NCEES
advancing licensure for engineers and surveyors

Principles and Practice of Engineering Examination
ARCHITECTURAL ENGINEERING CBT Exam Specifications

Effective Beginning October 2026

- The Architectural Engineering exam is computer based. It is closed book with an electronic reference. Design standards applicable to the PE Architectural Engineering exam are shown on the last two pages.
- Examinees have 9.5 hours to complete the exam, which contains 85 questions. The 9.5-hour time includes a tutorial and an optional scheduled break. Examinee works all questions.
- The exam uses the U.S. Customary System (USCS) of units.
- The exam is developed with questions that will require a variety of approaches and methodologies, including design, analysis, and application.
- The knowledge areas specified as examples of kinds of knowledge are not exclusive or exhaustive categories.

		Number of Questions
1.	**Electrical Systems**	**23–35**
	A. Power distribution design	
	B. Emergency and standby power systems	
	C. Overcurrent protection (e.g., principles, methods, device coordination)	
	D. Grounding and bonding principles	
	E. Electrical construction methods and materials (e.g., cabling and conductors, enclosure ratings, pathways)	
	F. Equipment and device layout	
	G. Branch circuit design	
	H. Power factor analysis	
	I. Voltage drop analysis	
	J. Short circuit analysis	
	K. Lighting systems (e.g., luminaire layout, illumination calculations)	
	L. Lighting control systems (e.g., manual and automatic controls, zoning)	
	M. Fire alarm systems	
2.	**Mechanical Systems**	**25–38**
	A. Heat gain and loss calculations	
	B. Psychrometrics	
	C. HVAC system analysis and selection (e.g., equipment, distribution)	
	D. Flow and riser schematics (e.g., primary/secondary, constant/variable flow)	
	E. Sequences of operation for building controls	
	F. Fan affinity laws	
	G. Pump affinity laws	
	H. Air distribution	
	I. Pressure calculations (e.g., air, hydronic)	
	J. Hydronic distribution	
	K. Specialty piping systems (e.g., fuel oil, natural gas)	

L. Mechanical construction methods and materials (e.g., ductwork and piping materials, insulation)
M. Indoor air quality
N. Domestic water systems (e.g., equipment, layout, sizing)
O. Sanitary waste and vent systems (e.g., routing, sizing, slope, invert, equipment)
P. Building stormwater systems (e.g., routing, sizing, slope, invert, equipment)
Q. Fire protection system coordination (e.g., system types, hazards, standpipes, equipment)

3. Structural Systems 15–23

A. Design criteria (e.g., code analysis, suitable construction types, occupancy use)
B. Material properties (e.g., strength, stiffness, hardness, modulus)
C. Gravity loads (e.g., dead loads, live loads, environmental loads)
D. Lateral loads (e.g., wind [MWFRS, Components and Cladding], seismic)
E. Analysis of components (e.g., truss, frames, beams, stability of elements)
F. Foundations (e.g., piles, piers, spread, geotechnical reports)
G. Wood structures (e.g., compression and flexural members, walls)
H. Masonry structures (e.g., compression and flexural members, walls)
I. Steel structures (e.g., connections, compression, flexural and tension members)
J. Concrete structures (e.g., compression, shear, flexural, anchorage to concrete, elevated slabs)
K. Serviceability and constructability (e.g., deflection, elongation, temporary structures, vibrations)

4. Project Administration 7–11

A. Scheduling and process (e.g., design tasks, sequence of activities, critical path method, cost estimation)
B. Construction administration (e.g., contract documentation, conformance with contract documents, differing site conditions)
C. Legal impacts (e.g., scope of services, impact of decisions that may result in lawsuit, errors, and omissions)

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ARCHITECTURAL ENGINEERING Codes and Standards

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In addition to the *PE Architectural Engineering Reference Handbook*, the following codes and standards will be supplied in the exam as searchable, electronic pdf files with links for easy navigation. This NCEES YouTube video shows how the standards will be presented on the exam. Standards will be provided as individual chapters on the exam, and only one chapter at a time can be opened and searched. This ensures the exam software runs large files effectively.

Solutions to exam questions that reference a standard of practice are scored based on this list and the revision year shown. Solutions based on other standards will not receive credit. All questions use the U.S. Customary System (USCS) of units.

NCEES does not sell design standards or printed copies of the NCEES handbook. The NCEES handbook is accessible from your MyNCEES account. Design standards are available through the publisher or a bookseller.

ABBREVIATION	DESIGN STANDARD TITLE
IBC	*International Building Code,* 2018 edition, International Code Council, Inc.
IECC	*International Energy Conservation Code*, 2018 edition, International Code Council, Inc.
IFC	*International Fire Code*, 2018 edition, International Code Council, Inc.
IMC	*International Mechanical Code*, 2018 edition, International Code Council, Inc.
IPC	*International Plumbing Code*, 2018 edition, International Code Council, Inc.
ASHRAE	Standard 62.1–2016, *Ventilation for Acceptable Indoor Air Quality,* American Society of Heating, Refrigerating and Air-Conditioning Engineers.
ASHRAE	Standard 90.1—2016, *Energy Standard for Buildings Except Low-Rise Residential Buildings*, American Society of Heating, Refrigerating and Air-Conditioning Engineers.
NFPA 13	*Standard for the Installation of Sprinkler Systems*, 2019 edition, National Fire Protection Association.
NFPA 14	*Standard for the Installation of Standpipe and Hose Systems,* 2019 edition, National Fire Protection Association.
NFPA 20	*Standard for the Installation of Stationary Pumps for Fire Protection,* 2019 edition, National Fire Protection Association.
NFPA 70	*National Electrical Code*, 2017 edition, National Fire Protection Association.
NFPA 72	*National Fire Alarm and Signaling Code*, 2019 edition, National Fire Protection Association.
NFPA 101	*Life Safety Code*, 2018 edition, National Fire Protection Association.

ACI 318 *Building Code Requirements for Structural Concrete*, 2019 edition, American Concrete Institute.

TMS 402/602 *Building Code Requirements and Specification for Masonry Structures* (and companion commentaries), 2016, The Masonry Society, Longmont, CO.

AISC *Steel Construction Manual*, 15th edition, American Institute of Steel Construction, Inc.

ASCE 7 *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*, 2016 edition, American Society of Civil Engineers.

NDS *National Design Specification for Wood Construction*, 2018 edition, and *National Design Specification Supplement: Design Values for Wood Construction*, 2018 edition, American Wood Council, Leesburg, VA.