

PE Certification: Your Guide to Licensure

Introduction to PE Certification

What is a Professional Engineer (PE)?

A Professional Engineer (PE) is an engineer who has been officially licensed by a state board to practice engineering. This license signifies a high level of competence, ethical conduct, and a commitment to public safety. Unlike engineers without a PE license, PEs typically have the legal authority to sign and seal engineering plans, drawings, and reports for public and private clients, taking professional responsibility for their work. This distinction is critical, as much of the work that impacts public infrastructure, health, and safety requires the oversight of a licensed PE.

Why is PE Certification Important?

Obtaining a PE license offers numerous benefits that can significantly advance an engineer's career:

- **Increased Credibility and Authority:** A PE license enhances your professional standing, earning trust from clients, employers, and colleagues. It demonstrates a proven level of competence and adherence to rigorous ethical standards. Only a licensed PE can legally take responsibility for engineering projects that directly impact public safety and welfare.
- **Career Advancement and Leadership Opportunities:** Many senior engineering and management positions require or strongly prefer a PE license. It signals a higher commitment to the profession and the ability to assume greater responsibility, including leadership roles in organizations.
- **Higher Earning Potential:** PEs generally command higher salaries compared to their non-licensed counterparts. Surveys consistently show a significant salary differential for licensed engineers.
- **Enhanced Job Security and Flexibility:** The demand for licensed engineers remains strong, providing greater job security. A PE license also offers more flexibility, allowing you to work across different industries, start your own consulting firm, or even work as a subject matter expert.
- **Professional Development:** The journey to licensure, and the ongoing continuing education requirements, foster a commitment to lifelong learning and professional growth.

The Licensing Process Overview

The path to becoming a licensed Professional Engineer typically involves four key steps, often referred to as the "4 Es":

1. **Education:** Obtain a bachelor's degree in engineering from an ABET-accredited program.
2. **FE Exam (Fundamentals of Engineering):** Pass the NCEES Fundamentals of Engineering (FE) exam, typically taken during or shortly after graduation. This qualifies you as an Engineer-in-Training (EIT) or Engineer Intern (EI).
3. **Experience:** Accumulate the required amount of progressive, verifiable engineering work experience (typically four years, under the supervision of a licensed PE).
4. **PE Exam (Principles and Practice of Engineering):** Pass the NCEES Principles and Practice of Engineering (PE) exam in your chosen engineering discipline.

Important Note on State-Specific Variations:

It's crucial to remember that specific requirements can vary significantly by state (or U.S. territory). While the NCEES sets the national standards for the exams, each state's engineering licensing board has its own rules regarding education, experience, application procedures, and continuing education. **Always consult your state's engineering licensing board for the most accurate and up-to-date information.**

The Road to Licensure: Education and Examinations

1. Education Requirements

The foundational step to PE licensure is obtaining an engineering degree from an accredited program.

- **ABET Accreditation:** Most state licensing boards require a bachelor's degree from an engineering program accredited by the **Accreditation Board for Engineering and Technology (ABET)**. ABET accreditation ensures that a program meets specific quality standards and prepares graduates for professional practice. You can check your program's accreditation status on the ABET website.
- **Non-ABET Degrees:** If your degree is not from an ABET-accredited program, you are still eligible for licensure, but it could require a different pathway. These pathways can be different from State to State. Some states may even require an evaluation of your academic credentials through NCEES's Credentials Evaluations service.

2. The Fundamentals of Engineering (FE) Exam

The FE exam is generally the first step in the licensure process and is typically taken by students in their final year of an ABET-accredited engineering program or by recent graduates.

- **Purpose:** The FE exam assesses your understanding of fundamental engineering principles across various disciplines. Passing this exam designates you as an **Engineer-in-Training (EIT) or Engineer Intern (EI)**, a crucial stepping stone towards the PE license.

- **Format:** The FE exam is a computer-based test (CBT) administered year-round at NCEES-approved Pearson VUE test centers. It is a single 5-hour and 20-minute session, including a tutorial, a scheduled break, and the exam itself. The exam consists of 110 multiple-choice questions.
- **Disciplines:** The FE exam is offered in several discipline-specific versions, including:
 - Chemical
 - Civil
 - Electrical and Computer
 - Environmental
 - Industrial and Systems
 - Mechanical
 - Other Disciplines (general engineering)
- **Registration:** You register for the FE exam through your MyNCEES account on the NCEES website. The exam fee is payable directly to NCEES.
- **Study Resources:** NCEES provides various resources for the FE exam, including:
 - **FE exam specifications:** Details the topics covered for each discipline.
 - **Reference handbooks:** The only allowed reference material during the exam. Familiarize yourself with it!
 - **Practice exams:** Available for purchase from NCEES.

3. The Principles and Practice of Engineering (PE) Exam

The PE exam is the second and final examination required for licensure. It is designed for engineers who have gained at least four years of progressive work experience in their chosen engineering discipline.

- **Purpose:** The PE exam evaluates an engineer's competency in a specific discipline, assessing their ability to apply engineering principles to practical problems and make sound professional judgments.
- **Format:** Most PE exams are computer-based (CBT) and administered year-round at NCEES-approved Pearson VUE test centers. The exam appointment time is typically 8.5 to 9.5 hours, including a tutorial, scheduled break, and the exam. The exams consist of 80 multiple-choice questions, which may include alternative item types (AITS) such as drag-and-drop, point-and-click, and fill-in-the-blank.
- **Disciplines:** NCEES offers PE exams in 27 different disciplines, such as:
 - Civil (Construction, Geotechnical, Structural, Transportation, Water Resources & Environmental)
 - Electrical and Computer (Computer Engineering, Electronics, Controls, and Communications, Power)
 - Mechanical (HVAC and Refrigeration, Machine Design and Materials, Thermal and Fluids Systems)
 - ...and many more specialized fields.
- **Registration:** Similar to the FE, registration for the PE exam is done through your MyNCEES account. The exam fee is payable to NCEES (currently around \$400). **Note:** Many state licensing boards require a separate application and fee for approval to

qualify for the exam *before* you can register with NCEES. Check your state board's specific process.

- **Study Resources:** NCEES provides exam specifications, reference handbooks, and practice exams for the PE exams. Many third-party review courses and study materials are also available (see Page 5).

Tips for Exam Preparation:

- **Create a Study Plan:** Develop a realistic study schedule and stick to it.
- **Familiarize Yourself with the Handbook:** For CBT exams, the NCEES reference handbook is your only resource. Practice using it effectively.
- **Work Practice Problems:** The best way to prepare is to solve a large volume of practice problems.
- **Consider a Review Course:** For the PE exam, a structured review course can provide guidance, accountability, and access to experienced instructors.

4. Engineering Work Experience

Accumulating qualifying engineering experience is a critical component of the PE licensure process. This experience typically occurs *after* passing the FE exam and earning your engineering degree.

- **General Requirements:** Most state licensing boards require a minimum number of years of **progressive and verifiable engineering work experience** for applicants with an ABET-accredited bachelor's degree. The exact duration can vary by state, and some states may accept less experience for those with a master's or Ph.D. (e.g., 12 months to 1 year deduction).
- **Supervision by a Licensed PE:** A crucial aspect of qualifying experience is that it must be gained under the **direct, active, and responsible supervision of a licensed Professional Engineer (PE)**. This supervisor is responsible for guiding your work, providing oversight, and ultimately verifying your experience to the state board. If you work for a company where your direct supervisor is not a PE, you may need to identify another PE within the organization who can oversee and vouch for your engineering work. This requirement can vary from State to State.
- **Nature of Experience:** The experience must involve the meaningful application of engineering principles. It should demonstrate a progression of engineering competencies and responsibilities, moving beyond rote tasks to include:
 - Engineering design
 - Engineering calculations and analysis
 - Planning for engineering works
 - Preparation and review of engineering plans and specifications
 - Problem-solving and critical thinking in engineering contexts
 - Decision-making that impacts the public's safety and welfare
- **Documenting Your Experience:** When applying for licensure, you will need to provide detailed documentation of your work experience. This typically includes:

- A statement from you describing your roles, responsibilities, projects, and the engineering principles applied. Be specific and use strong action verbs.
- Verification by your supervisor(s) (who must be PEs) attesting to the nature and extent of your experience. They will often be required to sign off on your experience record and potentially answer questions from the board.
- Maintaining thorough records of your projects, reports, drawings, and any other relevant work throughout your career is highly recommended.
- **Qualifying vs. Non-Qualifying Experience:** Not all work in an engineering company qualifies. For example:
 - **Qualifying:** Design work, analysis, fieldwork, lab work, manufacturing process improvements, research, and development **under the supervision of a PE.**
 - **Non-Qualifying (generally):** Routine drafting, equipment selection from catalogs, sales work that doesn't involve applying engineering principles, or purely administrative tasks.

Tips for Documenting Your Experience:

- **Start Early:** Don't wait until you're ready to apply. Keep a running log of your projects, tasks, and responsibilities from day one of your post-graduation employment.
- **Be Specific and Quantify:** Instead of "worked on a project," write "Designed the HVAC system for a 10-story commercial building, resulting in a 15% energy efficiency improvement." Use numbers and metrics whenever possible.
- **Focus on Engineering Judgment:** Highlight instances where you made engineering decisions, analyzed alternatives, and solved complex problems.
- **Emphasize Progression:** Show how your responsibilities increased over time, demonstrating a growing level of expertise and autonomy.
- **Communicate with Your Supervisor:** Discuss your desire for PE licensure with your supervisor. Ask them to help you gain qualifying experience and ensure they are prepared to verify your work when the time comes.

The Importance of Early Planning

It's advisable to start documenting your engineering experience from day one of your post-graduation employment. Keep detailed records of your projects, reports, drawings, and any other relevant work throughout your career. This proactive approach will streamline the application process when you are ready to apply for the PE exam and licensure. Many states allow you to apply for approval to sit for the PE exam while still accumulating your final months of experience.

Applying for Licensure & Maintaining Your PE

Applying for Licensure

Once you have satisfied the education, FE exam, and experience requirements, you can officially apply for your PE license with a State engineering licensing board. **The State you apply for the license has no connection to your State of residence.** You can apply to any State Board irrespective of whether you reside in the State you are applying in or not!

- **State-Specific Application:** Each state has its own licensing board and specific application procedures. **It is crucial to visit your state board's website to download the application forms and understand their unique requirements.**
 - **Finding Your State Board:** A comprehensive directory of all state licensing boards can be found on the NCEES website:
<https://ncees.org/about/member-licensing-board-directory/>
- **Required Documentation:** The application typically involves:
 - Completed application form.
 - Official transcripts from your university (proving ABET-accredited degree).
 - Proof of passing the FE exam (NCEES records will typically suffice).
 - Detailed experience record, often requiring supervisor verification and signatures from licensed PEs.
 - Professional references from licensed PEs (often 3-5 references are required).
 - Payment of application and licensure fees.
 - Background check and potentially a state-specific ethics exam or jurisprudence exam (testing knowledge of state laws and board rules).
- **Review Process:** The state board will review your application thoroughly to ensure all requirements are met. This process can take several weeks to months, depending on the state board's workload and the completeness of your application.
- **Approval and Licensure:** Upon approval, you will be issued your Professional Engineer license, allowing you to legally practice engineering and use the "PE" designation after your name.

Maintaining Your PE License: Continuing Professional Competency (CPC)

Obtaining your PE license is a significant achievement, but it's not a one-time event. To maintain your licensure, you are generally required to participate in continuing professional competency (CPC) activities, often measured in Professional Development Hours (PDHs).

- **Purpose:** CPC requirements ensure that PEs remain current with advancements in engineering, maintain technical proficiency, and adhere to ethical standards. This commitment to lifelong learning helps protect the public.
- **PDH Requirements:**
 - Most states require a certain number of PDHs to be earned during each renewal cycle, which is typically every one to two years.
 - The number of PDHs varies by state, but a common range is 10 to 15 PDHs per year (or 20-30 PDHs for a two-year cycle).
 - Some states may have specific requirements for ethics hours or hours related to state laws and regulations.
- **Qualifying Activities:** PDHs can be earned through a variety of activities, including:

- Completing online courses or webinars (many provided by professional societies or specialized training companies)
- Attending workshops, seminars, and conferences
- Participating in technical society meetings
- Publishing technical papers or articles
- Obtaining new patents
- Teaching relevant engineering courses
- Active participation in professional engineering societies
- **Record Keeping:** It is your responsibility to keep accurate records of your PDH credits, including course titles, dates of completion, and the number of credits earned. State boards typically require you to retain these records for several years (e.g., 4-6 years) in case of an audit. NCEES offers a free CPC Tracking service through your MyNCEES account. However, this is also a State specific requirement: some states do not require PDHs to be recorded or submitted.
- **Renewal:** Licenses must be renewed periodically, along with the submission of documented PDHs (if required) and payment of renewal fees. Failure to comply with CPC requirements or timely renewal can lead to the lapse or suspension of your license.

Comity (Reciprocity) for Multi-State Practice

If you plan to practice engineering in multiple states, you can often obtain licenses in other jurisdictions through a process called **comity** (also known as reciprocity or endorsement). This means that you apply for the license in a new State based on the existing PE license. **Typically this means that you will not need** to redo many of the requirements that you fulfilled to gain the original license.

- **NCEES Records:** NCEES facilitates this process by maintaining an **NCEES Record**. This is a verified compilation of your academic transcripts, exam results, employment history, and professional references. Having an NCEES Record can significantly expedite the comity application process, as you transmit your pre-verified information directly to other state boards.
 - **NCEES Records Program:** <https://ncees.org/ncees-services/records-program/>
- **State-Specific Requirements:** While NCEES streamlines the process, each state board still has the final say and may have additional requirements, such as a jurisprudence exam or a specific number of PDHs related to their state's laws and regulations.

BEST PRACTICE: If you would like to use the **comity** process, it is best to keep all your records within MYNCEES instead of directly submitting evidence to the State Licensing Board and keeping this information updated. This is because the verified information in the MYNCEES record can be used by any State Licensing board, and you will only need to do this once. If you did not use MYNCEES, then you will have to submit the documents and verify it with each and every State board separately every single time.

Useful Links, Study Resources & Key Takeaways

Useful Links:

- **National Council of Examiners for Engineering and Surveying (NCEES):** Your primary resource for exam information, registration, reference handbooks, and records.
 - Website: <https://ncees.org/>
 - FE Exam Info: <https://ncees.org/exams/fe-exam/>
 - PE Exam Info: <https://ncees.org/exams/pe-exam/>
 - Member Licensing Board Directory: <https://ncees.org/about/member-licensing-board-directory/>
- **ABET (Accreditation Board for Engineering and Technology):** Verify the accreditation of your engineering program.
 - Website: <https://www.abet.org/>
- **National Society of Professional Engineers (NSPE):** A great resource for ethical guidance, advocacy, and professional development.
 - Website: <https://www.nspe.org/>
- **State Engineering Licensing Boards:** Always consult your specific state's board. Find contact information via the NCEES Member Licensing Board Directory.

Study Resources for the FE and PE Exams:

Preparing for the FE and PE exams requires dedicated effort. Here are some valuable resources:

- **NCEES Official Resources:** As mentioned, these are indispensable.
 - Exam Specifications: Detail the topics covered for each exam.
 - Reference Handbooks: Your only allowed reference during CBT exams.
 - Practice Exams: Mimic the actual exam experience.
- **Review Courses:** Many reputable organizations offer comprehensive review courses, both online and in-person, for the FE and PE exams. These courses often provide structured learning, practice problems, and expert instruction. Popular providers include:
 - **PPI (Professional Publications, Inc.):** Offers widely used reference manuals and practice problems.
 - **Kaplan Engineering:** Provides various study materials and courses.
 - **University Extension Programs:** Many universities offer PE/FE exam review courses.
- **Textbooks and Study Guides:** Numerous textbooks and study guides are available from various publishers that focus on specific exam disciplines. Check Amazon, professional society bookstores, or engineering supply retailers.
- **Online Forums and Study Groups:** Connecting with other aspiring PEs in online forums (e.g., Reddit's r/PE_Exam) or local study groups can provide support, share insights, and help clarify challenging concepts.
- **Professional Engineering Societies:** Many discipline-specific societies (see below) offer study materials, webinars, and review courses tailored to their field.

Professional Engineering Societies (Examples):

Joining a professional engineering society can offer valuable networking, continuing education, and advocacy opportunities.

- **American Society of Civil Engineers (ASCE)**
 - **American Society of Mechanical Engineers (ASME)**
 - **Institute of Electrical and Electronics Engineers (IEEE)**
 - **American Institute of Chemical Engineers (AIChE)**
 - **American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)**
 - **Society of Fire Protection Engineers (SFPE)**
 - **Institute of Transportation Engineers (ITE)**
 - **National Society of Professional Engineers (NSPE)** - An umbrella organization for all engineering disciplines, focusing on licensure and ethics.
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Navigating the PE Licensure Path

This section provides practical use cases to illustrate the PE licensure process for candidates with diverse backgrounds, focusing on the requirements in California and South Carolina as examples.

Use Case 1: Candidate with a Foreign (Non-ABET Accredited) Degree

Scenario: An engineer with a bachelor's degree in civil engineering from a university outside the United States wants to become a licensed PE in South Carolina. This process is illustrated in Figure 1.

Process Overview:

1. **Create NCEES Account:** The first step for all candidates is to create a MyNCEES account.
2. **FE Exam:** Once the profile is created in myNCEES the FE exam can be paid for, and then scheduled.
3. **Degree Transcripts:** The degree transcripts have to be submitted from the original Educational institute directly to NCESS either electronically or via post.
4. **Degree Evaluation:** Since the degree is not ABET-accredited, the candidate must have their educational credentials evaluated by NCEES. This evaluation will determine if their education is substantially equivalent to an ABET-accredited degree program. All past

degree transcripts must be sent directly from the university to NCEES. The Degree evaluation (activation in the website) can only be purchased after the transcripts are received and validated by the NCEES. The degree evaluations will require submission of the full curriculum as well. This will require translation if the curriculum is not written in English.

5. **Work Experience:** For South Carolina, a candidate will generally need to accumulate four years of progressive engineering experience under the supervision of a licensed PE.
6. **State-Specific Requirements:** The candidate must meet all other South Carolina board requirements, which may include fingerprinting and a background check.
7. **PE Exam:** Once the experience and other board requirements are met, the candidate can apply for approval to sit for the PE exam. After passing the PE exam, the board will grant the PE license.

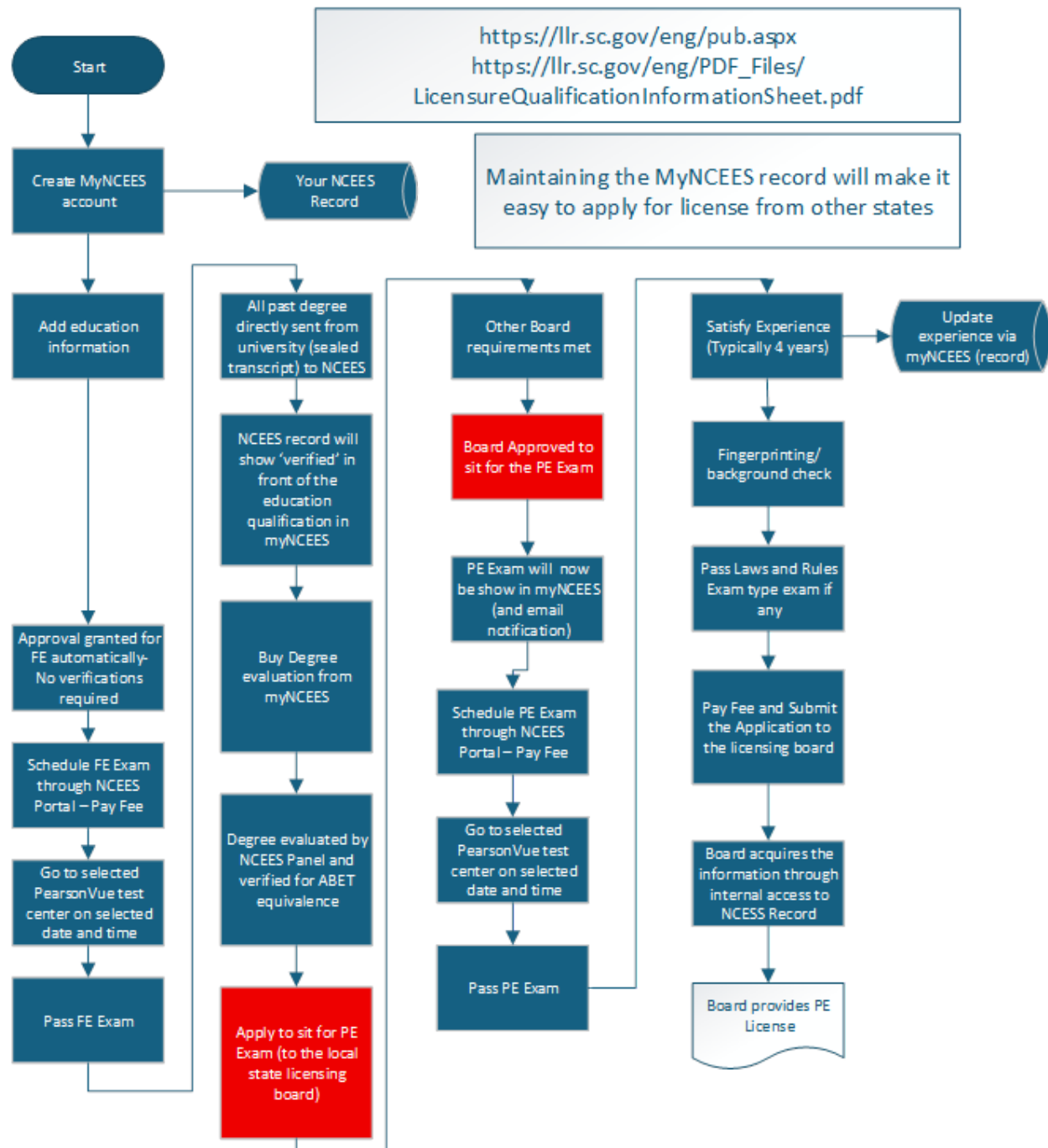


Figure 1: Process Flowchart for South Carolina

Use Case 2: Candidate with a PhD in California

Scenario: An engineer has a PhD in Electrical Engineering and one year of work experience. They wish to get their PE license in California. This process is illustrated in Figure 2.

Process Overview:

California offers a distinctive path for candidates (since their requirements center around educational credits) with a PhD/MSc degree. This is an expedited path that is typically available in other States. If you do not have preference (and a requirement) on a specific State for Licensing, California can be one of the best States to get your licensing from. Their application systems are all online, processes are highly efficient and there is a great support system from the administrators of the California Licensing Board towards the applicants.

1. **FE Exam Waiver:** In California, having a PhD in engineering may make you eligible to waive the FE exam requirement. You can request an FE waiver.
2. **Create NCEES Account and Record:** The candidate will still need to create a MyNCEES account and an NCEES Record. The NCEES Record will compile their education, work experience, and references.
3. **Claim Education Credit:** The candidate can claim education credit for their PhD, which will reduce the amount of required work experience. In many cases, a PhD can be credited for up to 5 years of the required experience, meaning only one additional year of work experience may be needed.
4. **State Application:** The candidate must apply directly to the California Board for Professional Engineers, Land Surveyors, and Geologists (BPELSG). BPELSG will access the candidate's information through their NCEES Record.
5. **California-Specific Exams:** The candidate will need to pass a California-specific Laws and Rules exam.
6. **PE Exam:** The candidate must still pass the Principles and Practice of Engineering (PE) exam in their discipline. However, unlike most States, there are no requirements to get approval from the Board to take the PE exam. The only requirement is to pass the FE exam and the MYNCEES portal will then automatically activate the portion to buy and schedule the PE Exam.
7. **Licensure:** After passing the PE exam and meeting all other state requirements including fingerprinting, BPELSG will issue the PE license.

NOTE 1: If the applicant bypasses the NCEES Record path, then there is no requirement to submit all their degree transcripts or evaluate credentials. Your only requirement is to submit your final degree (Say Masters or PhD) gained from USA. You can easily do this by transmitting your transcript electronically with minimal effort.

NOTE 2: To satisfy the experience requirements you only need to have 1 year of experience after gaining your degree. This 1 year has to be after your graduation date on your degree certificate (not degree requirement completion date in your transcript)

NOTE 3: However, if you do this, you will not have the information in MYNCEES and the longer path will have to be repeated if you ever need to apply for COMITY license from another State with a different requirement.

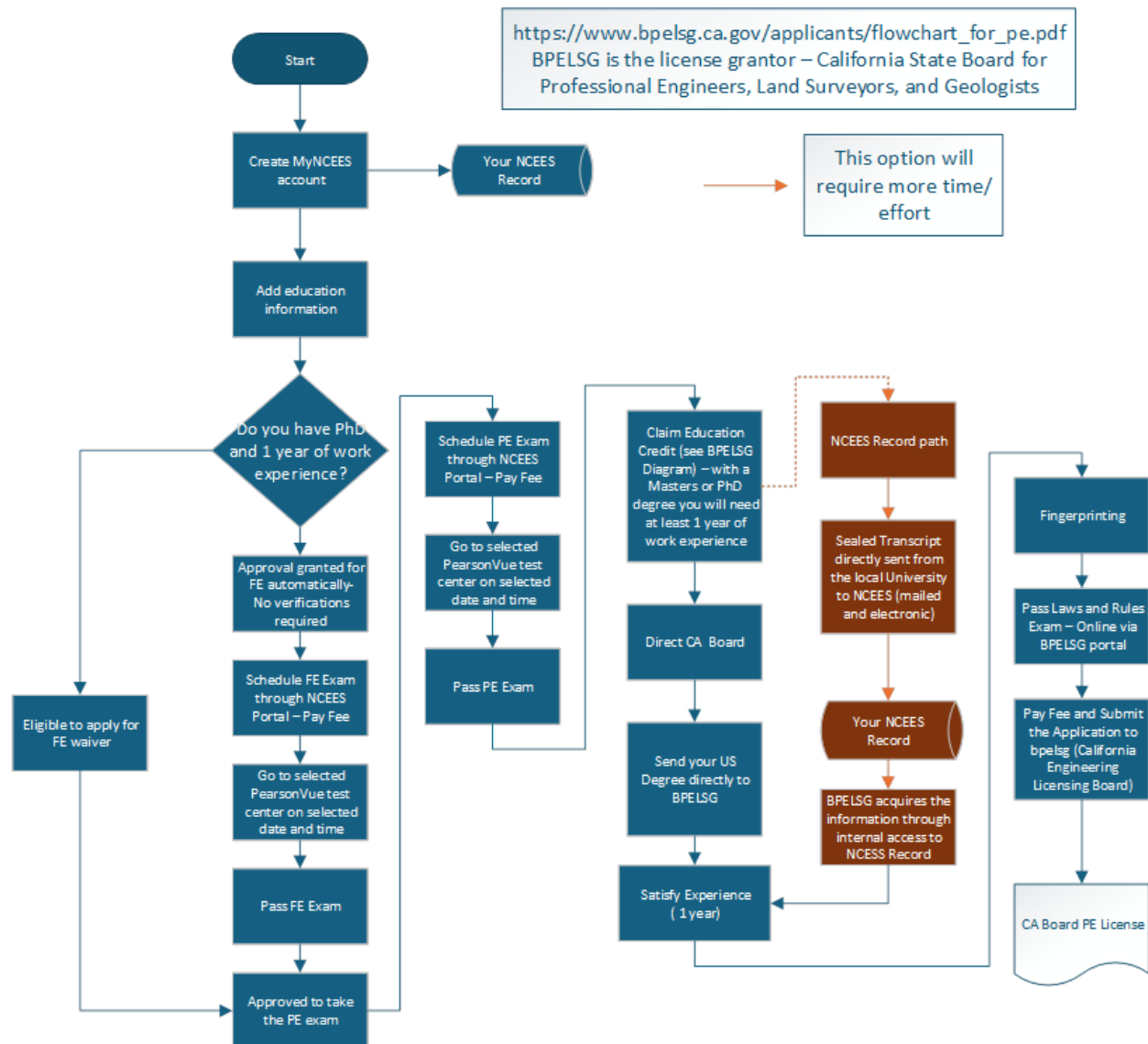


Figure 2: Process Flowchart for California

Frequently Asked Questions (FAQ)

Q1: What is the first step I should take to get my PE license?

The first step for any aspiring PE is to create a MyNCEES account on the National Council of Examiners for Engineering and Surveying (NCEES) website. This will be your portal for exam registration and, in many cases, for managing your license application materials.

Q2: What is ABET accreditation and why is it important?

ABET (Accreditation Board for Engineering and Technology) accreditation ensures that an engineering program meets high-quality standards. Most state licensing boards require a bachelor's degree from an ABET-accredited program. If your degree is not ABET-accredited, you will likely need to undergo a credentials evaluation and accumulate more years of work experience.

Q3: Can I take the FE and PE exams at any time?

Yes, both the FE and PE exams are computer-based tests (CBT) and are administered year-round at NCEES-approved Pearson VUE test centers. You can register for the exams through your MyNCEES account.

Q4: What kind of work experience qualifies for licensure?

Qualifying experience must involve the application of engineering principles and show a progression of responsibility. This includes tasks like engineering design, calculations, analysis, and problem-solving. Work that is purely administrative or does not require engineering judgment, such as routine drafting or sales, generally does not qualify.

Q5: What are Professional Development Hours (PDHs)?

PDHs are credits earned for continuing professional competency (CPC) activities that are required to maintain your PE license. Most states require a certain number of PDHs (often 10-15 per year) to be completed during each renewal cycle. These can be earned through activities like attending seminars, taking courses, or publishing technical papers.

Key Takeaways

- **Start Early:** Begin planning for your PE license early in your engineering career. This includes taking the FE exam soon after graduation and meticulously documenting your work experience.
- **Know Your State's Requirements:** Licensing requirements vary by state. Always consult your specific state's engineering licensing board for the most accurate and up-to-date information.
- **Leverage NCEES Resources:** NCEES is the primary organization that develops and administers the FE and PE exams. Their website (ncees.org) is an invaluable resource for exam specifications, registration, and other important information.
- **Commit to Continuous Learning:** The PE license is not a one-time achievement. Be prepared for ongoing continuing education to maintain your licensure and stay current in your field.

- **Networking Matters:** Connect with licensed PEs in your field. They can provide mentorship, guidance, and even serve as references for your licensure application. Join professional societies.
- **The Value is Immense:** While the path to PE licensure requires dedication and effort, the professional recognition, career opportunities, and increased earning potential make it a highly worthwhile endeavor for any aspiring professional engineer.

Becoming a Professional Engineer is a testament to your technical competence, ethical commitment, and dedication to the engineering profession. It opens doors to greater responsibility, influence, and ultimately, a more fulfilling career. Good luck on your journey!