.asp
6 https://www.state.gov/global-community-liaison-office/family-member-employment/family-member-employment-in-the-d-c-area/evaluation-of-foreign-degrees/
7 https://www.naces.org/members
8 https://aice-eval.org/

Helpful Information Regarding Credential Evaluation Services[9]

- There is no federal regulation of credential evaluation services.
- Use a credential evaluation service recommended by the employer, education institution or state licensing authority to which you are applying.
- Credential evaluations are not free. Credential evaluations are done on an individual, case-by-case basis and take into consideration various factors.
- Credential evaluation services generally require English translations of any non-English documents. YWCA Tulsa offers language translation services locally.[10]
- The cost and the timeframe to complete a credential evaluation will vary according to the complexity of the case and the amount of documentation provided. The entire credentialing process may take weeks to months.

> Are your credentials from Afghanistan, Eritrea, Iraq, Syria, Turkey, Ukraine, or Venezuela? Do you have limited proof of academic achievements as a result of adverse circumstances in one of these countries? The WES Gateways Program may be able to assist you to receive a credential evaluation report.[11] YWCA Tulsa serves as the local referral partner for the program. Email YWCA Tulsa at info@ywcatulsa.org for more information.

World Education Services (WES) is one of the NACES agencies that provides credential evaluation services. Click here to understand their credential evaluation process.[12] Preview a list of documents you may need to start your credential evaluation process here.[13]

Credential Evaluation for Licensure in Oklahoma

The credential evaluation service for engineering licensure in Oklahoma is NCEES Credential Evaluations. The National Council of Examiners for Engineering and Surveying (NCEES) offers a credential evaluation service that compares a candidate's academic background to established criteria and provides this information to the U.S. licensing board where the candidate is applying to sit for a licensure exam. Please refer to Appendix 3 and 4 regarding detailed information on Professional Engineer (PE) licensure.

> If you graduated from an engineering program in one of the 23 jurisdictions covered by the Washington Accord[14] (an agreement between engineering organizations to recognize each other's accredited academic qualifications), then your engineering degree may already be declared substantially equivalent to a degree from a U.S. program. The following countries are signatories of the Washington Accord: Australia, Canada, China, Chinese Taipei, Costa Rica, Hong Kong China, India, Indonesia, Ireland, Japan, Korea, Malaysia, Mexico, New Zealand, Pakistan, Peru, Russia, Singapore, Sir Lanka, South Africa, Turkey, United Kingdom, and United States.

9 https://sites.ed.gov/international/recognition-of-foreign-qualifications/
10 https://www.ywcatulsa.org/immigrant-and-refugee-services/translation-and-interpretation-services/
11 https://www.wes.org/partners/global-talent-bridge/wes-gateway-overview/
12 https://www.youtube.com/watch?v=7lMmpBb1pn8&feature=youtu.be
13 https://applications.wes.org/required-documents
14 https://www.ieagreements.org/accords/washington/

Case Study: Entering the Field of Engineering in the United States

Name: Rafael Fuenmayor
Credentials: BA in Electronics Engineering
Job Title: Manufacturing Engineering Supervisor at Webco Industries, Inc.

Rafael is an internationally trained engineer from Venezuela, working as a Manufacturing Engineering Supervisor at Webco Industries, Inc. He earned a bachelor's in electronics engineering with a concentration in automation and control systems in Venezuela. He also earned a bachelor's in mechanical engineering from Oklahoma State University.

Rafael was interested in engineering because both of his parents are mechanical engineers, and he was exposed to engineering at a young age. He was initially interested in oil and gas and interned at two companies related to the oil and gas field, both of which were Gas Turbine companies. These internships were a result of the relationships he had built which opened opportunities for him. As he ventured into his studies, he discovered that he enjoyed the problem-solving aspect of engineering, and it became his strength. He also realized that the manufacturing field was a better fit for him due to his focus on problem solving.

While Rafael was job hunting, a friend who was working at Webco Industries put him in contact with the human resources department. He went through two rounds of interviews and was hired as a Manufacturing Engineer.

Rafael recommends that current engineering students prioritize getting relevant work experience in the form of internships while in college. Starting internships as early as sophomore year will put them at an advantage over most students. Throughout your internships, you should network and build relationships which can open opportunities for future job offerings.

As for immigrant engineers with experience, Rafael advises them to focus on their strengths and show how they can be an asset to the company they are applying. Tailoring resumes and cover letters to the role and the company you are seeking can make a big difference. It is also an important skill to be able to communicate effectively in English. Communicating in a technical way is critical for engineering positions.

Career Options in the Field of Engineering

Many engineering positions tend to fall into general categories such as civil engineering, chemical engineering, mechanical engineering, electrical engineering, or industrial engineering. However, there are many other engineering disciplines such as aerospace, architectural, biomedical, chemical, computer science, IT, software, telecommunications, and petroleum engineering.

Brief overview of common types of engineering jobs

- Civil engineers design and construct infrastructure projects.
- Chemical engineers develop and design chemical manufacturing processes.
- Mechanical engineers research and develop machines.
- Electrical engineers design and develop electrical equipment.
- Industrial engineers find ways to make all systems - integrated workers, machines, materials, information, and energy- run as efficiently as possible.
- Research and Development engineer is responsible for developing and evaluating new research ideas, improving existing technologies, providing technical support, and assisting in the research and development duties.

Learn more about the different types of engineering here.[15]

Once you have a better understanding of the U.S. equivalent of your international degree, you can use the information to explore your career options and decide if further education and licensure is necessary. Some internationally trained workers gain U.S. work experience in entry-level professions as they pursue licensure. Others decide to return to school to gain qualifications for mid- or senior-level jobs.

When you are looking at jobs that interest you, look for the minimum academic requirements needed to qualify for the position. Minimum academic requirements may vary based on where you decide to work. Public and private institutions may have different requirements. Usually, the higher the minimum academic requirements, the higher the salary and leadership opportunities.

15 https://www.bestcolleges.com/engineering/types-of-engineering/

Jobs by minimum academic requirements:

Associate degree

An associate degree is generally the equivalent of two years of higher education. Working in the field of engineering with an associate degree usually involves working in a technician role.

Sample Job Titles	Sample Responsibilities
Civil Engineering Technician[16]	• Help civil engineers to design and construct infrastructure projects, such as bridges, sewer systems, and airports. • May also help to design and construct industrial, commercial, or residential building projects.
Mechanical Engineering Technician[17]	• Help mechanical engineers research and develop machines, such as medical devices, transportation systems, and heating and cooling systems. • Duties may also include record keeping and data analysis, sketching rough layouts, and doing calculations for the supervising engineer.
Electrical and Electronics Engineering Technician[18]	• Help electrical engineers design and develop electrical equipment, such as communication and navigation systems. • May work in product assessment and testing, using diagnostic equipment to evaluate, finetune, and repair products.
Industrial Engineering Technician[19]	• Help industrial engineers find ways to make systems run as efficiently as possible, integrating workers, machines, materials, information, and energy. • May design machinery and equipment layouts and plan workflows for maximum efficiency, as well as analyzing production statistics and costs.
Designer/Drafter/Drafting Engineer[20]	• Prepare detailed drawings and plans for engineering projects under the direction of an engineer, using computer aided design (CAD) software.

16 https://www.bls.gov/ooh/architecture-and-engineering/civil-engineering-technicians.htm
17 https://www.bls.gov/ooh/architecture-and-engineering/mechanical-engineering-technicians.htm
18 https://www.bls.gov/ooh/architecture-and-engineering/electrical-and-electronics-engineering-technicians.htm
19 https://www.bls.gov/ooh/architecture-and-engineering/industrial-engineering-technicians.htm
20 https://www.bls.gov/ooh/architecture-and-engineering/drafters.htm

Bachelor's degree

A bachelor's degree is generally the equivalent of four years of higher education. A bachelor's degree in engineering is the minimum degree required to qualify for most entry-level jobs as an engineer. Entry-level positions may also require knowledge of a specialized field or geographic area served, internship experience, and proficiency with specialized software.

Sample Job Titles	Sample Responsibilities
Civil Engineer[21] • Project Engineer, Structural Engineering Designer, Associate Traffic Engineer, Civil Engineering Designer	• Design and construct infrastructure projects, such as roads, bridges, water supply systems, sewer systems, and airports.
Computer Hardware Engineer[22]	• Research, design, develop, and test computer systems and components. • Usually work in research laboratories that build and test various types of computer models.
Software Developers, Quality Assurance Analysts, and Testers[23]	• Design computer applications or programs. • Identify problems with applications or programs and report defects.
Mechanical Engineer[24] • Project Engineer, Quality Engineer, Reliability Engineer, Software Engineer	• Research and develop machines, such as medical devices, transportation systems, electric generators and turbines, automated factory equipment, and heating and cooling systems.
Electrical or Electronics Engineer[25] • Engineering Associate, Network Implementation Engineer, Optical Engineer, Embedded Software Engineer, Design Engineer, Cyber Security Engineer, Junior Lighting Designer, Systems and Equipment Engineer, Maintenance Engineer	• Design and develop electrical equipment, such as communication and navigation systems, and the electrical systems within machines such as cars and aircraft. • Manufacturing industries that employ electrical engineers include automotive, marine, railroad, aerospace, defense, consumer electronics, commercial construction, lighting, computers and components, telecommunications, and traffic control.
Industrial Engineer[26] • Continuous Improvement Engineer, Business Intelligence Consultant, Associate Distribution Engineer, Association Logistics Engineer, Quality Engineer, Inventory and Asset Control Manager, Associate Operations Research Engineer	• Find ways to make systems run as efficiently as possible, integrating workers, machines, materials, information, and energy.

21 https://www.bls.gov/ooh/architecture-and-engineering/civil-engineers.htm
22 https://www.bls.gov/ooh/architecture-and-engineering/computer-hardware-engineers.htm
23 https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm
24 https://www.bls.gov/ooh/architecture-and-engineering/mechanical-engineers.htm
25 https://www.bls.gov/ooh/architecture-and-engineering/electrical-and-electronics-engineers.htm
26 https://www.bls.gov/ooh/architecture-and-engineering/industrial-engineers.htm

Master's Degree

A master's degree is generally the equivalent of one to two years of study in an advanced degree program after obtaining a bachelor's degree. A master's degree may not be necessary to obtain an engineering position, but many mid- or senior- level positions at the management level in engineering call for an advanced degree. Engineers with master's degrees tend to have higher starting salaries and more easily secure leadership or management positions.

Sample Job Titles	Sample Responsibilities
Civil Engineering • Construction Engineer, Structural Engineer, Building Control Surveyor, Water Resource Engineer, Building Services Engineer, Engineering Geologist, Quantity Surveyor	• The Master of Science in Civil Engineering (MSCE) may include other specialties such as Environmental or Structural Engineering. Subspecialty areas include: Sustainable Infrastructure, Geotechnical Engineering, Hydrology and Hydrodynamics, or Transportation Engineering.
Mechanical Engineering • Senior Mechanical Engineer, Senior Mechanical Systems Engineer, Senior Mechanical Design Engineer, Senior Mechanical Project Engineer	• The Master of Science in Mechanical Engineering (MSME) may include other specialties such as Mechatronics, Aerospace Engineering, or Mechanical Engineering Modelling.
Electrical Engineering • Senior Electrical Engineer, Senior Electrical Design Engineer, Senior Project Engineer	• Specialty areas for the Master of Science in Electrical Engineering (MSEE) might include: Signal Processing and Communications, Systems and Control, Electromagnetics and Photonics, or Bioelectrical.
Industrial Engineering • Senior Quality Engineer, Senior Solutions Architect, Senior Logistics Engineer Senior Automation Engineer, Senior Process Engineer	• The Master of Science in Industrial Engineering (MSIE) might include course study in Human Factors Engineering, Manufacturing Systems Engineering, Operational Research, or Production Systems Engineering.

Doctorate Degree

A doctorate or doctoral degree is generally the equivalent of four to six years of study in an advanced degree program. A PhD is for those who want to work in research either in industry or in academia or for a government research lab. Below are two areas of engineering with job opportunities for PhDs.

Sample Job Titles	Sample Responsibilities
Chemical Engineer[27] • Bioprocess Development, Chemist Analyst, Process/Product Developer	• Design processes and equipment for large-scale manufacturing, plan and test production methods and byproducts treatment, and direct facility operations. • Preparation for management positions usually requires working under the guidance of a more experienced chemical engineer.
Biomedical Engineer[28] • Senior Imaging System Engineer, Senior Principal Engineer, Senior Project Engineer Research and Development	• Biomedical engineers combine engineering principles with medical sciences to design and create equipment, devices, computer systems, and software used in healthcare. • To lead a research team, a biomedical engineer generally needs a graduate degree

27 https://www.bls.gov/ooh/architecture-and-engineering/chemical-engineers.htm
28 https://www.bls.gov/ooh/architecture-and-engineering/biomedical-engineers.htm

Exploring the Engineering Profession in Oklahoma

When considering a profession, it is helpful to know the industries available in your area, wage information for the career path you choose, and the likelihood of getting a job. This section has resources you can use to better understand employment options in Oklahoma using local labor market information.

Beginning your employment search:

- The Periodic Table of Science, Technology, Engineering, and Math (STEM) Occupations in Oklahoma in 2022. You can view total openings, average annual wage, and typical education needed for entry.[29]
- Use O*Net OnLine to find labor market information. Look for "Bright Outlook" occupations, which are jobs that are expected to grow rapidly in the next several years.[30]
- Learn more about in-demand job titles at CareerOneStop.[31] Look for What's In Demand?[32] Oklahoma has a rich history in the petroleum, aerospace, and manufacturing industries.
- A good source of local job information are the Occupation, Wage and Industry Reports by the Oklahoma Employment Security Commission.[33] The most recent report is 2022 Occupation, Wage, and Industry Report.[34]
- Consult the Oklahoma Licensed & Certified Occupations report for information on licensing requirements for jobs in engineering.[35]
- Visit MyNextMove.org.[36] Look for "Engineering" in the Search careers for information on occupations in engineering like salary, educational requirements, and required skills.
- For jobs and additional resources for those living in Adair, Cherokee, Creek, McIntosh, Muskogee, Okmulgee, Osage, Pawnee, Sequoyah, Tulsa, and Wagoner counties, visit Green Country Workforce.[37]
- Visit the Tulsa Regional Chamber of Commerce Directory to learn more about top employers in the field of Engineering in Tulsa, Oklahoma.[38] In the "Search by Business Category" search for the category of engineering you are interested in.
- The Oklahoma Employment Security Commission has an events calendar.[39] Choose Career Fair under category to find job fairs in your area. Please check that the event is in your city.

29 https://oklahoma.gov/content/dam/ok/en/oesc/documents/labor-market/publications/stem/stem-employment-chart-2022.pdf
30 https://www.onetonline.org/
31 https://www.careeronestop.org/
32 https://www.careeronestop.org/JobSearch/Plan/whats-in-demand.aspx
33 https://oklahoma.gov/oesc/labor-market/oews.html
34 https://oklahoma.gov/content/dam/ok/en/oesc/documents/labor-market/publications/occupation-and-wages/oklahoma-wage-report-2022.pdf
35 https://oklahoma.gov/oesc/labor-market/licensed-occupations.html
36 https://www.mynextmove.org/find/search?s=engineering
37 https://www.greencountryworks.org/find-a-job/
38 https://tulsachamber.com/index.php?src=membership
39 https://oklahoma.gov/oesc/events-calendar.html

Common Engineering Occupations in Oklahoma and wages

These occupational employment and wage estimates are calculated with data collected from employers in all industry sectors in metropolitan and nonmetropolitan areas in Oklahoma. Visit the U.S. Bureau of Labor Statistics on wage estimates in Oklahoma.[40]

Major Employers in Key Industries in the Tulsa Area

Aerospace and Defense

- Air National Guard
- American Airlines
- Cherokee Industries, Inc.
- Consolidated Turbine Specialists, LLC
- Cymstar
- FlightSafety International
- Honeywell Aerospace Services
- International Jet Service Corp
- L3Harris
- Lufthansa Technik
- NORDAM Group
- Omni Air International
- Spirit Aerosystems
- Vertical Aerospace
- Walden's Machine

Technology & Telecommunications

- Alorica, Inc.
- AT&T & DirecTV
- Avantive Solutions
- ConsumerAffairs
- Cox Communications
- DXC Technology
- Micahtek Inc
- Northern Data
- US Cellular
- Verizon Business
- Zayo Group

Manufacturing

- A G Equipment Company
- AAON, Inc.
- Acme Engineering & Manufacturing
- American Castings
- Ameristar Perimeter Security
- Anchor Glass Container Corporation
- Ardagh Group
- AXH Air-Coolers
- Berry Global
- Bluebell
- Captive-Aire Systems Inc.
- Cascades Paper Products
- Dal-Tile, Inc.
- Enel
- Enerflex
- Enovation Controls
- Extract Companies, LLC
- Georgia-Pacific
- Bama Companies Inc
- Greenheck Group Hilti North America
- I.S.T.I. Plant services
- IC Bus of Oklahoma LLC
- Kelvion Inc Thermal Solutions
- Kimberly Clark
- McElroy Manufacturing, Inc.
- Muncie Power Products, Inc
- Navico Inc.
- Navistar
- O-I (Owens Illinois)
- Pepsi Bottling Group
- RAE Corporation
- Refresco
- Sofidel America
- Spirit Aerosystems
- Webco Industries Inc.
- Whirlpool Corporation
- Zeeco Inc.

40 https://www.bls.gov/oes/current/oes_ok.htm#17-0000

Energy

- Baker Hughes
- Big Elk
- ClearSign Technologies
- Conoco
- Francis Energy
- Grand River Dam Authority
- Helmerich & Payne, Inc.
- Honeywell UOP
- Integrated Service Company LLC
- John Zink Hamworthy
- Kaiser-Francis Oil Company
- Latshaw Drilling & Exploration
- Magellan Midstream Partners LP
- Matrix Service Company
- NOV, Inc.
- ONE Gas
- ONEOK, Inc.
- Phillips Petroleum
- Public Service Company of Oklahoma
- Sunoco
- T.D. Williamson, Inc
- The Williams Companies
- Universal Field Services
- W Energy Software
- WPX Energy

Other Career Options for Technical or Engineering Professionals

Related careers can be ideal options for you if you want to continue working in the field while growing your professional network and gaining U.S. work experience.

Related Careers

Position	Brief Description	Education Requirements
Construction and Building Inspectors[41]	Work onsite to ensure that local and national building codes and ordinances, zoning regulation, and contract specifications are up to standard.	At least a high school diploma.
Industrial Machinery Mechanics and Maintenance Workers and Millwrights[42]	Specialize in repairing and maintaining machinery at all levels of construction.	At least a high school diploma.
Electro-mechanical Technicians[43]	Work with electro-mechanical, unmanned machines.	At least an associate degree.
Engineering Technologist[44]	Specialize in implementing existing engineering technology. Work focuses on activities related to product improvement, manufacturing, and construction.	At least an associate degree. Certification is voluntary but may make you a more attractive candidate.
Construction managers[45]	Oversee a team on a project and are responsible for scheduling, coordinating, and hiring construction site contractors.	At least a bachelor's degree.
Cost Estimators[46]	Estimate financial, labor, and material expenses for projects.	At least a bachelor's degree.
Cartographers and Photogrammetrists[47]	Create and update maps and charts	At least a bachelor's degree.
Sales engineers[48]	Sell scientific and technological products or services to businesses.	At least a bachelor's degree, with strong communication skills and some sales experience.

41 https://www.bls.gov/ooh/construction-and-extraction/construction-and-building-inspectors.htm
42 https://www.bls.gov/ooh/installation-maintenance-and-repair/industrial-machinery-mechanics-and-maintenance-workers-and-millwrights.htm
43 https://www.bls.gov/ooh/architecture-and-engineering/electro-mechanical-technicians.htm
44 https://www.bls.gov/ooh/architecture-and-engineering/mechanical-engineering-technicians.htm
45 https://www.bls.gov/ooh/management/construction-managers.htm
46 https://www.bls.gov/ooh/business-and-financial/cost-estimators.htm
47 https://www.bls.gov/ooh/architecture-and-engineering/cartographers-and-photogrammetrists.htm
48 https://www.bls.gov/ooh/sales/sales-engineers.htm

Alternative Careers

Alternative Careers are occupations outside the field of engineering in which you can use your transferable skills from your engineering background to explore a different career path. Alternative Careers in Oklahoma include:

Position	Brief Description	Education Requirements
Computer Support Specialist[49]	Provide help and advice to computer users and organizations.	At least an associate degree.
Career or Technical Education Teacher[50]	Instruct students in technical and vocational subjects at the secondary or postsecondary levels.	Bachelor's degree & work experience in the subject you are teaching.
Technical Trainer[51]	Plan, conduct, and administer programs to train employees and improve their skills and knowledge.	At least a bachelor's degree.

Resources to find additional related and alternative careers:

- For an overview of jobs and education data in Oklahoma, you can use Green Country Workforce.[52]
- Learn more about the skills that employers seek from O*Net Online[53]
- View a list of critical occupations in Oklahoma: https://oklahomaworks.gov/oklahoma-workforce-data/critical-occupations/

49 https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#:~:text=Network%20support%20specialists%20analyze%2C%20troubleshoot,help%20directly%20to%20computer%20users
50 https://www.bls.gov/ooh/education-training-and-library/career-and-technical-education-teachers.htm
51 https://www.bls.gov/ooh/business-and-financial/training-and-development-specialists.htm
52 https://www.greencountryworks.org/find-a-job/
53 https://www.onetonline.org/find/descriptor/browse/Skills/

Next Steps and Local Resources

Ready to pursue your professional and educational goals in the United States? Flourish Tulsa partners are available to support you every step of the way!

Step 1: Create a Career Plan

Schedule a free mini consultation at YWCA Tulsa to speak with a specialist who will help you outline your career path. To schedule an appointment, call (918) 663-0377 and mention Flourish Tulsa.

Step 2: Pursue Employment and Paid Training or Internships

Enroll in the Green Country Workforce (GCW) program (formerly known as Workforce Tulsa program) to obtain a paid internship or full-time job. In addition, as a GCW participant, you may be eligible for free, professional development opportunities offered by local service providers. Sign up by visiting the GCW Find a Job webpage or calling (918) 796-1200 and mention Flourish Tulsa.[54]

Step 3: Enroll in ESL Courses

If improving your English proficiency is one of your goals, you can enroll in English as a Second Language (ESL) courses. ESL courses are offered online and in-person at Tulsa Community College (TCC) and YWCA Tulsa. Scholarships may be available. For more information about TCC's ESL courses visit the TCC ESL webpage or call (918) 595-7536.[55] For information about YWCA Tulsa's ESL courses visit YWCA Tulsa English Language Classes webpage or call (918) 663-0377.[56] Remember to mention Flourish Tulsa.

54 http://bit.ly/GCWProgram
55 http://bit.ly/TCCESL
56 http://bit.ly/YWCATulsaESL

Step 4: Build a Professional Network

Build your professional network by joining Mosaic and attending their monthly meetings hosted by the Tulsa Regional Chamber. To learn more and register to attend, visit the Mosaic webpage.[57]

The Tulsa Engineering Foundation is a local engineering foundation where you can meet and network with other engineers in Tulsa.[58] Twenty engineering/technical organizations and seven universities and colleges are members of the Tulsa Engineering Foundation. Check the calendar for meetings and events.[59]

Step 5: Engage your Employer and Share these Resources

Share the resources available on the Flourish Tulsa webpage with your human resources department or manager, visit the Flourish Tulsa webpage.[60]

For more information about Flourish Tulsa, contact resilient@cityoftulsa.org.

57 http://bit.ly/Join-Mosaic
58 https://tulsaengineer.org/
59 https://tulsaengineer.org/calendar/
60 http://bit.ly/FlourishTulsa

Appendix I: Certifications

Engineering Technicians

While certification is not required, engineering technicians can make themselves more attractive candidates for employment by pursuing certification from the National Institute for Certification in Engineering Technologies (NICET), a division of NSPE.[61]

Control Systems and Automation Technicians

While certification is not required, control systems and automation technicians can make themselves more attractive candidates for employment by pursuing certification as a Certified Control Systems Technician (CCST) from the International Society for Automation (ISA).[62]

61 https://www.nicet.org/
62 https://www.isa.org/certification/ccst

Appendix II: Additional Resources

Career/Employment Resources

- For job search assistance, job training, and more, visit Green Country Workforce.[63]
- Information on registered apprenticeships by career can be found at My Next Move.[64]
- The Oklahoma Society of Professional Engineers is one of the professional organizations for engineers in the state.[65]
- You can also find resources from the National Society of Professional Engineers.[66]
- For more info on the immigrant workforce in Oklahoma, see New Americans Economy.[67]

English Classes

Having the ability to communicate effectively in written and spoken English are important for obtaining your first job in engineering and seeking promotions.

- Below are some free courses that can help you learn and practice vocabulary specific to the engineering industry:
  - English for Science, Technology, Engineering, and Mathematics, a course created by the University of Pennsylvania and funded by the U.S. Department of State Bureau of Educational and Cultural Affairs and offered online by Coursera.[68]
  - A three course "specialization" in Communication Skills for Engineers, created by Rice University and offered online by Coursera.[69] (Note: These classes were designed for native English Speakers, but could be helpful practice if already have advanced English skills)
  - English Communications Skills for Engineers, offered online by Udemy.[70]

63 https://www.greencountryworks.org/
64 https://www.mynextmove.org/find/apprenticeship
65 https://www.ospe.org/
66 https://www.nspe.org/
67 https://www.newamericaneconomy.org/locations/oklahoma/
68 https://www.coursera.org/learn/stem
69 https://www.coursera.org/specializations/leadership-communication-engineers
70 https://www.udemy.com/course/english-for-engineers/

Educational Resources

- You can learn more about engineering career options and degrees in the "Educational Pathways" section of the World Education Services (WES) Global Talent Bridge Career Pathways in Engineering E-Guide.[71]
- If you decide to pursue training in other fields, you can use the Local Training Finder at Career One Stop.[72]
- The Tulsa Community College ESL Program offers an Intensive English Program (IEP) as well as ESL classes at all levels.[73]
- Some engineers such as Mechanical, Design, Industrial or Product Engineers find they need to have a strong command of Computer Assisted Design (CAD).
- A good command of the US customary units (Imperial system of measurement) and updated computer skills are also key.
- You can find a listing of Oklahoma colleges and universities at: https://www.okhighered.org/state-system/colleges-universities/list.shtml
- See a complete list of all institutions of higher education at: https://sde.ok.gov/higher-ed

Financial Resources

- To learn more about financial aid information in the state of Oklahoma, visit the website of the Oklahoma State Regents for Higher Education at https://www.okhighered.org/.
- The Tulsa Financial Empowerment Center offers one-on-one professional financial counseling at no cost to all residents.[74]

Immigration Services

- The National Immigration Legal Services Directory maintains a list of Oklahoma immigrant service providers.[75]

World Education Services (WES) Resources for Students and Internationally Trained Immigrants

- Webinars covering a variety of topics such as credential evaluation, employment, job search, and skilled immigrants.[76]
- Career Pathways Guides for various career fields in the United States.[77]
- WES Advisor Blog post articles on topics such as credential evaluation, document verification, education, and employment in the United States.[78]
- Free Degree Equivalency Tool can be used to determine what your degree is comparable to in the United States.[79]

71 https://www.wes.org/advisor-e-guides/
72 https://www.careeronestop.org/Toolkit/Training/find-local-training.aspx
73 https://www.tulsacc.edu/admissions-aid/admissions/english-second-language-program-admissions
74 https://www.cityoftulsa.org/fec
75 https://www.immigrationadvocates.org/nonprofit/legaldirectory/search?state=OK
76 https://www.wes.org/partners/events/
77 https://www.wes.org/partners/global-talent-bridge/career-pathways/
78 https://www.wes.org/advisor-blog/
79 https://applications.wes.org/degree-equivalency-tool/

Appendix III: Obtaining a Professional Engineer (PE) License

This section provides general information about obtaining licensing and certification in Oklahoma. The agency in charge of licensing for engineers in Oklahoma is the Oklahoma State Board of Licensure for Professional Engineers and Land Surveyors, also referred to as the "Oklahoma Board" throughout this guide.[80] If you decide to pursue a state license in engineering in Oklahoma, you need to follow the credential evaluation requirements of the Oklahoma Board.

The information presented in this guide should not be considered exhaustive. It is always important to consult the Oklahoma Board for the timeliest and most authoritative guidance.

Oklahoma State Board of Licensure for Professional Engineers and Land Surveyors
Oklahoma Engineering and Design Professionals Center
220 NE 28th St., Suite 120
Oklahoma City, Oklahoma 73105
United States

Website: http://www.pels.ok.gov
Telephone: (405) 521-2874
Fax: (405) 523-2135
Contact list[81]

Brief Overview: Licensing Steps

1. If you currently have an engineering degree, contact the Oklahoma Board to determine if a NCEES credential evaluation is needed.[82]
2. Take and pass the Fundamentals of Engineering (FE) exam administered by NCEES.[83] It may be possible to qualify for a waiver of the FE exam requirement if you have 15 or more years of verifiable engineering experience. Please contact the Oklahoma Board for more information.
3. Complete required engineering work experience (4-6 years). Your past experience outside of the United States can count towards this requirement.
4. Take and pass the Principles and Practice of Engineering (PE) exam administered by NCEES. In Oklahoma, the PE exam can be taken prior to obtaining the required experience.
5. File for a professional license with the Oklahoma Board.

For a more detailed description of the process please see Appendix 4. Detailed Steps of the Licensing Process in Oklahoma.

80 http://www.pels.ok.gov/
81 https://www.ok.gov/pels/About_Us___Contact_Us/Contact_Us/index.html
82 https://ncees.org/records/ncees-credentials-evaluations/
83 https://ncees.org/

Costs of Licensing

Each step in the licensing process has a cost. Costs can vary for each applicant. Below is an overview of some costs associated with licensing. These costs are current as of September 2023.

Item	Approximate Cost
NCEES Evaluation, if needed	$350[84]
Document Translation for Credential Evaluation	Varies
FE exam preparation materials	Varies[85]
FE examination	$175[86]
Register as an Engineer Intern	$0[87]
PE examination	$375[88]
Minimum needed	**$900 or more**

Tips for Licensing

- It is important to follow each step in the correct order, unless otherwise specified.
- There are limits to how many times you can apply, or how long you can take between each step.
  - For example, in Oklahoma, FE examinees will be provided one attempt per testing window and no more than 3 attempts in a 12-month period.
- You can learn about FE and PE exam requirements at https://ncees.org/engineering/#oklahoma.
- You can download a free copy of the NCEES Examinee Guide to learn more about the licensing exam.[89]

84 https://ncees.org/records/ncees-credentials-evaluations/
85 https://account.ncees.org/exam-prep/
86 https://ncees.org/exams/fe-exam/
87 https://www.ok.gov/pels/Applicants/Engineer_Intern_Application/
88 https://ncees.org/engineering/pe/
89 https://ncees.org/exams/examinee-guide/

Appendix IV: Detailed Steps of the Licensing Process in Oklahoma

Below is more detailed information for each step in the licensure process.

Step 1: Complete Qualifying Degree

- Do you already have an engineering degree?
  - YES: See next step below.
  - NO: In Oklahoma, other "related science" degrees may be approved. Contact the Oklahoma Board to see if your degree qualifies.
- Is your degree from an Accreditation Board for Engineering and Technology (ABET) accredited program?
  - To determine if a foreign degree program is accredited, visit ABET-Accredited Program Search Tool.[90]
  - If it is accredited, you are ready to prepare for the Fundamentals of Engineering exam.
- If your degree is not ABET accredited, you may need an NCEES degree evaluation.[91] Consult the Oklahoma Board if a degree evaluation is necessary.
  - If evaluation is needed, schedule a credential review by the National Council of Examiners for Engineering and Surveying (NCEES).[92] Start the evaluation process by creating an online account using MyNCEES.
  - If your transcripts are evaluated by NCEES and the report indicates there are deficiencies in the curriculum, contact the Oklahoma Board for instructions.
    - Although this is not usually required, you may have to redo some coursework at an ABET-accredited engineering or surveying program. Please contact the Oklahoma Board for more information on making up coursework.
      - View a list of ABET accredited programs in Oklahoma.[93]
      - View[94] a list of online programs.

90 https://www.abet.org/accreditation/find-programs/
91 https://www.abet.org/accreditation/what-is-accreditation/what-programs-does-abet-accredit/
92 https://ncees.org/records/ncees-credentials-evaluations/
93 https://accreditation.org/find-accredited-programs/university-search?program_search%5B0%5D=country%3A6&program_search%5B1%5D=country%3A68&program_search%5B2%5D=country%3A79&program_search%5B3%5D=country%3A147&program_search%5B4%5D=state_province%3AOklahoma
94 https://www.abet.org/accreditation/find-programs/

Step 2: Pass the Fundamentals of Engineering (FE) Exam

- The Fundamentals of Engineering (FE) exam is one of the first steps in the process to becoming a professional licensed engineer (P.E.).[95] This exam is administered by NCEES and is only offered in English.
  - In Oklahoma, examinees will be provided with one attempt per testing window and no more than three attempts in a 12-month period.

Step 3: Work Experience

- Once you have passed the FE exam, you can apply with the Oklahoma Board to be certified as an Engineer Intern. View the application here.[96]
- You must complete four years of progressive engineering work experience; six years for an approved related science degree.
  - Work experience can be considered in a variety of ways, including work experience in a foreign country. Consult the Oklahoma Board if your foreign work experience meets the requirement.
- Work experience must be approved and verified by the Oklahoma Board.
- Consult the: "Experience Required to Qualify for P.E. Licensure in the State of Oklahoma" chart for additional details.[97]

Step 4: Pass the Principles and Practice of Engineering (PE) exam.

- The Principles and Practice of Engineering (PE) exam tests for a minimum level of competency in a particular engineering discipline. There are 27 engineering disciplines to choose from when testing. For exam-specific information, visit the NCEES website and select your engineering discipline.[98]
- In most cases, applicants take the Principles and Practice of Engineering Examination after completing the required engineering experience.

Step 5: File for a professional license with the Oklahoma State Board of Licensure for Professional Engineers and Land Surveyors.

- Once you have passed the PE exam and obtained the required experience for licensure, you should complete the application process to become licensed as a Professional Engineer.[99]

95 https://ncees.org/engineering/fe/
96 https://www.ok.gov/pels/documents/EI%20App_Nov%202020_Final.pdf
97 https://www.ok.gov/pels/documents/PE%20and%20PS%20Initial%20Lic%20App%20Update_Feb%202021%20b.pdf
98 https://ncees.org/engineering/pe/
99 https://www.ok.gov/pels/Applicants/Professional_Engineer_and_Professional_Structural_Engineer_(PE,_SE)_Applications/index.html