

# BUILDING INDUSTRIES (BI)

## BI 0001. OSHA Construction Safety Training

*Unit: 1*

Formerly known as CET 1

Hours: 18 lecture

Covers a variety of construction safety and health hazards workers may encounter. Provides safety information to construction workers about employee and employer rights and responsibilities. Emphasizes identification, avoidance, abatement, control, and prevention of job-related hazards on construction sites. This course is taught by authorized industry outreach trainers, and upon successful completion, students will receive the OSHA 10 Hour card. (not transferable)

## BI 0002. OSHA 30-Hour Construction Safety Training

*Units: 2*

Hours: 36 lecture

Covers specific OSHA requirements as they apply to the construction industry and teaches safety awareness to help recognize and reduce the risks of job site hazards. This course is an orientation and covers safety and health hazards workers may face on construction work sites with emphasis on hazard identification, avoidance, control and prevention and is intended for supervisors or workers who have some safety responsibility. Upon successful completion, 30 hour OSHA card issued by instructor. (not transferable)

## BI 0003. Introduction to Construction and CNC Woodworking

*Units: 3*

Formerly known as CET 3

Advisory: Completion with grade of "C" or better or concurrent enrollment in BI 1

Hours: 108 (36 lecture, 72 laboratory)

Designed to teach the skills required to be successful in the construction and woodworking industries. Topics include fundamentals of woodworking, safe operation of hand tools, introduction to wood CNC manufacturing, project drawings, and environmentally sound design and construction techniques. Hands-on experience with construction and woodworking tools and materials based on assigned student project(s). (not transferable)

## BI 0005. Introduction to the Built Environment

*Units: 3*

Formerly known as CET 5

Hours: 54 lecture

Introduction to the building industry: trends, organizations, construction processes, contracting laws, regulations, business aspects and career pathways. (CSU)

## BI 0006. Introduction to Construction Management

*Units: 3*

Prerequisite: Completion of BI 5 with grade of "C" or better

Hours: 54 lecture

Introduction to Construction Management. Topics are based on learning outcomes from the American Council for Construction Education (ACCE). This course introduces the structure of construction estimation, financing, and proper planning. (CSU)

## BI 0007. Building with Green Construction Materials

*Units: 4*

Formerly known as CET 7

Advisory: Completion with grade of "C" or better or concurrent enrollment in BI 1

Hours: 180 (18 lecture, 162 laboratory)

Project-based study of the performance characteristics of building materials using sustainable construction techniques and materials. Includes the basic properties and installation techniques of metals, aggregates, cement products, asphalt products and wood. Safe handling of construction materials and tools. (CSU)

## BI 0008. Civil Applications of Computer-Aided Design

*Units: 3*

Formerly known as DES 10

Prerequisite: Completion of ADVM 2 or BI 10 with grade of "C" or better or equivalent as determined by instructor

Hours: 90 (36 lecture; 54 laboratory which may be scheduled TBA)

Development of drafting skills used in the areas of industrial and civil engineering support. Emphasis on land division, determination of location and direction, development of plots based upon legal description and the fundamentals of utilizing surveying data as applied to preliminary and final maps. Designed for students who have attained an intermediate knowledge of the processes and practices of engineering design/drafting support. Introduction to AutoCAD Civil 3D software. (CSU)

## BI 0010. Architectural Drawing I

*Units: 3*

Formerly known as DES 20

Hours: 90 (36 lecture; 54 laboratory which may be scheduled TBA)

Introduction to the fundamentals of residential construction and design documentation. Drawings of a residence are developed and detailed, to include sketches, site plan and floor plans, foundation, elevations, and section views. AutoCAD instruction is incorporated to develop CAD drawings and electronic data sets. (CSU)

## BI 0011. Architectural Drawing II

*Units: 3*

Formerly known as DES 21

Prerequisite: Completion of BI 10 with grade of "C" or better or equivalent as determined by instructor

Hours: 90 (36 lecture; 54 laboratory which may be scheduled TBA)

Advances the skills and knowledge of residential architectural drawing production started in BI 10. Course focuses on production of residential architectural drawings of a 2-story wood framed house in the context of current and relevant building codes, construction materials and methods, industry standard work flow, production and graphic standards through the use of a drawing software application. Additional skills of software utilization, drawing management, complex drawing creation and printing will be covered. This course teaches intermediate AutoCAD skills. (CSU)

## BI 0012. Architectural Drawing III-BIM (Building Information Modeling)

*Units: 3*

Formerly known as DES 22

Prerequisite: Completion of BI 11 with grade of "C" or better or equivalent as determined by instructor

Hours: 90 (36 lecture; 54 laboratory which may be scheduled TBA)

Continuation of the architectural design started in BI 10 and 11. Students utilize Building Information Modeling (BIM) using REVIT software to develop commercial architectural documentation (including electronic data sets) in adherence to the International Building Code (IBC) and local county and state codes. (CSU)

**BI 0015. Managing the Computer-Aided Design (CAD) Environment**

*Units: 3*

Formerly known as DES 40

Prerequisite: Completion of BI 8, ADVM 11 or BI 12 with grade of "C" or better, or equivalent as determined by instructor

Advisory: Completion of ADVM 3D with grade of "C" or better

Hours: 90 (36 lecture; 54 laboratory which may be scheduled TBA)

Designed for the advanced Drafting and Engineering Support student.

Topics include proper CAD management skills and the development of "as built" models used in the manufacturing, architectural and civil disciplines. Focus on utilizing, creating and instituting CAD standards, policies and procedures. Development of prototypes integral to the design process in their chosen area of concentration (mechanical, civil and/or architecture). (CSU)

**BI 0020. Foundations and Framing**

*Units: 3*

Formerly known as CET 20

Hours: 108 (36 lecture, 72 laboratory)

Fundamentals of construction foundation and framing techniques involving layout and construction to include, establishing elevations, site preparation, types of foundation forms, rebar and bolt installation, concrete placement techniques for slab on grade, cast in place (CIP), and pre-cast installations, structural steel, various types of floor systems, and applicable code requirements specific to the above. Introduction to California Green Technology and "Net Zero Energy" policies and sustainability practices for residential, commercial, and industrial construction. (CSU)

**BI 0022. Introduction to Energy Efficiency Construction**

*Units: 3*

Formerly known as CET 22

Hours: 108 (36 lecture, 72 laboratory)

Fundamentals of residential, commercial, and industrial framing techniques to include interior and exterior walls, ceilings, roof systems, stair design, installation and placement of sub trades including dry mechanical, plumbing, electrical, and structural steel post and beam installations. Introduction the future of construction as it evolves utilizing California Green Technology, "Net Zero Energy" policies, and sustainability practices. (CSU)

**BI 0024. Fundamentals of Construction Documents and Estimating**

*Units: 3*

Formerly known as CET 24

Hours: 54 lecture

Establishes a vocabulary and understanding of construction related documents including the symbols and detail views of building plans. Cost estimating to include material and labor cost calculations, specifications, problem solving, and bid preparations. (CSU)

**BI 0026. Residential House Wiring and Codes**

*Units: 3*

Formerly known as CET 26

Hours: 108 (36 lecture, 72 laboratory)

Introduction in the electrical trade. Inside wiring as applied to residential, commercial, and industrial structures. Electrical service requirements for photovoltaic systems. Use of tools and materials of the trade. Review of the National Electrical Code and the applications and California Electrical Code updates to the California Green Technology and "Net Zero Energy" policies. (CSU)

**BI 0028. Independent Study**

*Units: 1-3*

Formerly known as CET 28

Designed for students interested in furthering their knowledge at an independent study level in an area where no specific curriculum offering is currently available. Independent study might include, but is not limited to, research papers, special subject area projects, and research projects. See Independent Study page in catalog. (CSU)

**BI 0030. Finish Carpentry**

*Units: 3*

Formerly known as CET 30

Advisory: Completion with grade of "C" or better or concurrent enrollment in BI 3

Hours: 108 (36 lecture, 72 laboratory)

Fundamentals of woodworking hand tools, power hand tools and woodworking machinery to safely develop knowledge and skills leading to finish trim carpentry. Emphasis on residential construction finish carpentry standards, details, nomenclature, trims, and methods of setting interior and exterior doors, window jamb and trims, closet packs, cabinet installs, wainscoting, stair trim and railings, base and ceiling trims and finished flooring applications. (not transferable)

**BI 0032. Residential Building Codes**

*Units: 3*

Formerly known as CET 32

Hours: 54 lecture

Instruction in building codes for light frame one- or two-story dwellings related to local jurisdictions and the State of California. Application of codes to existing buildings with a study of regulations and abatement procedures for standard frame and Insulated Concrete Forms (ICF) green technology buildings. Includes codes related to California Green Technology and "Net Zero Energy" policies. (not transferable)

**BI 0034. Plumbing and Mechanical Installation and Design**

*Units: 3*

Formerly known as CET 34

Hours: 108 (36 lecture, 72 laboratory)

Introduction to the planning, installing, and maintaining of mechanical (HVAC/R) and plumbing systems in accordance with local codes and ordinances. Includes use of materials and codes related to California Green Technology and "Net Zero Energy" policies. (CSU)

**BI 0095. Internship in Building Industries**

*Units: 0.5-4*

Formerly known as CET 95

Designed for advanced students to work in an area related to their educational or occupational goal. Provides new on-the-job technical training under the direction of a worksite supervisor, allowing students to expand knowledge and skills in the chosen field. Mandatory orientation session and faculty approval to determine eligibility. One unit of credit is equal to 54 hours of work. Students may earn up to a total of 16 units in internship courses (any course numbered 95 and PDEV 94). (CSU)

**BI 0800. Introduction to Energy Surveying***Units: 0*

Formerly known as CET 800

Prerequisite: Completion of BI 1 with grade of "C" or better, or equivalent as determined by the program chair

Hours: 40 (24 lecture, 16 laboratory)

Competency-based course of instruction designed to align with the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) Level-1 energy auditing standards. Provides hands-on experience in residential and commercial energy auditing. Emphasis on principles and sources of energy, detailed facilities evaluation techniques, data collection for energy auditing, establishing baselines, and conducting accurate inventories. Includes workplace safety policies and practices to comply with OSHA guidelines. Students required to secure personal protective equipment as of first class session. (pass/no pass grading) (noncredit)

**BI 0801. Basic Electricity and Wiring Fundamentals***Units: 0*

Formerly known as CET 801

Prerequisite: Completion of BI 800 with grade of "Pass"

Hours: 40 (20 lecture, 20 laboratory)

This comprehensive introduction to electrical wiring provides a well-rounded understanding of the fundamentals of basic electricity, electrical safety, electrical circuitry, and the processes and procedures of the electrical wiring trades. Includes relevant electrical codes. Students required to secure personal protective equipment as of first class session. (pass/no pass grading) (noncredit)

**BI 0802. Introduction to Lighting Retrofits***Units: 0*

Formerly known as CET 802

Prerequisite: Completion of BI 801 with grade of "Pass"

Hours: 40 (20 lecture, 20 laboratory)

Provides well-rounded competency-based understanding of lighting retrofit trade fundamentals through hands-on experience in commercial retrofit procedures and skills. Includes electrical safety, policies, and practices as relate to retrofit work. Students required to secure personal protective equipment as of first class session. (pass/no pass grading) (noncredit)

**BI 0804. Rapid Prototyping for Product Design***Units: 0*

Formerly known as CET 804

Hours: 18 (9 lecture, 9 laboratory)

Hands-on exposure to processes used to fabricate prototypes. An introduction to tools and technologies for prototyping, including design for manufacture. Example products show the process from idea to market including the series of prototypes that helped get the product to successful sales. Course materials cover safe hand tool use, power woodworking hand tools, wood shop tools, laser cutting, and CNC routers. (pass/no pass grading) (noncredit)

**BI 0805. Introduction to Industry and Occupational Safety for the Building Trade***Units: 0*

Formerly known as CET 805

Hours: 28 (24 lecture, 4 laboratory)

Provides an introduction to the building trades as an occupation. Covers a variety of construction safety and health hazards workers may encounter. Provides safety information to construction workers about employee and employer rights and responsibilities. Emphasizes identification, avoidance, abatement, control, and prevention of job-related hazards on construction sites. Upon successful completion, 10 hour OSHA card issued by instructor. (pass/no pass grading) (noncredit)

**BI 0806. Introduction to Building Trades and Tools***Units: 0*

Formerly known as CET 806

Prerequisite: Completion of BI 805 with grade of "Pass"

Hours: 48 (27 lecture, 21 laboratory)

Provides an overview of the local/regional building trade industry. Introduces students to the proper and safe operation of hand and power tools used in construction. Covers the fundamentals of construction math, measurements and blueprints. Emphasizes the employability skills such as time management, communication and proper attire for success in the construction industry. (pass/no pass grading) (noncredit)

**BI 0807. Basic Material Handling and Building***Units: 0*

Formerly known as CET 807

Prerequisite: Completion of BI 806 with grade of "Pass"

Hours: 53 (36 lecture, 17 laboratory)

Provides an overview of building materials and techniques for construction. Introduces students to basic trades including plumbing, electrical, and HVAC. Covers the fundamentals of framing, flooring, and tiling. Explains relevant building codes. (pass/no pass grading) (noncredit)