

Construction

CONSTRUCTION – CONST

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Possible career opportunities

Students completing a certificate in construction are qualified for positions in middle management in the building and construction inspection field, and in supervision for the construction industry.

Program-level student learning outcomes

Program learning outcomes are subject to change. The most current list of program learning outcomes for each program is published on the DVC website at www.dvc.edu/slo.

**Associate in science degree
 Construction**

Students completing the program will be able to...

- A. interpret the codes related to the construction industry.
- B. identify code-compliant construction in buildings.
- C. identify types of zoning used in a jurisdiction.
- D. write knowledgeable correction notices.
- E. apply construction terminology.
- F. identify the effects of various governmental agencies involved in the construction industry on a construction project.
- G. interpret blueprints and specifications.

Upon successful completion of one of the areas of specialization, the student will have the necessary knowledge and skills for a career in building or construction inspection or for supervision responsibilities in the construction industry. This program is also valuable for those already employed in the field who wish to upgrade their skills.

To earn an associate in science degree with a major in construction, students must complete each course used to meet a major requirement with a "C" grade or higher and complete general education requirements as listed in the catalog. A student is eligible for graduation with an associate in science degree after the satisfactory completion of one of three areas of specialization, general education requirements and degree-applicable elective coursework for a total of 60 units. Degree requirements can be completed by attending classes in the day, the evening, or both. Certain courses may satisfy both major and general education requirements; however, the units are only counted once.

General Education Option 1 (DVC General Education) is appropriate for students who do not intend to transfer. DVC construction students who intend to transfer must consult with a program advisor or counselor to ensure that the requirements for transfer to four-year institutions of their choice are met. Students who intend to transfer are advised to select either General Education Option 2 (IGETC) or Option 3 (CSU GE).

Students are limited to one associate in science degree in construction regardless of the number of specializations completed. Multiple certificates of achievement may be awarded.

construction and building inspection specialization

<i>major requirements:</i>		<i>units</i>
CONST-114	Blueprint Reading	3
CONST-124	Construction Details and Specifications	3
CONST-170	Fundamentals of Building Inspection	3
CONST-181	Building Code Interpretation:	
	Non-Structural	3
CONST-182	Building Code Interpretation: Structural.....	3
CONST-183	Title 24: Energy Conservation Codes	3
CONST-191	Plumbing Code Interpretation	3
CONST-192	Mechanical Code Interpretation	3
CONST-266	Electrical Codes: Articles 90-398.....	3
CONST-267	Electrical Codes: Articles 400-830.....	3
CONST-273	Construction Management	3
total minimum required units		33

**construction and supervision and superintendency
 specialization**

<i>major requirements:</i>		<i>units</i>
BUS-101	Business English	3
BUSMG-120	Introduction to Management Studies	3
BUSMG-121	Practices and Concepts of Supervision.....	3
CONST-114	Blueprint Reading.....	3
CONST-116	Plane Surveying.....	4
CONST-124	Construction Details and Specifications	3
CONST-244	Estimating: Residential	3
CONST-245	Estimating: Commercial	3
CONST-273	Construction Management	3
CONST-276	Legal Aspects of the Construction Industry.....	3

<i>plus at least 3 units from:</i>		
CONST-110	Occupational Safety.....	2
CONST-136	Construction Processes: Commercial.....	4
CONST-181	Building Code Interpretation:	
	Non-Structural.....	3
CONST-295	Occupational Work Experience Education in CONST	1-4
total minimum required units		34

Construction

construction management specialization

<i>major requirements:</i>		<i>units</i>
ARCHI-244	Architectural Practice and Working Drawings I.....	3
BUS-101	Business English.....	3
COMSC-101	Computer Literacy.....	4
CONST-135	Construction Processes: Residential.....	4
CONST-136	Construction Processes: Commercial.....	4
CONST-144	Materials of Construction.....	3
CONST-244	Estimating: Residential.....	3
CONST-273	Construction Management.....	3
CONST-276	Legal Aspects of the Construction Industry.....	3
MATH-120	Intermediate Algebra.....	5
PHYS-110	Elementary Physics.....	3
total minimum required units		38

Associate in science degree Pre-apprenticeship

Students completing the program will be able to...

- A. interpret blueprints and specifications.
- B. apply construction terminology.
- C. use currently available basic personal protective equipment and be able to select appropriate equipment for a given environment.
- D. identify the most common sources of occupational injury and death.
- E. apply principles of job site safety.
- F. practice professional behavior on the construction site.
- G. demonstrate a clear understanding of many trades, interactions, interdependencies, and how the basic construction process flows from one trade to another.

This program prepares students for entry-level jobs in the building trades and/or entry into apprenticeship programs. Program content includes introduction to construction processes, occupational health and safety principles, and blueprint reading. In addition, the program provides contextualized math and English, physical education, a survey of trades, and college and workplace successes.

Upon completion of the program students will be able to directly enter the Northern California Laborers' union, enter the Carpenters Training Committee for Northern California pre-apprenticeship program, or apply to a variety of apprenticeship programs, government agencies, and private-sector employers.

Students must complete each course used to meet a major requirement with a "C" grade or higher and maintain an overall GPA of 2.5 or higher in the coursework required for the major. Students are advised that if they have previously completed equivalent or higher level English and/or math courses, these may be substituted for the degree requirements. Students are advised that entry into apprenticeship programs can be highly competitive and that many trades require documentation of at least one year of high school or one term of college algebra. Completion of higher levels of English and mathematics than are required by the degree are highly recommended.

General Education Option 1 (DVC General Education) is appropriate for students who do not intend to transfer. DVC construction students who intend to transfer must consult with a program advisor or counselor to ensure that the requirements for transfer to four-year institutions of their choice are met. Students who intend to transfer are advised to select either General Education Option 2 (IGETC) or Option 3 (CSU GE).

<i>major requirements:</i>		<i>units</i>
CARER-140	Job Search Strategies.....	1
CONST-105	Survey of the Trades.....	1.5
CONST-110	Occupational Safety.....	2
CONST-114	Blueprint Reading.....	3
CONST-135	Construction Processes: Residential.....	4
CONST-215	Construction Job Site Training.....	2
KNACT-120	Fitness Training.....	0.5
ENGL-122	Freshman English: Composition and Reading.....	3

plus at least 3 units from:*

MATH-120	Intermediate Algebra.....	5
MATH-121	Plane Trigonometry.....	3

total minimum required units 20

**Higher-level math may be substituted.*

Certificate of achievement Construction and building inspection

Students completing the program will be able to...

- A. interpret the codes related to the construction industry.
- B. identify code-compliant construction in buildings.
- C. identify types of zoning used in a jurisdiction.
- D. write knowledgeable correction notices.
- E. apply construction terminology.
- F. identify the effects of various governmental agencies involved in the construction industry on a construction project.
- G. interpret blueprints and specifications.

This program is designed to prepare students for a career in building or construction inspection, and it is also valuable for those already employed in the field who wish to upgrade their skills.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Certificate requirements can be completed by attending classes in the day, the evening, or both.

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<i>required courses:</i>	<i>units</i>
CONST-114 Blueprint Reading.....	3
CONST-124 Construction Details and Specifications.....	3
CONST-170 Fundamentals of Building Inspection.....	3
CONST-181 Building Code Interpretation: Non-Structural.....	3
CONST-182 Building Code Interpretation: Structural.....	3
CONST-183 Title 24: Energy Conservation Codes.....	3
CONST-191 Plumbing Code Interpretation.....	3
CONST-192 Mechanical Code Interpretation.....	3
CONST-266 Electrical Codes: Articles 90-398.....	3
CONST-267 Electrical Codes: Articles 400-830.....	3
CONST-273 Construction Management.....	3
total minimum required units	33

**Certificate of achievement
Construction and supervision and
superintendency**

Students completing the program will be able to...

- A. estimate materials cost (quantity survey).
- B. apply construction terminology.
- C. schedule sequences of construction projects.
- D. identify the effects of various governmental agencies involved in the construction industry on a construction project.
- E. interpret blueprints and specifications.
- F. utilize instruments used in surveying.
- G. use oral and written communication skills in managing and supervising construction projects.

This program is designed for those preparing for supervision responsibilities in the construction industry.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Certificate requirements can be completed by attending classes in the day, the evening, or both.

<i>required courses:</i>	<i>units</i>
BUS-101 Business English.....	3
BUSMG-120 Introduction to Management Studies.....	3
BUSMG-121 Practices and Concepts of Supervision.....	3
CONST-114 Blueprint Reading.....	3
CONST-116 Plane Surveying.....	4
CONST-124 Construction Details and Specifications.....	3
CONST-244 Estimating: Residential.....	3
CONST-245 Estimating: Commercial.....	3
CONST-273 Construction Management Studies.....	3
CONST-276 Legal Aspects of the Construction Industry.....	3
total minimum required units	31

**Certificate of achievement
Construction management**

Students completing the program will be able to...

- A. estimate materials cost (quantity survey).
- B. apply construction terminology.
- C. schedule sequences of construction projects.
- D. identify the effects of various governmental agencies involved in the construction industry on a construction project.
- E. interpret blueprints and specifications.

This two-year program is designed to prepare students for positions in middle management or as technicians in the construction industry, working with a contractor, architect, engineer, or supplier and including such duties as material takeoff, estimating costs, purchasing, and timekeeping.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a "C" grade or higher. Certificate requirements can be completed by attending classes in the day, the evening, or both.

<i>required courses:</i>	<i>units</i>
ARCHI-244 Architectural Practice and Working Drawings I.....	3
BUS-101 Business English.....	3
COMSC-101 Computer Literacy.....	4
CONST-135 Construction Processes: Residential.....	4
CONST-136 Construction Processes: Commercial.....	4
CONST-144 Materials of Construction.....	3
CONST-244 Estimating: Residential.....	3
CONST-273 Construction Management.....	3
CONST-276 Legal Aspects of the Construction Industry.....	3
MATH-120 Intermediate Algebra.....	5
PHYS-110 Elementary Physics.....	3
total minimum required units	38

**Certificate of achievement
Pre-apprenticeship**

Students completing the program will be able to...

- A. interpret blueprints and specifications.
- B. apply construction terminology.
- C. use currently available basic personal protective equipment and be able to select appropriate equipment for a given environment.
- D. identify the most common sources of occupational injury and death.
- E. apply principles of job site safety.
- F. practice professional behavior on the construction site.
- G. demonstrate a clear understanding of many trades, interactions, interdependencies, and how the basic construction process flows from one trade to another.

Construction

This program prepares students for entry-level jobs in the building trades and/or entry into apprenticeship programs. Program content includes introduction to construction processes, occupational health and safety principles, and blueprint reading. In addition, the program provides contextualized math and English, physical education, a survey of trades, and college and workplace success.

Upon completion of the program students will be able to directly enter the Northern California Laborers’ union, enter the Carpenters Training Committee for Northern California pre-apprenticeship program, or apply to a variety of apprenticeship programs, government agencies, and private-sector employers.

The certificate of achievement requires completion of 21 The certificate of achievement requires completion of 20 units of study and certain courses also meet requirements of other construction degrees and certificates. Students must complete each course used to meet a certificate requirement with a “C” grade or higher. Students are advised that entry into apprenticeship programs can be highly competitive and that many trades require documentation of at least one year of high school or one term of college algebra. Completion of higher levels of English and mathematics than are required by the certificate are highly recommended. Students will enroll in CARER-140, CONST-105, CONST-135, CONST-215, and KNACT-120 as a cohort and complete these courses in one term.

<i>required courses:</i>	<i>units</i>
CARER-140 Job Search Strategies	1
CONST-105 Survey of the Trades	1.5
CONST-110 Occupational Safety.....	2
CONST-114 Blueprint Reading	3
CONST-135 Construction Processes: Residential	4
CONST-215 Construction Job Site Training	2
KNACT-120 Fitness Training	0.5

<i>plus at least 3 units from*:</i>	
ENGL-096 Introduction to College Reading and Study Skills	3
ENGL-097 Introduction to Integrated College Reading and Writing	5
ENGL-098 Introduction to College Writing.....	3

<i>plus at least 3 units from*:</i>	
MATH-090 Elementary Algebra	5
MATH-092 Math for Trade Pre-Apprentices.....	4
MATH-120 Intermediate Algebra	5
MATH-121 Plane Trigonometry	3
total minimum required units	20

* Higher-level math and English may be substituted.

**Certificate of accomplishment
Pre-apprenticeship**

Students completing the program will be able to...

- A. interpret blueprints and specifications.
- B. apply construction terminology.
- C. use currently available basic personal protective equipment and be able to select appropriate equipment for a given environment.
- D. identify the most common sources of occupational injury and death.
- E. apply principles of job site safety.
- F. practice professional behavior on the construction site.
- G. demonstrate a clear understanding of many trades, interactions, interdependencies, and how the basic construction process flows from one trade to another.

This program prepares students for entry-level jobs in the building trades and/or entry into apprenticeship programs. Certain courses also meet requirements of other construction degrees and certificates. Students must complete each course with a “C” grade or higher.

<i>required courses:</i>		<i>units</i>
CONST-110 Occupational Safety.....		2
CONST-114 Blueprint Reading		3

<i>plus at least 3 units from:</i>	
ENGL-096 Introduction to College Reading and Study Skills	3
ENGL-097 Introduction to Integrated College Reading and Writing	5
ENGL-098 Introduction to College Writing.....	3

<i>plus at least 3 units from*:</i>	
MATH-090 Elementary Algebra	5
MATH-092 Math for Trade Pre-Apprentices.....	4
MATH-120 Intermediate Algebra	5
MATH-121 Plane Trigonometry	3
total minimum required units	11

* Higher-level math and English may be substituted.

Construction

CONST-101 Exploring Construction, Architecture, Manufacturing, and Engineering

- 1 unit P/NP
- 18 hours lecture/22 hours laboratory per term
 - Note: Field trips required.

This course provides an overview of employment trends, work attitudes, values, materials, processes, and career opportunities in construction, architecture, manufacturing, and engineering. Students will explore these topics through lecture and hands-on experience with high-tech equipment and processes, guest lectures, and field trips to industrial sites. CSU

CONST-105 Survey of the Trades

- 1.5 units SC
- 18 hours lecture/36 hours laboratory per term
 - Note: This course is part of the career advancement academy construction trades program.

The course presents a survey of career opportunities and requirements of the skilled trades as well as basic theoretical and practical skills common to all construction trades. CSU

CONST-110 Occupational Safety

- 2 units SC
- 36 hours lecture/18 hours laboratory per term
 - Note: Students meeting all course requirements will be eligible for a 30 hour OSHA Construction Safety Card. Students may petition to repeat when regulatory or industry standards change. Only the first course completed will be applied toward a degree or certificate requirement. Units for both courses will apply towards the 60 units required for the degree.

This course covers the principles of health and safety in construction. Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) regulations and how they are applied to construction will be covered. CSU

CONST-114 Blueprint Reading

- 3 units SC
- 54 hours lecture per term

This course introduces the interpretation and development of blueprints for the building industry. CSU

CONST-116 Plane Surveying

- 4 units SC
- 54 hours lecture/54 hours laboratory per term
 - Prerequisite: MATH-121 or equivalent
 - Note: Same as ENGIN-140

This course covers the principles and practices of surveying including measurement of distances, directions and elevations; measuring standards; introduction to electronic measurements and metric units; calibration, systematic and random error analysis; traverse calculations; use and care of surveying instruments including tapes, transits and levels; GPS measurements; map reading; horizontal and vertical curves and mapping. CSU, UC

CONST-124 Construction Details and Specifications

- 3 units SC
- 54 hours lecture per term

Advanced study of construction detailing and specifications for building systems from foundations to roofs, including windows and doors, thermal and moisture protection, stairs and elevators and metal fabrications for wood frame, reinforced concrete, structural steel, and heavy timber buildings. Interpretation and sketching of details as well as an introduction to the general conditions for the construction contract. Techniques required to produce construction drawings and specifications conforming to current building codes and standards, including using manual drawing techniques and computer aided drafting. CSU

CONST-135 Construction Processes: Residential

- 4 units SC
- 54 hours lecture/54 hours laboratory per term
 - Note: Credit by examination option available.

This course is an introduction to basic processes of the construction industry. Students will study light wood-frame construction and code requirements in residential construction. The areas of focus include quantity analysis, work activity sequencing and scheduling. CSU

CONST-136 Construction Processes: Commercial

- 4 units SC
- 54 hours lecture/54 hours laboratory per term

This course is an overview of the processes of heavy construction including review of the working plans/drawings, construction sites, layout, substructures, superstructures made of concrete, steel, masonry, and wood. CSU

CONST-144 Materials of Construction

- 3 units SC
- 54 hours lecture per term

This course introduces the performance characteristics of construction materials. Testing concepts and procedures, basic properties of metals, concrete, timber, masonry, and roofing materials with an emphasis on construction applications will also be covered. CSU

CONST-150 Topics in Construction

- .3-4 units SC
- Variable hours

A supplemental course in construction designed to provide a study of current concepts and problems in construction. Specific topics to be announced in the schedule of classes. CSU

Construction

CONST-170 Fundamentals of Building Inspection

3 units SC

- 54 hours lecture per term

This course is focused on basic construction inspection procedures and the inspector's legal responsibilities. Topics to be covered include inspecting structures, occupancy types, safety, and proper record keeping. CSU

CONST-180 California Building Codes for Disability Access

3 units SC

- 54 hours lecture per term

This course provides an overview of building codes as they relate to disability access. Federal and State statutes, regulations, and case law associated with disability will also be covered. CSU

CONST-181 Building Code Interpretation: Non-Structural

3 units SC

- 54 hours lecture per term

This course provides an overview of the legal requirements associated with building inspection. Nonstructural plan check review, and inspection procedures for commercial and industrial buildings will also be covered. CSU

CONST-182 Building Code Interpretation: Structural

3 units SC

- 54 hours lecture per term
- Recommended: MATH-090 or MATH-090SP or MATH-090E or one year of high school algebra or equivalent

This course acquaints the student with legal requirements associated with building inspection. The development of code item checklists and structural plan reviews will also be covered. CSU

CONST-183 Title 24: Energy Conservation Codes

3 units SC

- 54 hours lecture per term

This course presents an overview of Title 24 energy conservation and energy compliance codes. The focus of the course is on building a plan inspection and construction field inspection. Energy projects, streamlining energy compliance forms review, case studies, and reviewing plan checking and building inspection procedures will also be covered. CSU

CONST-191 Plumbing Code Interpretation

3 units SC

- 54 hours lecture per term
- Note: Students may petition to repeat when code changes. Only the first course completed will be applied toward a degree or certificate requirement. Units for both courses will apply towards the 60 units required for the degree.

This course covers the interpretation and application of codes and standards as they apply to construction of plumbing systems. CSU

CONST-192 Mechanical Code Interpretation

3 units SC

- 54 hours lecture per term

This course acquaints students with legal requirements associated with building inspections. The California Mechanical Code and other standards as they apply to heating, ventilation, and refrigeration will also be discussed. CSU

CONST-215 Construction Job Site Training

2 units SC

- 9 hours lecture/81 hours laboratory per term
- Note: Job site experiences are scheduled off-campus. Students must provide transportation to and from job sites.

This course provides students with real job site experience in the construction trades. Students will participate as individuals and/or in group projects with organizations such as Habitat for Humanity and other community organizations. CSU

CONST-244 Estimating: Residential

3 units SC

- 54 hours lecture per term
- Recommended: CONST-114 or CONST-135 or equivalent

This course will present the procedures for estimating materials, labor costs, time management, and bidding strategies for residential construction projects. CSU

CONST-245 Estimating: Commercial

3 units SC

- 54 hours lecture per term
- Recommended: CONST-114 and CONST-136 or equivalents

This course will present the procedures for estimating materials, labor costs, time management, and bidding strategies for commercial construction projects. CSU

Construction**CONST-266 Electrical Codes: Articles 90-398**

3 units SC

- 54 hours lecture per term
- *Note: Same as ELECT-266. Students may petition to repeat when code changes. Only the first course completed will be applied toward a degree or certificate requirement. Units for both courses will apply towards the 60 units required for the degree.*

This course covers the interpretation of the National Electrical Code (NEC) for general requirements, wiring and protection, wiring methods and materials (articles 90-398). Safety installation practices will be presented.

CONST-267 Electrical Codes: Articles 400-830

3 units SC

- 54 hours lecture per term
- *Note: Same as ELECT-267. Students may petition to repeat when code changes. Only the first course completed will be applied toward a degree or certificate requirement. Units for both courses will apply towards the 60 units required for the degree.*

This course covers the interpretation of the National Electrical Code (NEC) for equipment for general use, special occupancies and special equipment (articles 400-830). Safety installation practices will be presented.

CONST-273 Construction Management

3 units SC

- 54 hours lecture per term

This course presents an introduction to administrative procedures, contracts, plans and specifications, schedules, diaries, inspections, report writing, and other forms of communication in the construction field. The different roles in construction management will also be discussed. CSU

CONST-276 Legal Aspects of the Construction Industry

3 units SC

- 54 hours lecture per term

This course provides a summary of the legal implications of the duties and responsibilities of a construction supervisor, superintendent, and contractor. The emphasis is on the practical aspects of legal theories, codes, and cases that are applied to the construction industry. Attention will also be given to contracts and their interpretations. CSU

CONST-295 Occupational Work Experience Education in CONST

1-4 units SC

- May be repeated three times
- Variable hours
- *Note: In order to enroll in CONST-295, students must be employed, register for the course, complete an online Employment Form, and participate in an orientation. Employment Form can be accessed at www.dvc.edu/wrkx. Incomplete grades are not awarded for this course.*

CONST-295 is supervised employment that extends classroom learning to the job site and relates to the student's chosen field of study or area of career interest. Under the supervision of a college instructor, students will engage in on-the-job and other learning experiences that contribute to their employability skills and occupational or educational goals. Five hours work per week or seventy-five hours work per term is equal to one unit. Students may earn up to a maximum of sixteen units; repetition allowed per Title 5 Section 55253. CSU

CONST-298 Independent Study

.5-3 units SC

- Variable hours
- *Note: Submission of acceptable educational contract to department and Instruction Office is required.*

This course is designed for advanced students who wish to conduct additional research, a special project, or learning activities in a specific discipline/subject area and is not intended to replace an existing course. The student and instructor develop a written contract that includes objectives to be achieved, activities and procedures to accomplish the study project, and the means by which the supervising instructor may assess accomplishment. CSU

CONST-299 Student Instructional Assistant

.5-3 units SC

- Variable hours
- *Note: Applications must be approved through the Instruction Office. Students must be supervised by a DVC instructor.*

Students work as instructional assistants, lab assistants and research assistants in this department. The instructional assistants function as group discussion leaders, meet and assist students with problems and projects, or help instructors by setting up laboratory or demonstration apparatus. Students may not assist in course sections in which they are currently enrolled. CSU