

Fundamentals of Engineering Exam (FE)

In the United States, the **Fundamentals of Engineering exam** (also known as the **FE exam**) is the first of two examinations engineers must pass in order to be certified as a Professional Engineer. It is open to anyone who has a degree in engineering or a related field, or is in their last year of an ABET-accredited engineering degree program. The exam is administered by the National Council of Examiners for Engineering and Surveying (NCEES).

The exam is eight hours long altogether, split into two four-hour sessions with a 30 minute lunch break in between. However, one hour passes between when time is called for the morning session to end until the classroom doors are closed for the afternoon session. This accounts for the time required to collect the morning exam and pass out the afternoon. The admittance time for the morning exam is typically around 7:15 A.M. Students are encouraged to arrive at the testing location as close as possible to this time. Failure to appear before the 7:45 A.M. starting time will result in the student being turned away from the testing site. As well, admittance time for the afternoon session is around 12:30 P.M., with testing room doors closing around 12:45 P.M.

The morning session is a 120-question general exam for which all examinees must sit, while the afternoon session consists of 60 questions and is more discipline-oriented, and far more difficult than the morning session. For this second half, examinees choose one of the following seven tests: chemical engineering, civil engineering, environmental engineering, electrical engineering, mechanical engineering, industrial engineering, or general engineering (similar in content to the morning exam, but far more detailed). The choice does not have to be made in advance, but rather on the day of the test.

Writing tools and scratch paper may not be brought to the testing site. Mechanical pencils are issued to all examinees, and the test booklet may be used as scratch paper for working problems. No calculators are allowed except for those specifically approved by NCEES and listed below; these models have no programming or communications capabilities which could allow people to cheat. The only reference material that may be used is the

fundamentals of engineering handbook, which is issued to examinees with the morning portion (the reference manual stays in the exam room during the lunch period for use during the afternoon portion). Examinees can obtain a copy of the handbook prior to the exam, either by downloading from the NCEES website, or purchasing a hard copy. This can aid examinees during preparation for the exam, as sections can be familiarized.

A scaled score of 70 is required to pass the exam. This does not mean one needs to answer 70% of the answers correctly to pass, however. A portion of previous exam questions are then given on subsequent exams. After the exam, a statistical analysis of these questions is used to equate the new test to the benchmark test. This makes all of the tests more or less equal in difficulty.

Those who pass the exam are designated Engineer In Training or given an equivalent designation, such as Engineer Intern, by their state's licensure board for engineers, and are partway through the certification process. After completing an apprenticeship (the length of which is set by state law and based on the type of degree received) an EIT may qualify to take the Professional Engineer (PE) exam. Certification is awarded upon successful completion of the PE exam. The standard time of apprenticeship under a Professional Engineer is 5 years of work experience for graduates of an ABET-accredited engineering program.

Calculator Policy

In order to prevent an examinee from gaining an unfair advantage, NCEES allows **only** the following calculators to be used on the Fundamentals of Engineering Exam

Casio fx-115

Hewlett Packard HP 33s and HP 35s

Texas Instruments TI-30X and TI-36x

The calculator must clearly display its model number so that exam proctors can quickly identify the calculator is approved for use during the exam. The list of allowed calculators is revised each November. It is crucial that any examinee check the NCEES website to verify their calculator is acceptable. Absolutely no other calculators are allowed.