CONSTRUCTION – CONST

Joseph Gorga, Dean
Physical Sciences and Engineering Division
Physical Sciences Building, Room 263

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 - Construction and building inspection specialization

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 governmental agencies involved in the construction industry on a construction project.
G. interpret blueprints and specifications.

Upon successful completion of the construction and building specialization, the student will have the necessary knowledge and skills for a career in building or construction inspection 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 all DVC 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 other 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.

<table>
<thead>
<tr>
<th>major requirements:</th>
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<tbody>
<tr>
<td>CONST-114 Print Reading</td>
<td>3</td>
</tr>
<tr>
<td>CONST-124 Construction Details and Specifications</td>
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</tr>
<tr>
<td>CONST-170 Fundamentals of Building Inspection</td>
<td>3</td>
</tr>
<tr>
<td>CONST-181 Building Code Interpretation: Non-Structural</td>
<td>3</td>
</tr>
<tr>
<td>CONST-182 Building Code Interpretation: Structural</td>
<td>3</td>
</tr>
<tr>
<td>CONST-183 Title 24: Energy Conservation Codes</td>
<td>3</td>
</tr>
<tr>
<td>CONST-191 Plumbing Code Interpretation</td>
<td>3</td>
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</tr>
</tbody>
</table>

total minimum units for the major 33

Associate in science degree
Construction - Construction and supervision and superintendency specialization

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 governmental agencies involved in the construction industry on a construction project.
E. interpret blueprints and specifications.
F. utilize instruments used in surveying.

Upon successful completion of the construction and supervision and superintendency 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 all DVC 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 other general education requirements; however, the units are only counted once.
Construction

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.

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<tr>
<td>BUSMG-120</td>
<td>Introduction to Management Studies</td>
<td>3</td>
</tr>
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<td>BUSMG-121</td>
<td>Practices and Concepts of Supervision</td>
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</tr>
<tr>
<td>CONST-116</td>
<td>Plane Surveying</td>
<td>4</td>
</tr>
<tr>
<td>CONST-124</td>
<td>Construction Details and Specifications</td>
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</tr>
<tr>
<td>CONST-244</td>
<td>Estimating: Residential</td>
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<td>CONST-245</td>
<td>Estimating: Commercial</td>
<td>3</td>
</tr>
<tr>
<td>CONST-273</td>
<td>Construction Management</td>
<td>3</td>
</tr>
<tr>
<td>CONST-276</td>
<td>Legal Aspects of the Construction Industry</td>
<td>3</td>
</tr>
<tr>
<td>plus at least 3 units from:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONST-110</td>
<td>Occupational Safety</td>
<td>2</td>
</tr>
<tr>
<td>CONST-136</td>
<td>Construction Processes: Commercial</td>
<td>4</td>
</tr>
<tr>
<td>CONST-181</td>
<td>Building Code Interpretation: Non-Structural</td>
<td>3</td>
</tr>
<tr>
<td>CONST-295</td>
<td>Occupational Work Experience</td>
<td>1-4</td>
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</tbody>
</table>
| total minimum units for the major | | 34

Associate in science degree  
Construction -  
Construction management specialization

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.

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 all DVC 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 other 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.

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<td>ARCHI-244</td>
<td>Architectural Practice and Working Drawings</td>
<td>3</td>
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<tr>
<td>BUS-101</td>
<td>Business English</td>
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<td>COMSC-101</td>
<td>Computer Literacy</td>
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<tr>
<td>CONST-135</td>
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<td>MATH-120</td>
<td>Intermediate Algebra</td>
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<tr>
<td>PHYS-110</td>
<td>Elementary Physics</td>
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| total minimum units for the major | | 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.

The associate in science degree requires eighteen units in the major, a minimum of units of general education units, and 18.5 elective units from a selection of degree applicable units. The certificate program courses also meet some of the requirements of other construction degrees and certificates. 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 completely equivalent or higher level English and/or math courses, these may be substituted for the requirements of the certificate of achievement. Many trades require documentation of at least one year of high school or one term of college algebra and higher levels of English and mathematics are highly recommended.

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<tr>
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<td>Job Search Strategies</td>
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<tr>
<td>CONST-105</td>
<td>Survey of the Trades</td>
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<tr>
<td>CONST-110</td>
<td>Occupational Safety</td>
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<td>CONST-215</td>
<td>Construction Job Site Training</td>
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<tr>
<td>KNACT-120</td>
<td>Fitness Training</td>
<td>0.5</td>
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<td>ENGL-122</td>
<td>First-Year College Composition and Reading</td>
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<tr>
<td>MATH-120</td>
<td>Intermediate Algebra</td>
<td>5</td>
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total minimum units for the major 22

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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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.

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.

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<td>Legal Aspects of the Construction Industry</td>
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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.

required courses:    units
ARCHI-244  Architectural Practice and Working Drawings I   3
BUS-101  Business English  3
CONST-105  Construction Processes: Residential  4
CONST-106  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.

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 units. 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.

required courses:    units
CARER-140  Job Search Strategies  1
CONST-105  Survey of the Trades  1.5
CONST-110  Occupational Safety  2
CONST-114  Print Reading  3
CONST-135  Construction Processes; Residential  4
CONST-215  Construction Job Site Training  2
KNACT-120  Fitness Training  .5
MATH-092  Math for Trade Pre-Apprentices  4
plus at least 3 units from*:  
ENGL-096  Introduction to College Reading and Study Skills  3
ENGL-098  Introduction to College Writing  3

total minimum required units 21

* Higher level Math and English may be substituted for the Certificate of Achievement. You must have completed English and Math at the level designated or higher through assessment or prior equivalent classes or by concurrent enrollment.
Construction

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.

required courses: .......................................................... units
CONST-110 Occupational Safety..........................2
CONST-114 Print Reading...........................................3

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

plus at least 3 units from*:
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 for the Certificate of Accomplishment.

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 Print Reading
3 units SC
• 54 hours lecture per term

This course presents the interpretation of construction documents, drawings, and specifications used in the building industry. Students are introduced to project plans for single and multi-family dwellings as well as mixed-use and light commercial. 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, elevations and measuring standards. An introduction to electronic measurements and calibration as well as systematic and random error analysis is presented. Students will use surveying instruments, perform Global Positioning System (GPS) measurements; and gain experience with map reading and mapping. CSU, UC

CONST-124 Construction Details and Specifications
3 units SC
• 54 hours lecture per term

This course presents the study of construction drawings and specifications for building systems. Details related to foundations, roofs, windows, doors, stairs, elevators, metal fabrications, and reinforced concrete are covered. The study of thermal and moisture protection, structural steel, wood-framed, and heavy-timber buildings and the interpretation and sketching of details is emphasized. CSU
Construction

**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

**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
Construction

**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

**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