

# The Education Standard

The *NCARB Education Standard* is an 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 liberal education in architecture. This section provides a detailed description of the subject areas and the number of semester hours required in each area.

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

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

### 1. General Education Requirement

A total of 45 semester hours are required, including a minimum of three semester hours of credit in composition. The other 42 semester hours of credit may be completed in one or more of the following five subjects:

#### A. ENGLISH

English is defined as written or oral communication that explains, interprets, analyzes, or presents and supports a point of view, utilizing the principles and conventions of standard English as taught in the United States.

Acceptable courses include composition, grammar, and public speaking.

Courses in English literature are NOT acceptable in this subject, but they are acceptable in the subject of humanities. Courses in English as a foreign language are NOT acceptable.

Subject Area	Semester Hours Required
1. General Education	45 hours*
2. History, Human Behavior, and Environment	16 hours
3. Technical Systems	24 hours
4. Practice	6 hours
5. Design	50 hours
6. Electives	19 hours
<b>TOTAL</b>	<b>160 hours</b>

\*includes 3 hours in English composition

**B. HUMANITIES**

Humanities is defined as the recognition, comprehension, analysis, and interpretation of various forms of art and literature.

Courses in philosophy and languages other than English are acceptable in this area.

The following types of courses are NOT acceptable in this subject but may be acceptable as electives: instrumental music, vocal music, and performance courses in dance, film, opera, radio, television, or theater. Studio art courses are NOT acceptable in this subject, but may be acceptable in the design subject area or as electives.

**C. MATHEMATICS**

Mathematics is defined as the logical study of quantity, form, arrangement, and magnitude. It includes the methods for using rigorously defined self-consistent symbols to disclose the properties and exact relationships of quantities and magnitudes, either in the abstract or in their practical connections.

Acceptable courses include algebra, analytic and descriptive geometry, calculus, differential equations, linear algebra, trigonometry, and all courses for which calculus is a prerequisite.

The following types of courses are NOT acceptable in this subject, but may be acceptable as electives: business mathematics, discrete mathematics, finite mathematics, mathematics for business students, mathematics for teachers, probability, statistics, and symbolic logic.

**D. NATURAL SCIENCES**

Natural science is defined as the study of the physical universe. Natural science is divided into two general areas: biological science and physical science.

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

Courses in cultural geography or economic geography are NOT acceptable in this subject, but they are acceptable in the subject of social studies.

**E. SOCIAL STUDIES**

Social studies is defined as the analysis of economic, historical, political, psychological, and sociological aspects of human society.

Acceptable courses include African-American studies, anthropology, archaeology, area studies, Asian studies, cultural geography, economic geography, economics, Hispanic studies, history, Native American studies, political science, psychology, sociology, and women's studies.

**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 Associa-

tion 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, Human Behavior, and Environment Requirement

At least 16 semester hours of credit may be completed in one or more of the following three areas:

### A. HISTORY

History is defined as the study of construction by which human needs have been satisfied and human aspirations have been met.

Acceptable topics include historical movements in architecture, history of architecture, history of art and architecture, history of building technology, and theory of architecture.

Courses in art history are NOT acceptable in this subject, but they are acceptable in the subject of humanities. Courses in cultural, economic, or political history are NOT acceptable in this subject, but they are acceptable in the subject of social studies.

### B. HUMAN BEHAVIOR

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

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

### C. ENVIRONMENT

Environment is defined as the constructed artifacts, service infrastructure, and climatic, geographic, and other natural characteristics of the site that influence the setting for architecture.

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

### SATISFYING DEFICIENCIES IN HISTORY, 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 general education, history, human behavior, and electives 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 Requirement

At least 24 semester hours of credit in:

- > Structural Systems (at least six credits);
- > Environmental Control Systems (at least six credits); and
- > Construction Materials and Assemblies (at least six credits).

The additional six credits required may be distributed over any of the following three areas:

#### A. STRUCTURAL SYSTEMS

Structural systems is defined as the basic structural elements of buildings, their interaction as a support system, the forces that act on and in buildings, and the principles and theory upon which an understanding of these systems is based.

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 is defined as 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, fire protection, heating, lighting (natural and artificial), plumbing, sanitary systems, solar energy utilization, sound, and sustainability.

#### C. CONSTRUCTION MATERIALS AND ASSEMBLIES

Construction materials and assemblies is defined as the characteristics of building materials and how they are used, made, and applied in a building project.

Acceptable topics include building materials, conservation of structures, cost of materials, detailing, installation sequences, materials and assemblies characteristics, materials selection, and physical properties of materials.

#### 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 Requirement

At least six semester hours of credit in:

- Project Process, Project Economics, and Business Management and Ethics; and
- Laws and Regulations including Construction Law, Building Codes, Accessibility, and Zoning.

The six semester hours of credit may be completed in one of the following four areas:

##### A. PROJECT PROCESS

Process is defined as 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, 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 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 AND ETHICS

Business management is defined as the concepts, ethics, 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, office management, office organization, legal agreements, negotiating legal agreements, professional liability, and professional rules of conduct.

##### D. LAWS AND REGULATIONS

Laws and regulations is defined as 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, life-safety systems, professional liability, professional registration, professional rules of conduct, tax laws, and zoning regulations.

Courses in foreign law are NOT acceptable in this subject, but may be acceptable as Elective Subjects.

### **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 Requirement**

At least 50 semester hours of credit, including a Level V design studio sequence. Each level must have a minimum of eight semester hours and a maximum of 12 semester hours. Design is defined as analysis, synthesis, judgment, and communication that architects use to understand, bring together, assess, and express the ideas that lead to a built project.

Design is divided into five levels. These levels are:

### **LEVEL I:**

Individual learning experiences within a non-building spatial context; beginning user consciousness with a familiarity of spatial analysis, design process methodology, and development of communication skills; and design literacy.

### **LEVEL II:**

The foundation sequence continues with greater emphasis on the environment, user space study, and further skill development; introduction of qualitative technical materials; a minimum proficiency in the design and communication of simple buildings with an introductory understanding of construction and structural systems; and data analysis, programming, site analysis, and design.

### **LEVEL III:**

Simple and complex building case studies with qualitative technical input; individual and group projects; total building synthesis developed; a general proficiency in the complete design of simple buildings with a minimum ability to deal with complex buildings and multibuilding complexes; and site analysis and design.

### **LEVEL IV:**

The synthesis of complex building and multibuilding complexes within the urban context; integration of technical information; general proficiency in the total synthesis of complex buildings and related systems; transportation, communication, life-safety systems; and social ramifications of planning and architecture.

**LEVEL V:**

Project emphasis on complex building design, planning, and urban design. Level V work must indicate a mastery of data collection, analysis, programming, planning, building design, structures, building systems, landscape design, and other related knowledge.

**SATISFYING DEFICIENCIES IN DESIGN**

Courses in graphic communication, computer-assisted design, photography, and studio art may be used to fulfill Level I requirement. Levels II-V must be satisfied by the completion of studio courses. Completion of a comprehensive studio in Level IV or Level V is highly desirable.

On-campus or off-campus design studios shall be taken at or through any school of architecture with a professional degree program accredited by NAAB or CACB/CCCA. Such studios must be administered or monitored by the design faculty and must be taken for academic credit. 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.

**6. Elective Subjects**

The minimums noted in each subject area total 141 semester hours of credit. The additional 19 semester hours of credit may be taken in any one or more of the five subject areas and/or acceptable elective subjects.

Acceptable elective subject areas include: architecture, business administration, computer science, engineering, interior design, law, public administration, and other courses that in the opinion of NAAB are acceptable toward the elective subject requirement.