



# The Education Standard

January 2012

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The *NCARB Education Standard* is the approximation of the requirements of a professional degree from a program accredited by the National Architectural Accrediting Board (NAAB). It includes general studies, professional studies, and electives, which together comprise a professional liberal education in architecture.

Following are detailed descriptions of the subject areas and categories and the number of semester credit hours required.

This document, effective January 2012, supersedes all previous editions of the *NCARB Education Standard* and the publications *Circular of Information No. 3, Education Evaluation Criteria*, and *Education Evaluation Services for Architects*. Please check NCARB's website, [www.ncarb.org](http://www.ncarb.org), regularly for updates to this publication and for the most current information regarding the *NCARB Education Standard* and the education requirement for *NCARB certification*. © January 2012

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Subject Area and Category	Semester Credit Hour Requirement <sup>1, 2</sup>
<b>1. General Education</b>	<b>45 hours</b>
A. Communication Skills	3 hrs. min.
B. Humanities and Arts	N/A
C. Quantitative Reasoning	N/A
D. Natural Sciences	N/A
E. Social Sciences	N/A
<b>2. History and Theory, Human Behavior, and Environment</b>	<b>16 hours</b>
A. History and Theory	6 hrs. min.
B. Human Behavior	3 hrs. min.
C. Environment	3 hrs. min.
<b>3. Technical Systems</b>	<b>24 hours</b>
A. Structural Systems	6 hrs. min.
B. Environmental Control Systems	6 hrs. min.
C. Construction Materials and Assemblies	6 hrs. min.
D. Building Service Systems and Building Envelope / Enclosure Systems	3 hrs. min.
<b>4. Practice</b>	<b>9 hours</b>
A. Project Process	3 hrs. max.
B. Project Economics	3 hrs. max.
C. Business Management	3 hrs. max.
D. Laws and Regulations	3 hrs. min.
E. Technical Documentation	3 hrs. max.
F. Ethics and Social Responsibility	3 hrs. max.
<b>5. Design</b>	<b>50 hours</b>
Level I	8 hrs. min. / 12 hrs. max.
Level II	8 hrs. min. / 12 hrs. max.
Level III	8 hrs. min. / 12 hrs. max.
Level IV	8 hrs. min. / 12 hrs. max.
Level V	8 hrs. min. / 12 hrs. max.
<b>6. Electives</b>	<b>16 hours<sup>3</sup></b>
<b>TOTAL</b>	<b>160 HOURS</b>

The *NCARB Education Standard* is the approximation of the requirements of a professional degree from a NAAB-accredited degree program. It includes general studies, professional studies, and electives, which together comprise a professional liberal education in architecture.

The *NCARB Education Standard* is the criteria for the EESA-NCARB Education Evaluation (described on page 19 of the [Education Guidelines](#)). An EESA-NCARB Education Evaluation is required for two types of applicants who are seeking to satisfy one of two alternates to the education requirement for NCARB certification:

- > Applicants who have a professional degree in architecture from a country other than the United States or Canada and whose degree meets the requirements for licensure in that country, and
- > Applicants for the Broadly Experienced Architect (BEA) Program who have at least 64 semester credit hours (or 96 quarter credit hours) of post-secondary education.

The EESA-NCARB Education Evaluation process is described on page 20 and the BEA Program is described on page 9 of the [Education Guidelines](#). The education requirement for NCARB certification is described in the *Handbook for Interns and Architects*.

<sup>1</sup> If the total number of hours obtained in a subject area exceeds the total minimum required hours or maximum allowable hours for the categories in the subject area, the remaining hours may be in any category of the subject area. For example, the 42 hours in General Education subject area remaining after satisfaction of the three hour minimum required in the Communication Skills category, may be in any or more of the other five categories of the General Education subject area; Humanities and Arts, Quantitative Reasoning, Natural Sciences, and/or Social Sciences.

<sup>2</sup> Hours in excess of the maximum allowable number of hours for any category may be used to satisfy the Electives subject area.

<sup>3</sup> The minimum number of hours in each subject area totals 144 hours. The additional 16 hours may be in any one or more of the five subject areas and/or acceptable Electives.

The *NCARB Education Standard*, the individual subject areas and categories of the *NCARB Education Standard*, and means to satisfy any identified deficiencies are described below and on the following pages. The following definitions have been developed to approximate the requirements of a NAAB-accredited degree program in architecture.

A minimum of 160 semester credit hours (which is the equivalent of 240 quarter credit hours) of academic credit is required and is grouped into six subject areas: General Education; History and Theory, Human Behavior, and Environment; Technical Systems; Practice; Design; and Electives.

## 1. GENERAL EDUCATION

A total of 45 semester credit hours are required, including a minimum of three hours in Communication Skills, specifically in English composition. The other 42 hours may be in one or more of the other five categories:

### A. Communication Skills

Communication Skills are defined as effective written and oral communication using the conventions of standard English as taught in the United States.

Acceptable courses include English composition, English grammar, public speaking, media communication, community consensus building, research methods, speech communication, business communication, and introductions to research.

Courses in English literature are NOT acceptable in this category, but they are acceptable in Humanities and Arts. Courses in English as a foreign language are NOT acceptable in Communication Skills; however, they may be acceptable in Humanities and Arts.

### B. Humanities And Arts

Humanities and Arts are defined as the academic study of the expressions and artifacts of human experience in word, image, music, and gesture using methods that are primarily analytic, critical, or speculative and that apply rational thought to construct and assess opinions, ideas, and arguments.

Acceptable courses include philosophy, ancient and modern languages, literature, law, history, philosophy, religion, visual, performing and applied arts, and language courses other than English.

### C. Quantitative Reasoning

Quantitative Reasoning is defined as the study of quantitative methods and rational, systematic steps based on sound mathematical procedures to arrive at a conclusion.

Acceptable courses include algebra, analytic and descriptive geometry, trigonometry, calculus, logical reasoning, pre-calculus, linear algebra, and statistics.

### D. Natural Sciences

Natural Science is defined as the study of the universe using a naturalistic approach, which is understood as obeying rules or laws of natural origin. The term Natural Science is also used to distinguish study in those fields that use the scientific method to study science and nature.

Acceptable courses include astronomy, astrophysics, bacteriology, biology, chemistry, earth science, physics, geology, zoology, microbiology, biochemistry, and botany.

## E. Social Sciences

Social Sciences is defined as the study of the fields of academic scholarship that explore human society.

Acceptable courses include: anthropology, archaeology, economics, geography, history, linguistics, political science, gender studies, racial/ethnic studies, geography, international studies, psychology, and sociology.

### Satisfying Deficiencies in General Education

Relevant courses may be taken at any university, college, or community college that is accredited by one of the six regional accrediting associations in the United States: Middle States Association of Colleges and Schools, North Central Association of Colleges and Schools, New England Association of Schools and Colleges, Northwest Commission on Colleges and Universities, Southern Association of Colleges and Schools, and Western Association of Schools and Colleges. Information concerning regional accreditation is usually found in each academic institution's catalog. It can also be obtained from the office of the registrar of the institution.

If a U.S. regionally accredited academic institution grants credit in relevant subjects on the basis of equivalency examinations administered by the institution or by the College Entrance Examination Board's Advance Placement Program, and if that credit is listed on an official transcript issued by that institution, then that credit can be used to satisfy the general education requirement.

[The College Level Examination Program \(CLEP\)](#) can be used to satisfy the general education requirement. The score required varies from subject to subject. Further information can be obtained from [NAAB](#).

## 2. HISTORY AND THEORY, HUMAN BEHAVIOR, AND ENVIRONMENT

A total of at least 16 semester credit hours, with minimum requirements for each category as indicated:

- > History and Theory (6)
- > Human Behavior (3)
- > Environment (3)

The remaining four (4) semester credit hours may be in any one or more categories of the History and Theory, Human Behavior, and Environment subject area.

### A. History And Theory

History and Theory are defined as the study of the traditions of architecture and the built environment, landscape architecture, urban form, and construction by which diverse human needs, values, and aspirations have been addressed in response to cultural, climatic, ecological, technological, socioeconomic, and public health constraints.

Acceptable topics include historical movements in architecture, history of architecture, landscape architecture, and urban design, history of building technology, and theory of architecture.

Courses in art history, cultural history, economic history, and political history are NOT acceptable in this category, but they are acceptable in General Education.

## B. Human Behavior

Human Behavior is defined as the study of the characteristics, nature, and behavior of diverse individuals and groups that relate to the physical and spatial environments in which they function, and to the processes of environmental modification and change.

Acceptable topics include the study of ergonomics, human behavior, post-occupancy studies, cultural diversity, social diversity, and social response to the environment.

## C. Environment

Environment is defined as the study of man-made conditions, service infrastructure, and climatic, ecological, geographic, and other natural characteristics of the site that influence the setting for architecture and have an impact on the architectural design process.

Acceptable topics include issues of sustainability, ecology, energy, landscape architecture, site analysis, site planning, and urban planning as they relate to the physical form, characteristics, and structure of the environment.

### Satisfying Deficiencies In History and Theory, Human Behavior, and Environment

Only courses taken at schools of architecture with a professional degree program accredited by NAAB or CACB/CCCA are acceptable for satisfying deficiencies. A list of NAAB- and CACB/CCCA-accredited programs can be found at [www.naab.org/architecture\\_programs/](http://www.naab.org/architecture_programs/). Courses taken at institutions without NAAB- or CACB/CCCA-accredited programs may be accepted if approved by NAAB in advance. Courses taken at community or junior colleges are acceptable for satisfying deficiencies in the General Education subject area, the History and Theory category, the Human Behavior category, and the Electives subject area only.

If a U.S. regionally accredited academic institution grants credit in relevant subjects on the basis of equivalency examinations administered by the institution, and if that credit is listed on an official transcript issued by that institution, then that credit can be used to satisfy these subject area requirements.

## 3. TECHNICAL SYSTEMS

A total of at least 24 semester credit hours, with minimum requirements for each category as indicated:

- > Structural Systems (6)
- > Environmental Control Systems (6)
- > Construction Materials and Assemblies (6)
- > Building Service Systems and Building Envelope/Enclosure Systems (3)

The remaining three (3) hours may be in any one or more categories of the Technical Systems subject area.

### A. Structural Systems

Structural Systems are defined as the study of the basic structural elements of buildings, their interaction as a support system, the forces that act on and in buildings, and the principles, theory, and appropriate applications of these systems.

Acceptable topics include analysis of structural systems, construction, construction assemblies, determinate and indeterminate systems, equilibrium, forces and force systems, free body diagrams, gravity, lateral forces, loads, mechanics of materials, resolution of external forces, shear and bending moments, sizing of structural members, stability, statics, strength of materials, stress and strain, structural elements, structural systems in wood, steel and concrete, and theory of structures.

## B. Environmental Control Systems

Environmental Control Systems are defined as the study of building elements that pertain to the modification of the microclimate for purposes of human use and comfort.

Acceptable topics include acoustics, air conditioning, building core systems, energy, energy efficiency, energy transmission, environmental systems, heating, lighting (natural and artificial), solar energy utilization, and sustainability.

## C. Construction Materials and Assemblies

Construction Materials and Assemblies are defined as the study of the characteristics of building materials and how they are used, made, and appropriately applied in a building project.

Acceptable topics include physical properties of building materials, sustainable material selection, detailing, installation characteristics of material assemblies, and associated assembly cost for labor and materials.

## D. Building Service Systems and Building Envelope/Enclosure Systems

Building Service Systems and Building Envelope/Enclosure Systems are defined as: Building Service Systems, the application and performance of non-thermal mechanical, electrical, control, communications, circulation, and signal systems and Building Envelope/Enclosure Systems, the performance characteristics of the building envelope/enclosure.

Acceptable topics in Building Envelope/Enclosure Systems include moisture transfer, durability, energy performance, and material use and detailing. Acceptable topics in Building Service Systems include plumbing, electrical, vertical transportation, security, control, communication, and fire protection systems.

## Satisfying Deficiencies in Technical Systems

Only courses taken at schools of architecture with a professional degree program accredited by NAAB or CACB/CCCA are acceptable for satisfying deficiencies. A list of NAAB- or CACB/CCCA-accredited programs can be found at [www.naab.org/architecture\\_programs/](http://www.naab.org/architecture_programs/). Courses taken at institutions without NAAB- or CACB/CCCA-accredited programs may be accepted if approved by NAAB in advance.

Courses taken at community or junior colleges are NOT acceptable for satisfying deficiencies in technical systems.

If a U.S.-regionally accredited academic institution grants credit in relevant subjects on the basis of equivalency examinations administered by the institution, and if that credit is listed on an official transcript issued by that institution, then that credit can be used to satisfy these subject area requirements.

## 4. PRACTICE

A total of at least nine (9) semester credit hours are required.

At least three (3) hours must be in:

- > Laws and Regulations

The other six (6) hours must be in the following categories with no more than three (3) hours in any one category:

- > Project Process
- > Project Economics
- > Business Management
- > Technical Documentation
- > Ethics and Social Responsibility

### A. Project Process

Project Process is defined as the study of the entire range of activities involved in a typical architectural design project as it moves from inception through completion of construction. These activities include not only those which the architect carries out, but also those of other professionals.

Acceptable topics include bidding and negotiation, client relationships, leadership and collaboration, construction documents, contracts, design development, problem identification, project management, programming, site analysis, building code and accessibility analysis, and specifications.

### B. Project Economics

Project Economics is defined as the study of the financial aspects of building, including the economics of development.

Acceptable topics include building costs, cost and benefit analysis, cost control, development costs, estimating, finance, life-cycle costing, site acquisition and development, and value engineering.

### C. Business Management

Business Management is defined as the study of the concepts, standards, and procedures related to different forms of organization for architectural practice, including private and corporate offices as well as public-sector organizations and agencies.

Acceptable topics include business management, financial management, risk management, office management, office organization, customer service, legal agreements, negotiating legal agreements, legal and licensure responsibilities, professional liability, and professional rules of conduct.

### D. Laws and Regulations

Laws and Regulations are defined as the study of the body of common law, legislation, and regulation in the United States, including rules of professional conduct that affect architectural practice.

Acceptable topics include barrier-free design, building codes, laws affecting architectural practice, environmental regulation, life-safety systems, professional liability, professional registration, professional rules of conduct, tax laws, and zoning regulations. Courses in foreign law are NOT acceptable, but may be acceptable in the Electives subject area.

### E. Technical Documentation

Technical Documentation is defined as the study of the ability to prepare technically clear and accurate drawings, outline specifications, and models illustrating and identifying the assembly of materials, systems, and components appropriate for a building design.

## F. Ethics and Social Responsibility

Ethics and Social Responsibility are defined as the study of the application of professional judgment and leadership on ethical subjects regarding social, legal, political, and cultural issues in architectural design and practice. It includes the architect's responsibility to work in the public interest, to respect historic assets, and to improve the quality of life for local and global societies.

### Satisfying Deficiencies in Practice

Only courses taken at schools of architecture with a professional degree program accredited by NAAB or CACB/CCCA are acceptable for satisfying deficiencies. A list of NAAB- and CACB/CCCA-accredited programs can be found at [www.naab.org/architecture\\_programs/](http://www.naab.org/architecture_programs/). Courses taken at institutions without NAAB- or CACB/CCCA-accredited programs may be accepted if approved by NAAB in advance.

Courses taken at community or junior colleges are NOT acceptable for satisfying deficiencies in practice.

If a U.S.-regionally accredited academic institution grants credit in relevant subjects on the basis of equivalency examinations administered by the institution, and if that credit is listed on an official transcript issued by that institution, then that credit can be used to satisfy these subject area requirements.

## 5. DESIGN

A total of at least 50 semester credit hours including at least one Level V design studio sequence, with a minimum of eight (8) hours and maximum of twelve (12) hours in each level:

- > Level I
- > Level II
- > Level III
- > Level IV
- > Level V

The remaining ten (10) hours may be in any one or more levels of the Design subject area with no more than twelve (12) hours in any one level.

Design is defined as the analysis, synthesis, use of judgment, and development and communication tools and methods that architects use to understand, assess, bring together, and express the ideas that lead to a built project.

Design is divided into five levels. Each level requires competency in the subordinate level(s).

### A. Level I:

Level I is defined as individual learning experiences within two-dimensional and three-dimensional spatial contexts and ordering systems; basic architectural and environmental design principles, beginning user consciousness with a familiarity of spatial analysis, natural and formal ordering systems, design process methodology, and development of communication skills using appropriate media; and design literacy.

### B. Level II:

Level II is defined as individual learning experiences with emphasis on the environment, precedent, user-space study, investigative skills, and further design skill development; introduction of qualitative technical materials; a minimum proficiency in the design and communication of simple buildings with an introductory understanding of client need assessment, site (including existing building) assessment, construction and structural systems; and data analysis, programming, site analysis, and design.

**C. Level III:**

Level III is defined as individual and group learning experiences with emphasis on simple and complex building case studies with applied research and qualitative technical input; individual and group projects; development of total building synthesis design skills including building envelope/enclosure systems and assemblies; a general proficiency in the complete design of simple buildings with a minimum ability to deal with complex buildings and multi-building complexes; site analysis and design, principles of sustainable design related to manmade and natural resources, healthful environments, and reduced impact on the environment; and visual representation of each stage of the programming and design process including traditional and digital media.

**D. Level IV:**

Level IV is defined as individual or group learning that emphasizes the synthesis of complex building and multi-building complexes within the urban context; integration of technical information; ability to create technical drawings and specifications; general proficiency in the total synthesis of complex buildings and related systems; structural, environmental, service, transportation, communication, life-safety, and accessibility systems; and the social ramifications of planning and architecture. Studio learning at this level may integrate the use of digital media in design decision-making. Level IV requires collaborative group projects and requires mastery of Levels I, II, and III.

**E. Level V:**

Level IV is defined as individual or group learning that emphasizes comprehensive design and complex building design, planning, and urban design. Level V work must indicate a mastery of data collection, analysis, programming, planning, building design; an understanding of the basic principles of structural design, building service system design, building envelope/enclosure systems, landscape design; facility in other related knowledge and skills; and a full range of representational skills including traditional and digital media. Level V requires collaborative group projects and requires mastery of Levels I, II, III, and IV.

**Satisfying Deficiencies in Design**

All levels must be satisfied in studio courses. Courses in graphic communication, computer-assisted design, and digital design media (e.g. building information modeling programs) may be used to fulfill Levels II-IV when they are clearly integrated with studio courses. If such courses are taken on their own and without integration in a specific studio, they will be allocated as electives. Completion of a comprehensive studio in Level IV or Level V is required.

**6. ELECTIVE SUBJECTS**

The minimum number of semester credit hours in each subject area total 144 hours. The additional 16 hours may be in any one or more of the five subject areas and/or acceptable Electives.

Acceptable Electives include architecture, business administration, computer science, engineering, interior design, law, public administration, and other subjects that in the opinion of NAAB are acceptable toward Electives.