

**EL CAMINO COLLEGE
COURSE OUTLINE OF RECORD – Approved**

Subject:	ARCH
Course Number:	299
Descriptive Title:	Studio 4 - Design/Build & Technology
Division:	Industry and Technology
Department:	Architecture
Course Disciplines:	Architecture
Catalog Description:	As the fourth course in the architectural design studio series, this course explores the relationship between design and build (construction and fabrication), and between design and alternative materials.
Prerequisite:	Architecture 251 and Environmental Technology 249 with a minimum grade of C in prerequisite or equivalent
Recommended Preparation:	Construction Technology 100
Course Length:	Full Term
Hours Lecture (per week):	2
Hours Laboratory (per week):	6
Outside Study Hours:	4
Total Course Hours:	144
Course Units:	4
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	03/19/2001
Transfer UC:	
Effective Date:	
General Education:	
ECC	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	
Other:	

<p>Student Learning Outcomes:</p>	<p>SLO #1 Designing and Collaborating Upon completing the course work, students will demonstrate the ability to design a simple house and then successfully collaborate within a team to build the structure in the Lab.</p> <p>SLO #2 Design Theory Given instruction in Design Theory, based on lecture material given and handouts and required reading in the book, the student will create conceptual diagrams and analytical drawings, like exploded axonometric, to explain the main concept of idea behind the solution.</p> <p>SLO #3 Construction Tool Safety Given instruction on how to handle tools properly and safely, the student will take a safety test and pass with 100% score before they are allowed to work in the construction yard using power and manual tools.</p>
<p>Course Objectives:</p>	<ol style="list-style-type: none"> 1. Design Concept: Formulate design concepts or ideas through research, analysis, inspiration, sketches and diagrams. 2. Design Development: Use the design process to develop design. 3. Documentation: Represent, document and present design using design tools – plans, sections, elevations and models. 4. Material Selection: Select appropriate materials for their design (function, aesthetic, economy and sustainability) through research, precedent and construction method. 5. Design/Build: By building their own design, understand the relationship between design and construction.
<p>Major Topics:</p>	<ol style="list-style-type: none"> I. Design Concept: 4 hours, Lecture <ol style="list-style-type: none"> A. Research and analysis B. Inspiration, sketch and diagram II. Design Development: 5 hours, Lecture <ol style="list-style-type: none"> A. Plans, sections, elevations B. Physical and digital models C. Design process III. Material Selection: 4 hours, Lecture <ol style="list-style-type: none"> A. Research and analysis B. Appropriate use and precedent C. Function, aesthetic, economy, sustainability D. Alternative materials and use IV. Building Systems: 5 hours, Lecture <ol style="list-style-type: none"> A. Foundation B. Structure C. Mechanical D. Electrical

E. Plumbing

V. Construction Documents: 5 hours, Lecture

- A. Plans, sections, elevations
- B. Details
- C. Specifications
- D. Building code and permit process

VI. Construction Safety: 4 hours, Lecture

- A. Proper and safe use of tools
- B. Appropriate use of tools
- C. Protection
- D. Health and safety
- E. Trade apprenticeship
- F. Construction technology safety test

VII. Construction Methods: 4 hours, Lecture

- A. Building trades
- B. Sequencing
- C. Means and methods
- D. Materials
- E. Safety and access

VIII. Construction Finishes: 5 hours. Lecture

- A. Windows and doors
- B. Interior and exterior finish materials
- C. Roofing material
- D. Base and trim
- E. Flashing and waterproofing

IX. Design Concept: 9 hours, Lab

- A. Research and analysis
- B. Site, context, environment and culture
- C. Program, building type and precedent
- D. Inspiration, concept, idea and meaning
- E. Sketches and diagrams
- F. Landscape and sustainability

X. Design Development: 15 hours, Lab

- A. Application of and giving form to concept
- B. Exploration of geometry and shape
- C. Design tools and process
- D. 2 dimensional and 3 dimensional relationships
- E. Vision and clarity - abstraction, suggestion, imagination
- F. Site and building development - iterations, improvement and design dialogue
- G. Design representation, documentation and portfolio inserts
- H. Something out of nothing

	<p>XI. Material Selection: 9 hours, Lab</p> <ul style="list-style-type: none"> A. Materials research and properties B. Appropriate use and precedent C. Material function D. Aesthetic qualities E. Economy and cost implications F. Natural vs synthetic G. Sustainability considerations H. Alternative materials and use <p>XII. Building Systems: 12 hours, Lab</p> <ul style="list-style-type: none"> A. Foundation B. Structure C. Mechanical D. Electrical E. Plumbing <p>XIII. Construction Documents: 15 hours, Lab</p> <ul style="list-style-type: none"> A. Site plan B. Floor plans C. Roof plan D. Reflected ceiling plans E. Sections F. Elevations G. Interior elevations H. Exterior details A. Interior details J. Specifications K. Building code and permit process <p>XIV. Construction: 48 hours, Lab</p> <ul style="list-style-type: none"> A. Appropriate, proper and safe use of tools; health, safety and protection; construction technology safety test B. Building trades and apprenticeships C. Means and methods D. Sequencing and schedule E. Materials and finishes F. Flashing and waterproofing G. Insulation and energy efficiency
Total Lecture Hours:	36
Total Laboratory Hours:	108
Total Hours:	144
Primary Method of Evaluation:	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	Design a shelter and submit drawings to the instructor for review.

Critical Thinking Assignment 1:	1. Further develop and refine the design of the shelter using various design tools, multiple iterations and critical eye. Resubmit the design to the instructor for review.
Critical Thinking Assignment 2:	2. Build a shelter, thinking about building systems, materials, sequencing, means and methods. Submit documents (drawings and photographs) to the instructor for review and inspection.
Other Evaluation Methods:	Desk criticism Construction inspection Quality control
Instructional Methods:	Dialogue, guidance and desk critique Construction demonstration Construction yard
If other:	
Work Outside of Class:	Design assignments Required reading Written work Enhanced awareness of the built environment
If Other:	
Up-To-Date Representative Textbooks:	Francis D. K. Ching, <u>Building Construction Illustrated</u> , 6th edition, John Wiley, 2020.
Alternative Textbooks:	
Required Supplementary Readings:	
Other Required Materials:	Tools for architectural drafting, design and models Tool belt
Requisite:	Prerequisite
Category:	sequential
Requisite course(s): List both prerequisites and corequisites in this box.	Architecture 251 and Environmental Technology 249
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	Ability to create architectural construction documents. ARCH 251 - Create a series of construction documents using hand drawing, CAD and BIM. Ability to identify framing members used in wood frame construction. ARCH 251 - Analyze the names and functions of framing members in wood frame construction. Understand sustainable practices used in site and landscape development. ET 249 – Describe and discuss principles and strategies of sustainable and regenerative practices in site and landscape development.
Requisite Skill:	or equivalent

Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	If a student has taken equivalent courses at another college, the student will be prepared to enroll in this course. If students have experience in architectural construction documentation and sustainable site design, they will be prepared to enroll in this course. Students should have experience in architectural documentation and sustainable site design to succeed in this course.
Requisite course:	Construction Technology 100
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	<p>Ability to identify and use hand tools used in the construction field. CTEC 100 - Identify and use hand tools common to the construction industry.</p> <p>Ability to define terms used in the construction industry. CTEC 100 - Identify and define a list of construction terms.</p> <p>Ability to construct rough framing for a door and window. CTEC 100 - Construct a standard height wall including doors and windows.</p>
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Michael Stallings
Date:	03/14/2016
Original Board Approval Date:	09/01/2000
Last Reviewed and/or Revised by:	Marc Yeber
Date:	11/15/2021
Last Board Approval Date:	01/18/2022