

Introduction to Careers in Architecture and Construction **Scope and Sequence**

Unit Lesson **Objectives**

INTRODUCTION TO CAREERS IN ARCHITECTURE AND CONSTRUCTION

Design and Pre-Construction: The Field at a Glance

Describe the general knowledge and skills required for all careers in architecture and construction.

Describe the general purposes of zoning laws, OSHA, EPA, and other safety regulations.

Identify different kinds of workplaces in each pathway.

Describe the role and responsibilities of each stakeholder involved in the design and pre-construction phase of a construction project.

Project: Exploring Nonprofit Construction

Construction Site Management

Describe the general knowledge and skills required for all careers in architecture and construction.

Identify different kinds of workplaces in each pathway.

Project: Analyze a Local Construction Project

Maintenance and Operations

Describe the general knowledge and skills required for all careers in architecture and construction.

Identify different kinds of workplaces in each pathway.

Department of Labor O*NET Career Tools

Describe the skills required for successful careers in the Architecture and Construction cluster.

Analyze Department of Labor interest profiles.

Project: Maker Essay

Job Zones and Resources

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Identify jobs in construction that require specific education and preparation.

Describe Department of Labor Job Zones.

Analyze your skills in the context of potential careers within the Architecture and Construction career cluster.

Distinguish between training required of the building trades versus professions in the design and pre-construction pathway.

Describe careers requiring extensive preparations.

Project: Learning to Teach Others About What You Know

The Bigger Picture: The Role of Architecture and Construction in the US Economy

Distinguish between a craftsman and a laborer in construction, specifically the trades.

Distinguish between unionized and non-unionized labor, and how they are impacted by state regulations.

Test

BUILDING THE FUTURE: THE ART AND SCIENCE OF BUILDINGS

The Architect and Engineer

Describe the general development of architecture and engineering professions.

Describe the evolutionary relationship of architecture and engineering careers and the historical master builder role.

Analyze the specific roles of the architect and engineer in terms of interest profiles.

Project: Visualization for Architects and Engineers

Education for Licensed Professions: Architects and Engineers

Identify the roles and responsibilities of prominent agencies and organizations involved in the regulation of

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architecture and construction.

Argue in support of licensure and the need for a professional seal in architecture and engineering careers.

Describe the process of professional regulation and licensure, including how licensure is obtained, what the benefits are, and what the responsibilities of licensed professionals include.

Describe state regulation and accrediting boards, educational degree programs, internships, and testing for professional careers in architecture and engineering.

The Design-Build Revolution

Analyze the role of the architect and engineer in the construction process and how design-build construction methods are changing the workflow.

Compare the role of the A/E phase in the design process with the more traditional project delivery methods versus the more integrated design-build approach.

Project: Design Professionals Doing Humanitarian Work

Residential Construction

Differentiate the residential and commercial sectors of the construction industry.

Describe the role and impact of residential construction on the U.S. economy.

Describe developing trends and specializations within the residential construction sector.

Describe the benefits of growing specializations within the residential construction industry sector.

Discuss the importance of health and safety, and the importance of professionalization within the residential construction industry sector.

Project: New Directions in Residential Construction

Commercial Construction

Differentiate the residential and commercial sectors of the construction industry.

Describe the role and impact of commercial construction on the U.S. economy.

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Describe developing trends and specializations within the commercial construction sector.

Describe the benefits of growing specializations within the commercial construction industry sector.

Discuss the importance of health and safety, and the importance of professionalization within the commercial construction industry sector.

The Role of Innovation in the Built Environment

Describe the role of materials engineering and product development in the construction industry.

Describe careers within the health and science industries that are related to the design and pre-construction and construction phases—both existing relationships and new relationships—with particular attention to research and development.

Analyze the research and development (R&D) process in construction.

Describe the ways that innovation has impacted construction methods and materials.

Project: Materials

Test

GREEN JOBS IN ARCHITECTURE AND CONSTRUCTION

Green Building

define sustainability and resiliency

evaluate the importance of building sustainably

analyze and critique the concept of sustainability and how it is achieved in the built environment

describe the principles of Life Cycle Analysis of a building and how they relate to construction phases

Regulation and Assessment of Green Building

Review local legislation pertaining to sustainable building practices.

Describe what the LEED and the U.S. Green Building Council do.

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Assess the impact the LEED and the U.S. Green Building Council have had on green building.

Describe how LEED ratings/certification of a project can ensure more sustainable end products.

Project: Find a LEED Certified Building and Analyze It

Research and Development and its Impact on Green Building and Construction

Describe what green building research and development is.

Describe how governmental and non-governmental agencies in the US support green building research.

Analyze green building materials in the context of LEED.

Describe how research and development and manufacturing innovation lead to the creation of new, more sustainable building materials.

Project: Home Energy Audit Assignment

Green Economy

Describe several green industries and the impact of green products and green construction on the U.S. economy.

Analyze the impact of the “green economy” on careers in architecture and construction.

Green Jobs

Describe which regulations impact green jobs.

Analyze the tasks and competencies associated with green jobs.

Describe several green industries and the impact of green products and green construction on the US economy.

Analyze the impact of the “green economy” on careers in architecture and construction.

Project: Preparing Your Own Emergency Kit

Green Certification and Green Skills

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Analyze the tasks and competencies associated with green jobs.

Analyze the impact of the “green economy” on careers in Architecture and Construction.

Project: Design a New School Locker

Test

THE ARTS AND THE BUILT ENVIRONMENT: JOBS FOR CREATIVES

Pre-Construction and Design Specialists

Research new and emerging creative jobs in all pathways of the Architecture and Engineering career cluster.

Assess what technological advances and computer-aided drafting signify for the future of architecture and construction.

Analyze the role of education and the preparation needed for the highly specialized fields of: landscape architecture, interior design, artistic trades (master craftsmen), and historic preservation.

Describe specializations within the design pre-construction pathway.

Describe the changing role of the architectural draftsman.

Discuss prevalence of computer-aided design (CAD) and other computer programs.

Describe the roles and responsibilities of several design and pre-construction careers.

Analyze the current and future role of specialization in architecture and construction careers.

Assess how technology has changed architecture.

Describe new technologies and techniques within design and pre-construction.

Distinguish between interior design and interior decorating.

Project: Landscape Architecture in Large-Scale Action Essay

Interdisciplinary Work Within Specializations

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Objectives

Analyze the role of education and the preparation needed for the highly specialized fields of landscape architecture, interior design, artistic trades (master craftsmen), and historic preservation.

Describe specializations within the design pre-construction pathway.

Discuss the role of the landscape architect and interior designer.

Describe the roles and responsibilities of several design and pre-construction careers.

Analyze the current and future role of specialization in architecture and construction careers.

Assess how technology has changed architecture.

Describe the importance of interdisciplinary study and work in design and pre-construction.

Project: Drawing and Geometry:
Sketching Exercise

The Role of Art, History, and
Research in Design

analyze the role of education and the preparation needed for the highly specialized fields of: landscape architecture, interior design, artistic trades (master craftsmen), and historic preservation

describe specializations within design pre-construction pathway

discuss the role of the landscape architect and interior designer

describe the roles and responsibilities of several design and pre-construction careers

analyze the influence of art on the design and pre-construction careers

analyze the influence of history on the design and pre-construction careers

assess the need for research in the work of those in design and pre-construction careers

Historical Research and Preservation
in Architecture and Construction

Assess the importance of historical preservation.

Assess the importance of historical research in architecture and construction.

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Analyze the ways that technology and innovation have impacted historical preservation.

Analyze the potential of retrofitting historic buildings.

Project: National Register of Historic Places Project

The Trades: The Almost-Lost Arts of Master Craftsmen

Describe the roles of traditional craftsmen and how they relate to current careers in historical preservation and master craftsmanship.

Describe the specializations within the building trades including the master craftsmen.

Describe architecture and construction specializations that focus on historic buildings.

Identify skills, abilities, and talents needed for architecture and construction specializations that focus on historic buildings and analyze how these relate to interest profiles.

Describe and characterize key technical and creative requisites for each educational path for architecture and construction specializations that focus on historic buildings that fit the student's primary area (or areas) of interest.

Project: Master Craftsmen Resources

The Future of the Past

Describe the guilds that currently exist to preserve the traditional building arts and master-craftsmen roles.

Describe the fundamental principles of life cycle analysis of a building and how they relate to construction phases.

Describe the principle of embodied energy in existing buildings.

Test

BUILDING THE CITY

Planning

Describe the relationship between a building or structure and its infrastructure.

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Describe the regulatory role of planners.

Describe the regulatory role of municipal ordinances.

Assess the need for sustainable design in planning the future of urban centers.

Project: Future City Design

Zoning

Compare planning and zoning.

Describe the regulatory role of municipal ordinances.

Assess the need for sustainable design in planning the future of urban centers.

Project: Retrofitting Urban Sprawl Assignment

Overview of Prevailing Planning Trends

Describe transit-oriented development (TOD) and its significance.

Describe Smart Growth and its significance.

Analyze the interrelationship of planning trends and sustainable/resilient development.

Evolution of Civil Engineering

Analyze the history and evolution of civil engineering.

Describe the relationship between a building or structure and its infrastructure.

Describe the impact of technology on civil engineering.

Project: Tinkercad 3D Modeling Assignment

Environmental and Civil Engineering

Define natural infrastructure.

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Describe the job outlook for civil and environmental engineers.

Describe the relationship between civil engineering and heavy civil construction.

Project: The Well-Photographed Bridge Assignment

The Need for Resilient Infrastructure

Identify the dangers and issues facing the infrastructure of the United States.

Describe steps being taken to correct issues facing U.S. infrastructure.

Test

COURSE PROJECT, REVIEW, AND EXAM

Review

Exam