



***Fundamental of Engineering
Examination
Review Sessions***

Introduction





Coordinator of the Review Sessions

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Fundamental of Engineering Examination -- Outline

- **Computer Based Testing**



Why take the FE Exam?

➤ **Employment**

- State agencies requires FE certification

➤ **Pursue PE license**

- Regulations established by state licensing boards
- General requirements
 - » Graduate from an ABET-accredited engineering program
 - » Pass FE exam
 - » Obtain 4 or more years of engineering experience (some credit given for advanced engineering degree)

➤ **Professional Career Advancement**



LAPELS Rule §1509

- **LAPELS recently changed rule § 1509 effective July 20, 2014**
 - allowing Engineer Interns to take PE exam any time subsequent to becoming certified as an EI with Louisiana Professional Engineering and Land Surveying (LAPLES).
- **Is there a risk associated with “early taking” ?**
 - Maybe
 - some states will not accept a PE exam taken before 4 years of experience are gained.
 - if you thinks of moving to another state in future
 - » Check state board’s position on this issue
- **LAPLES PE licensure “early taker”**
 - required to have passed both the FE and PE exams,
 - gained 4 years of progressive engineering experience.



Review Session Overview

- **Review of subjects covered on FE Exam**
- **Moodle**
 - COE FE Review Session
 - Recording of Topics
 - Example problems
 - You may contact instructors to answer questions



Review Session Topics

TOPIC COVERED	INSTRUCTOR	CONTACT
Introduction	Mohammad	louaym@lsu.edu
Statics	Moorthy	moorthy@lsu.edu
Fluid Mechanics	Tsai	ftsai@lsu.edu
Strength of Materials	Moorthy	moorthy@lsu.edu
Dynamics	Waggenpack	mewagg@lsu.edu
Math	Zhang	hozhang@math.lsu.edu
Probability and Statistics	Knapp	gknapp@lsu.edu
Electrical Engineering	Farasat	mfarasat@lsu.edu

Exam Administration

- NCEES administers CBT
 - at approved Pearson VUE test centers
- NCEES Examinee Guide – 38 Pages
 - http://ncees.org/wp-content/uploads/2015/07/ExamineeGuide_6-17-16_.pdf

CONTENTS

OVERVIEW 1

COMPUTER-BASED EXAMS 2

- Fundamentals of Engineering (FE)
- Fundamental of Surveying (FS)
- Principles and Practice of Surveying (PS)

PENCIL-AND-PAPER EXAMS 13

Structural Engineering (SE)	PE (continued)
Principles and Practice of Engineering (PE)	Fire Protection
Agricultural and Biological Engineering	Industrial and Systems
Architectural Engineering	Mechanical (all modules)
Chemical	Metallurgical and Materials
Civil (all modules)	Mining and Mineral Processing
Control Systems	Naval Architecture and Marine Engineering
Electrical and Computer: Computer Engineering	Nuclear
Electrical and Computer: Electrical and Electronics	Petroleum
Electrical and Computer: Power Environmental	Software Engineering

APPENDIX 22



www.ncees.org

NCEES EXAMINEE GUIDE

DECEMBER 2014

Reference Materials

➤ NCEES FE Supplied Reference Handbook

- free download
- Register or log in to [MyNCEES](#) to download your free copy of the [FE Reference Handbook](#)
- <https://account.ncees.org/login>

Have a MyNCEES Account?

Login

[Forgot your password?](#)

Don't have a MyNCEES Account?

Create an account

Reference Materials

- **NCEES FE Supplied Reference Handbook**
 - free download
 - Register or log in to [MyNCEES](https://my.ncees.org) to download your free copy of the [FE Reference Handbook](#)
 - <https://account.ncees.org/login>
- **Familiarize yourself with e-version of hand book prior to test**
 - <http://ncees.org/engineering/fe/>

FE exam

The Fundamentals of Engineering (FE) exam is generally your first step in the process of becoming a professional licensed engineer (P.E.). It is designed for recent graduates and students who are close to finishing an undergraduate engineering degree from an EAC/ABET-accredited program. The FE exam is a computer-based exam administered year-round at [NCEES-approved Pearson VUE test centers](#).

The FE exam includes 110-questions. The exam appointment time is 6 hours long and includes

- Nondisclosure agreement (2 minutes)
- Tutorial (8 minutes)
- Exam (5 hours and 20 minutes)
- Scheduled break (25 minutes)

Learn more at the [NCEES YouTube channel](#).

Register for an FE exam by logging in to your [MyNCEES](#) account and following the onscreen instructions. Prepare for the FE exam by

- Reviewing the FE exam specifications, fees, and requirements
- Reading the reference materials
- Understanding scoring and reporting
- Viewing the most up-to-date FE exam pass rates

A \$175 exam fee is payable directly to NCEES. Some licensing boards may require you to file a separate application and pay an application fee as part of the approval process to qualify you for a seat for an NCEES exam. Your licensing board may have additional requirements. [Special accommodations](#) are available for examinees who meet certain eligibility criteria and sufficiently document their request.

Exam specifications

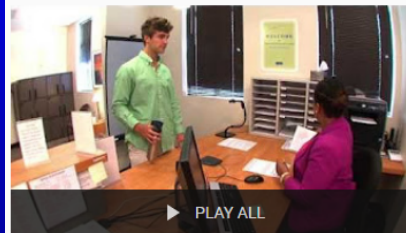
The FE is offered in seven disciplines. Specifications for the exams are as follows:

- [FE Chemical \(PDF\)](#)
- [FE Civil \(PDF\)](#)
- [FE Electrical and Computer \(PDF\)](#)
- [FE Environmental \(PDF\)](#)
- [FE Industrial and Systems \(PDF\)](#)
- [FE Mechanical \(PDF\)](#)
- [FE Other Disciplines \(PDF\)](#)

Reference Materials

➤ Learn -- NCEES YouTube channel

- Explore the computer-based exam experience
- <https://www.youtube.com/playlist?list=PLiZ0hjHNI9jzR8RW69ndkjlqH8bj0ew->
- Pearson VUE exam-day experience
- How to search onscreen NCEES reference handbook
- Pearson VUE reusable booklet
- How to flag items for review
- Onscreen calculator for CB exams
- Computer-based testing hotkeys
- Managing your time on exam day



Explore the computer-based exam experience

8 videos • 526,348 views • Last updated on Jul 13, 2017






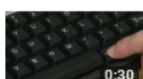



NCEES has provided a video series that introduces examinees to the exam-day experience for the new computer-based Fundamentals of Engineering and Fundamentals of Surveying exams.



NCEES Media

SUBSCRIBE

-  **Pearson VUE exam-day experience**
NCEES Media
4:36
-  **How to search the onscreen NCEES reference handbook**
NCEES Media
0:32
-  **Pearson VUE reusable booklet**
NCEES Media
0:28
-  **How to flag items for review**
NCEES Media
0:31
-  **Onscreen calculator for computer-based exams**
NCEES Media
0:25
-  **Computer-based testing hotkeys**
NCEES Media
0:30
-  **Managing your time on exam day**
NCEES Media
0:50




Eligibility

- Register for the exam directly with NCEES
 - <https://account.ncees.org/login>
 - Current Exam fee: \$175 Paid directly to NCEES
 - » Check website for cancelation/re-fund policy



FE CBT Exam Specifications

- **Greater scheduling flexibility year-round.**
 - Exams will be administered 175 days a year
 - Monday through Friday
 - **Test can be taken up to 3 times in a twelve month period and, but only once per testing window**
 - **Effective January 1, 2016**
 - Year-Round Testing (January – December)
 - Testing Windows: four quarters of the year.
 - » January – March
 - » April – June
 - » July – September
 - » October - December
 - **Best time available: Register as far in advance as possible**
 - **Fifteen available seats per testing session.**
 - **Results (P/F): e-mail notification from NCEES within 7-10 days.**
- 


FE Exam specifications

- Total Duration of Exam: 6:00
 - Nondisclosure agreement: 0:02
 - Tutorial: 0:08 minutes
 - Exam length: 5:20
 - Scheduled Break: 0:25

- Test make up
 - 7 Discipline Specific Exams: <http://ncees.org/exams/fe-exam/>
 - » Chemical
 - » Civil
 - » Electrical/ Computer
 - » Environmental
 - » Industrial
 - » Mechanical
 - » Others
 - 110 multiple choice questions and *alternative item types (check website)*
 - Passing score
 - Expert committee
 - Level of performance
 - » Corresponds with minimal competence in that discipline



Discipline Specific Specifications can be found at:

- **Chemical**
 - http://cbt.ncees.org/wp-content/uploads/2013/01/FE-Chem-CBT_with-ranges.pdf
 - **Civil**
 - http://cbt.ncees.org/wp-content/uploads/2013/01/FE-Civil-CBT-specs_with-ranges.pdf
 - **Electrical and Computer**
 - http://cbt.ncees.org/wp-content/uploads/2013/01/FE-Ele-CBT-specs_with-ranges.pdf
 - **Environmental**
 - http://cbt.ncees.org/wp-content/uploads/2013/01/FE-Env-CBT-specs_with-ranges.pdf
 - **Industrial**
 - http://cbt.ncees.org/wp-content/uploads/2013/01/FE-Ind-CBT-specs_with-ranges.pdf
 - **Mechanical**
 - http://cbt.ncees.org/wp-content/uploads/2013/01/FE-Mec-CBT-specs_with-ranges.pdf
 - **Other Disciplines**
 - http://cbt.ncees.org/wp-content/uploads/2013/01/FE-Other-CBT-specs_with-ranges.pdf
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or we can put this:

<http://cbt.ncees.org/major-domains-for-the-fe-exams-beginning-in-2014/>

This is the website that lists the links for each discipline spec

Student, 6/21/2013

***FE Exam specifications – Example of
Industrial***

FE Exam specifications

Discipline						
Chemical	Civil	Electrical	Environmental	Industrial	Mechanical	Other
Mathematics	Mathematics	Mathematics	Mathematics	Mathematics	Mathematics	Mathematics and Advanced Engineering Mathematics
Probability and Statistics	Probability and Statistics	Probability and Statistics	Probability and Statistics	Engineering Sciences	Probability and Statistics	Probability and Statistics
Engineering Sciences	Computational Tools	Ethics and Professional Practice	Ethics and Professional Practice	Ethics and Professional Practice	Computational Tools	Chemistry
Computational Tools	Ethics and Professional Practice	Engineering Economics	Engineering Economics	Engineering Economics	Ethics and Professional Practice	Instrumentation and Data Acquisition
Material Science	Engineering Economics	Properties of Electrical Materials	Material Science	Probability and Statistics	Engineering Economics	Ethics and Professional Practice
Chemistry	Statics	Engineering Sciences	Environmental Science and Chemistry	Modeling and Computations	Electricity and Magnetism	Safety, Health, and Environment
Fluid Mechanics/Dynamics	Dynamics	Circuit Analysis (DC and AC Steady State)	Risk Assessment	Industrial Management	Statics	Engineering Economics
Thermodynamics	Mechanics of Materials	Linear Systems	Fluid Mechanics	Manufacturing, Production, and Service Systems	Dynamics, Kinematics, and Vibrations	Statics
Material /Energy Balances	Materials	Signal Processing	Thermodynamics	Facilities and Logistics	Mechanics of Materials	Dynamics
Heat Transfer	Fluid Mechanics	Electronics	Water Resources	Human Factors, Ergonomics, and Safety	Material Properties and Processing	Strength of Materials
Mass Transfer and Separation	Hydraulics and Hydrologic Systems	Power	Water and Wastewater	Work Design	Fluid Mechanics	Materials Science
Chemical Reaction Engineering	Structural Analysis	Electromagnetics	Air Quality	Quality	Thermodynamics	Fluid Mechanics and Dynamics of Liquids
Process Design and Economics	Structural Design	Control Systems	Solid and Hazardous Waste	Systems Engineering	Heat Transfer	Fluid Mechanics and Dynamics of Gases
Process Control	Geotechnical Engineering	Communications	Groundwater and Soils		Measurements, Instrumentation, and Controls	Electricity, Power, and Magnetism
Safety, Health, and Environment	Transportation Engineering	Computer Networks			Mechanical Design and Analysis	Heat, Mass, and Energy Transfer
Ethics and Professional	Environmental Engineering	Digital Systems				

FE Exam specifications -- What can you bring to the exam room?

- **Enhanced security for exam content**
 - Check-in: government issued ID, photo taken, and palm-vein scan
 - *Watch the video*
 - http://www.ncees.org/Exams/Study_materials/Download_FE_Supplied-Reference_Handbook.php

- **Permitted**
 - Calculators
 - Check Calculator Policy
 - » <http://ncees.org/exams/calculator/>
 - Small dry-erase board will be supplied for calculations
 - FE Reference Manual will be embedded in the computer in a searchable pdf file format
 - Watch the video
 - http://www.ncees.org/Exams/Study_materials/Download_FE_Supplied-Reference_Handbook.php

Suggestions for Taking the FE Exam

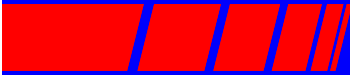
- **Start with subject areas you are familiar with**
 - Stronger areas to weaker areas.
- **Manage your time wisely**
 - Don't spend more than 3-5 minutes on a question
 - return to the question later
 - At about 20 minutes before finish time
 - » return to the skipped questions
 - At about 5 minutes from the end, guess
 - » Wrong answers have no penalty



Useful Web site

- www.eng.lsu.edu
- www.ncees.org
- www.lapels.com





***Good
Luck***

