

Construction Technology

Degrees and Certificates

Associate in Science Degree: Construction Technology

Certificate of Achievement: Construction Technology

Program Description

Construction Technology offers a series of carpentry courses, green-collar training courses and electrician trainee courses. Beginning Construction (CT 110), the introductory course, is open to all students.

The advanced Construction Technology carpentry courses—Beginning Construction Trades (CT 111), Framing (CT 112), Roof Framing (CT 113), Beginning Finish Carpentry (CT 114), Intermediate Finish Carpentry (CT 115), Blueprint Reading (CT 116), Measuring and Calculating (CT 118), and Construction Remodel (CT 119)—are designed for students who have completed CT 110, or those with a minimum of one year of carpentry experience. Work Experience in Construction (CT 290) combines on-the-job training with classroom instruction.

Building Green (CT 122), Weatherization (CT 124) and Introduction to PhotoVoltaic Systems (CT 125) do not require any previous building classes.

Santa Barbara City College (Division of Apprenticeship Standards, Electricians Certification Unit Approved School #138) offers four Electrician Trainee courses as a “partial” General Electrician curriculum. The courses—Blueprint Reading for Electricians, Electrical Mathematics and Introduction to *National Electrical Code*—are designed for students working as electricians who want to prepare for the state certification exam and those required to be enrolled in order to continue working for a C-10 electrical contractor’s license.

For further information concerning the carpentry courses or the Electrician Trainee courses, contact Patrick Foster at (805) 455-3187.

Program Student Learning Outcomes

1. Use construction tools safely and efficiently.
2. Demonstrate knowledge of component systems of typical residence.
3. Build a typical construction structure (wall, roof, cabinet, etc.).

4. Install typical construction trim (fascia, base, crown, etc.).
5. Demonstrate understanding of the necessity and components of building science and green building.

Faculty and Offices

Patrick Foster, *Director*
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Alan Price, *Dean* (A-218, ext. 3044)

AS Construction Technology Degree Requirements

Department Requirements (41.1 units)

CT 110 — Beginning Construction	4.7
CT 111 — Beginning Construction Trades.....	4.7
CT 112 — Framing	3
CT 113 — Roof Framing.....	3
CT 114 — Beginning Finish Carpentry	3
CT 115 — Intermediate Finish Carpentry	3
CT 116 — Blueprint Reading	3
CT 118 — Measuring and Calculating.....	3
CT 119 — Construction Remodel.....	4.7
CT 122 — Building Green	6
CT 124 — Weatherization	3

College Requirements

For complete information, see “Graduation Requirements” in the *Catalog* Index.

Certificate of Achievement: Construction Technology

Department Requirements (41.1 units)

CT 110 — Beginning Construction	4.7
CT 111 — Beginning Construction Trades.....	4.7
CT 112 — Framing	3
CT 113 — Roof Framing.....	3
CT 114 — Beginning Finish Carpentry	3
CT 115 — Intermediate Finish Carpentry	3
CT 116 — Blueprint Reading or	3
CT 118 — Measuring and Calculating or	3
CT 119 — Construction Remodel.....	4.7

CT 122 — Building Green6
CT 124 — Weatherization3

Construction Technology Courses

CT 104 — Basic Construction Skills (3)

Hours: 70 (45 lecture, 25 lab)

Introduction to basic construction skills for residential wood construction. Designed for students interested in a career in home construction, focusing on career overview, safety, work ethics, tool use and basic framing.

CT 110 — Beginning Construction (4.7) — CSU

Hours: 144 (54 lecture, 90 lab)

Introduction to construction skills and concepts, with emphasis on residential wood construction. Designed for entry-level students interested in a career in the building trades. Topics include safety, planning, foundation, floor framing, wall framing, roof framing and siding.

CT 111 — Beginning Construction Trades (4.7) — CSU

Hours: 144 (54 lecture, 90 lab)

Introduction to basic construction skills and concepts of the sub-trades involved in residential wood construction: concrete work, roofing, sheetrock, insulation, plumbing and electrical. Overview of trades, designed for students interested in a career in home construction.

CT 112 — Framing (3) — CSU

Hours: 72 (45 lecture, 27 lab)

Intermediate-level class in rough framing skills and concepts in residential wood construction. Designed for continuing students who have taken CT 110 and for carpenters with some experience in residential framing. Topics include safety, foundations, framing hardware, exterior siding, special wall construction, stair framing and special topics in framing.

CT 113 — Roof Framing (3) — CSU

Hours: 72 (45 lecture, 27 lab)

Intermediate-level class in rough framing skills and concepts in residential wood construction, with emphasis on roof framing. Designed for continuing students who have taken CT 110 and for carpenters with some experience in residential framing. Topics include safety, layout, rafter design, rake walls and cornice treatment.

CT 114 — Beginning Finish Carpentry (3) — CSU

Hours: 72 (45 lecture, 27 lab)

Introduction to finish carpentry, with emphasis on residential wood construction. Designed for students who have already taken CT 110 or who have some prior experience in carpentry or construction. Topics include safety, tool care, door hanging, door and window easing, baseboard, crown molding, flooring, and close shelf and pole.

CT 115 — Intermediate Finish Carpentry (3) — CSU

Hours: 72 (45 lecture, 27 lab)

Intermediate finish carpentry, with emphasis on residential wood construction. Designed for students who have taken CT 110 or who have some prior experience in carpentry or construction. Topics include cabinet installation, cabinet construction, built-ins, paneling and wainscoting.

CT 116— Blueprint Reading (3) — CSU

Course Advisories: Eligibility for ENG 98

Hours: 54 lecture

Introduction to blueprint reading in residential construction. Topics include understanding the uses of blueprints, types of plans, drafting conventions, contents of plans, focus on floor plans, elevations and sections, using the architectural scale, drafting simple plans, and shop drawings from plans.

CT 118— Measuring and Calculating (3) — CSU

Skills Advisories: MATH 1

Hours: 54 lecture

Introduction to measuring and calculating used in residential wood construction. Topics include working with common and decimal fractions, using the standard tape measure, using a calculator for construction, estimating material, understanding the special

triangles used in roof rafter calculations, rafter length calculation, and stair stringer calculation.

**CT 119 — Construction Remodel
(4.7) — CSU**

Hours: 144 (54 lecture, 90 lab)

Theory and skills for residential home remodeling. Designed for continuing students who have taken CT 110 and carpenters with some experience in residential construction. Topics include design, planning, demolition, tie-in, green applications and safety.

**CT 121 — Blueprint Reading for Electricians
(3) — CSU**

*Skills Advisories: Eligibility for ENG 98 and 103
Hours: 54 lecture*

Overview of blueprints, plans and specifications; symbols used in electrical-related trades; preparation and use of as-built drawings, wiring and line diagrams, schematics and ladder diagrams. Approved School #138 for California Electrician Trainees.

**CT 122 — Building Green
(6) — CSU**

Hours: 108 lecture

Overview of Green Building approach to design, planning and construction details in sustainable building. Includes site protection, water conservation and management, energy efficiency, solar heating and PV, material efficiency, deconstruction, insulation, indoor air quality, building performance and alternative building techniques.

**CT 123 — Outdoor Structures
(3) — CSU**

Hours: 72 (45 lecture, 27 lab)

Designing and building outdoor structures (trellises, pergolas, gazebos, sheds, gateways, decks, etc.). Topics include foundations, finished framing, roofs, hardware, joints, weatherproofing, etc.).

**CT 124 — Building Performance
(3) — CSU**

Hours: 72 (45 lecture, 27 lab)

Overview of building performance (assessment, diagnosis and remediation) in residential construction. Topics include building science, diagnostic testing, visual inspection, remediation, customer relations and business and job opportunities.

**CT 125 — Introduction to Photovoltaic Systems
(3) — CSU**

Hours: 90 (36 lecture, 54 lab)

Overview of Photovoltaic (PV) systems and installations. Topics include solar radiation, site survey, system components and configurations, batteries, inverters, system sizing, mechanical and electrical integration.

**CT 127 — Sustainability Audit
(3) — CSU**

Hours: 72 (45 lecture, 27 lab)

Overview of whole-house or sustainability audit (energy, water, indoor air quality, landscape) in residential construction. Topics include: career and business opportunities, comprehensive audit categories, the audit process, auditing tools and diagnostic tests, site inspection, surveys and recommendations.

**CT 128 — Beginning Plumbing
(3) — CSU**

Hours: 72 (45 lecture, 27 lab)

Overview of plumbing in residential construction. Topics include supply and DWV systems, materials, connections, tools used, fixtures, code requirements, etc.

**CT 129 — Construction Estimation
(3) — CSU**

Hours: 54 lecture

Introduction to estimating in residential construction. Topics include current estimation programs, software, material and labor calculations, take-offs from blueprints, carpentry and other-trade estimating, etc.

**CT 130 — Contractors License Preparation
(3)**

Hours: 54 lecture

Combination online and mandatory in-class course, divided into two eight-week sessions: law and trade. Prepares the student for taking the California State Contractors License Exam in the General Contractor (B-1) category.

CT 132 — Lighting Systems

(3) — CSU

Hours: 54 lecture

Basic function, operation, installation and characteristics of various lighting systems.

CT 133 — Motors, Motor Controllers, and Process Controllers

(3) — CSU

Hours: 54 lecture

Basic function, operation, installation and characteristics of various types of motors (AC, DC, dual voltage, repulsion, universal, 3-phase, Squirrel Cage, Synchronous).

CT 134 — Transformers

(3) — CSU

Hours: 54 lecture

Basic function, operation, installation and characteristics of transformers.

CT 135 — Grounding Systems

(3) — CSU

Hours: 54 lecture

Basic function, operation and characteristics of grounding systems.

CT 136 — Electrical Theory

(3) — CSU

Hours: 54 lecture

Basic electrical theory topics include ohms law, series/parallel circuits, voltage, magnetism, 3-phase systems, AC/DC theory, inductance and capacitance, etc.

CT 137 — Specialty Systems

(3) — CSU

Hours: 54 lecture

Basic function, operation and characteristics of specialty electrical systems. Topics include fire alarms, security alarms, voice/data/tv/video, signaling systems, lighting protection systems, fiber-optic systems, etc.

CT 139 — Construction Project Management

(3) — CSU

Hours: 54 lecture

Introduction to managing projects in residential construction. Topics include overview of management

programs and software, bidding, preconstruction set up, project budget, daily work plan, team roles, safety plan and job completion.

CT 153 — Electrical Mathematics

(3)

Skills Advisories: MATH 1

Hours: 54 lecture

Basic mathematics and its application to electrical and other technologies. Topics in arithmetic, common fractions, decimal fractions, percentages, graphs, measurement and introduction to algebra are covered. Approved School #138 for California Electrician Trainees.

CT 194 — Introduction to National Electrical Code

(3)

Skills Advisories: Eligibility for ENG 98 and 103

Hours: 54 lecture

Layout and content of the *National Electric Code*. Purpose, intent and scope of electrical codes, as well as utilization and application. Also includes use of the Code for calculations and hazardous locations. Approved School #138 for California Electrician Trainees.

CT 196 — Jobsite Management

(3) — CSU

Skills Advisories: Eligibility for ENG 98 and 103

Hours: 54 lecture

Introduction to jobsite supervision in the construction industry. Includes industry organization, documentation and record-keeping, personnel and financial management, as well as job planning and safety. Approved School #138 for California Electrician Trainees.

CT 290 — Work Experience in Construction

(1 – 4) — CSU

Hours: 60-300 lab

Work experience on a construction job or project, plus attending one orientation and a monthly meeting. Students perform assigned responsibilities as an employee, follow employer's rules, regulations and policies, write learning objectives, keep a record of time worked on a student data sheet, and secure employer's evaluation at the end of the semester.