

BITA 2: STUDY OF MODERN CRAFTSMANSHIP AND INFRASTRUCTURE

INDUSTRY SECTOR: Building and Construction Trades Sector

PATHWAY: Residential and Commercial Construction

CALPADS TITLE: Intermediate Residential and Commercial Construction (Concentrator)

CALPADS CODE: 7341

HOURS:

Total	Classroom	Laboratory/CC/CVE
180	90	90

JOB TITLE	O*NET CODE	JOB TITLE	O*NET CODE
Construction Laborers	47-2061.00	Helpers--Carpenters	47-3012.00
Helpers--Electricians	47-3013.00	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	47-3014.00
Helpers--Roofers	47-3016.00	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	47-3015.00

COURSE DESCRIPTION:

The Study of Modern Civilization Infrastructure and Craftsmanship course is designed to gain an in-depth understanding of the history behind construction, materials, and trades in the industry. Students will use primary sources and become Construction Historians as they reconstruct the advancement of the trades, materials, and tools that are now being used in residential and commercial construction. The course covers a more advanced knowledge of safety, use of hand and power tools, blueprint reading, geometry, and estimating. Integrated throughout the course are foundation standards, which include communication, ethics, interpersonal/team skills, critical thinking and other employment skills needed for the 21st Century.

Upon completion of this course, students will be able to perform the duties of an entry-level building construction technician with the knowledge of construction codes and general and trade-specific terminology.

A-G APPROVAL: G

ARTICULATION: None

DUAL ENROLLMENT: None

PREREQUISITES:

Prerequisite
BITA 1: FOUNDATION OF RESIDENTIAL AND COMMERCIAL CONSTRUCTION

METHODS OF INSTRUCTION

- Direct instruction
- Group and individual applied projects
- Multimedia
- Demonstration
- Field trips
- Guest speakers

STUDENT EVALUATION:

- Student projects
- Written work
- Exams
- Observation record of student performance
- Completion of assignments

INDUSTRY CERTIFICATION:

- None

RECOMMENDED TEXTS:

- None

PROGRAM OF STUDY

Grade	Fall	Spring	Year	Course Type	Course Name
9, 10, 11, 12			✓	Introductory	BITA 1: FOUNDATION OF RESIDENTIAL AND COMMERCIAL CONSTRUCTION
10, 11, 12			✓	Concentrator	BITA 2: STUDY OF MODERN CRAFTSMANSHIP AND INFRASTRUCTURE
11, 12			✓	Concentrator	BITA 3: ENERGY EFFICIENCY AND INFRASTRUCTURE OF THE FUTURE
12			✓	Capstone	BITA 4: EMERGING CONSTRUCTION ADVANCES & CHANGES

I.	INTRODUCTION AND ORIENTATION	CR	Lab/ CC	Standards
	<ul style="list-style-type: none"> • Demonstrate awareness of course objectives and competencies • Demonstrate an understanding of course requirements and student expectations • Demonstrate awareness of the industry standards and career opportunities 	2	0	Academic: LS: 11-12.6 RLST : 11-12.2 CTE Anchor: Career Planning and Management: 3.4 CTE Pathway: D1.1
II.	HISTORY OF ARCHITECTURE AND BUILDING CODES	CR	Lab/ CC	Standards
	<ul style="list-style-type: none"> • Identify styles of windows, doors, and roofs • Identify styles of homes • Transform a current architectural style to another by changing key elements • Define a building code • Trace the history of building codes • Identify the three dominant model codes of the past century • Describe the ICC (International Code Council), IBC (International Building Code), IRC (International Residential Code), and CBC (California Building Code) 	5	0	Academic: LS: 11-12.6 RSIT : 11-12.2 RLST : 11-12.2, 11-12.3 ETS: ETS1 CTE Anchor: Ethics and Legal Responsibilities: 8.2, 8.7 Technical Knowledge and Skills: 10.1, 10.3 CTE Pathway: D1.1, D1.2, D1.3, D2.1, D2.2, D3.1, D3.2
III.	GEOMETRY	CR	Lab/ CC	Standards
	<ul style="list-style-type: none"> • Understand the angle relationships in parallel lines • Establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles • Use models and diagrams to explain the Pythagorean Theorem • Determine the distance between two points on a coordinate plane using the Pythagorean Theorem • Analyze given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution • Apply mathematics to problems arising in everyday life, society, and the workplace 	16	25	Academic: LS: 11-12.6 RLST : 11-12.3 G-GMD: 5 G-MG: 3 G-SRT: 8 SEP: 6 CC: 1 ETS: ETS1 CTE Anchor: Problem Solving and Critical Thinking: 5.3, 5.4 Technical Knowledge and Skills: 10.1, 10.3 CTE Pathway: D2.3, D2.4, D2.1, D2.2, D3.5, D3.1
IV.	HISTORY OF WOOD AND STEEL FRAME CONSTRUCTION	CR	Lab/ CC	Standards

	<ul style="list-style-type: none"> Describe the four major types of wood house framing that have been used in America since colonial times Understand the progression of wood framing from colonial times to the present Trace the history of steel in construction to light gauge steel Understand the advantages and disadvantages of using wood or light gauge steel in certain situations 	5	5	Academic: LS: 11-12.6 RLST : 11-12.2, 11-12.3 WS : 11-12.2 CTE Anchor: Problem Solving and Critical Thinking: 5.4 Technical Knowledge and Skills: 10.1, 10.2, 10.3 CTE Pathway: D1.1
V.	FRAMING FLOOR	CR	Lab/CC	Standards
	<ul style="list-style-type: none"> Use decimals in the accurate keeping of an accounting ledger Calculate area Use the Pythagorean theorem to establish/check layout and framing a square Develop a bill of materials using linear measurement, perimeter, and area to estimate material quantities Calculate material takeoffs for floor frames Lay out and construct a scale model floor frame using blueprints Identify and describe the components of a residential floor frame Describe the layout and installation procedures for floor frame systems Assemble a floor frame using the correct materials in the correct order Describe joist restraints and subfloor sheathing installation 	10	10	Academic: LS: 11-12.6 RLST : 11-12.3, 11-12.4 G-SRT: 8 CTE Anchor: Problem Solving and Critical Thinking: 5.2 Health and Safety: 6.1, 6.3, 6.4, 6.6 Leadership and Teamwork: 9.2, 9.3 Technical Knowledge and Skills: 10.1, 10.3 CTE Pathway: D2.1, D3.1, D6.4
VI.	FRAMING WALL	CR	Lab/CC	Standards
	<ul style="list-style-type: none"> Identify the 12 primary members of a wood, stick-framed wall Layout and construct model home walls from blueprints Correctly spell and use the terminology associated with wood wall framing Assess scale model wall framing; adherence to code, cleanliness, squareness, and accuracy (compared to the prints and to scale) The name and purpose of the members involved in the construction of wood stick- framed walls, and how they are assembled The order of construction in preparation for, and the processes of wall framing. What properly constructed wall sections look like The name and purpose of the members involved in the construction of stick-framed walls, and how they are assembled 	5	15	Academic: LS: 11-12.6 RLST : 11-12.3 G-GMD: 5 G-MG: 3 G-SRT: 8 SEP: 6 CC: 1 ETS: ETS1 CTE Anchor: Problem Solving and Critical Thinking: 5.3, 5.4 Technical Knowledge and Skills: 10.1, 10.3 CTE Pathway: D2.3, D2.1, D2.4, D2.2, D3.1, D6.3, D6.5, D6.6, D6.7,

				D6.8, D6.9, D6.10, D6.14
VII.	FRAMING ROOF	CR	Lab/CC	Standards
	<ul style="list-style-type: none"> • Layout, and construct a conventionally stacked roof in 1" scale from blueprints • Correctly spell and use the terminology associated with wood wall framing • Assess scale model roof framing; adherence to code, cleanliness, squareness, and accuracy (compared to the prints and to scale) • Identify the name and purpose of the members involved in the construction of a conventionally stacked roof, and how they are assembled • Identify properly constructed roof sections 	5	15	Academic: LS: 11-12.6 RLST : 11-12.2, 11-12.3 G-MG: 1, 3 G-SRT: 8 CTE Anchor: Health and Safety: 6.3, 6.11, 6.12 Ethics and Legal Responsibilities: 8.2, 8.7 CTE Pathway: D1.2, D1.3, D2.2, D6.14, D6.15, D6.16, D8.9, D8.10
VIII.	ELECTRICAL	CR	Lab/CC	Standards
	<ul style="list-style-type: none"> • Understand the process of using electricity in housing • Develop and apply basic skills in electrical wiring work • Find at least three codes in the NEC (National Electrical Code) that govern electrical construction • Calculate current, resistance, and voltage • Given the power equation, calculate the power consumed in circuit or load • Name and identify electrical symbols while reading electrical plans • Lay out and install a circuit from blueprints • Identify the tools and equipment used by electricians today • Define terms related to electrical safety • Identify electrical wiring tools and materials • Demonstrate safe working procedures in a construction and shop environment • Work cooperatively as a team member • Identify electrical hazards and how to avoid or minimize them in the workplace 	10	10	Academic: LS: 11-12.6 RLST : 11-12.10, 11-12.3, 11-12.4 A-CED: 4 N-Q: 3 CC: 5 CTE Anchor: Problem Solving and Critical Thinking: 5.1, 5.2 Health and Safety: 6.1, 6.3, 6.4, 6.5, 6.6, 6.8, 6.12 Responsibility and Flexibility: 7.7 Leadership and Teamwork: 9.2, 9.3, 9.6, 9.7 Technical Knowledge and Skills: 10.1, 10.2, 10.3, 10.5 CTE Pathway: D2.3, D11.1, D11.2, D11.3, D11.4
IX.	PLUMBING	CR	Lab/CC	Standards
	<ul style="list-style-type: none"> • Understand the history of plumbing • Use plumbing tools and identify them • Apply plumbing safety • Install a toilet • Calculate volume • Install a sink 	5	5	Academic: LS: 11-12.6 RLST : 11-12.3 CTE Anchor: Problem Solving and Critical

	<ul style="list-style-type: none"> • Work with a team by communicating effectively 			Thinking: 5.2 Health and Safety: 6.1, 6.3, 6.4, 6.5, 6.6 Leadership and Teamwork: 9.2, 9.3 CTE Pathway: D2.3, D10.9, D10.10
X.	DRYWALL	CR	Lab/CC	Standards
	<ul style="list-style-type: none"> • Understand the drywall industry overview • Calculate an estimation of how much drywall is needed for a floor plan • Install drywall • Match texture and patch drywall . 	5	5	Academic: LS: 11-12.6 RLST : 11-12.3 CTE Anchor: Problem Solving and Critical Thinking: 5.2 Health and Safety: 6.1, 6.3, 6.4, 6.6 Leadership and Teamwork: 9.2, 9.3 Technical Knowledge and Skills: 10.3, 10.5 CTE Pathway: D2.1, D7.2
XI.	EMPLOYMENT LITERACY	CR	Lab/CC	Standards
	<ul style="list-style-type: none"> • Identify available positions in the industry through the use of the internet • Complete an application form correctly • Prepare a written resume • Participate in a simulated employment interview • Prepare a portfolio 	10	0	Academic: LS: 11-12.6 RSIT : 11-12.2 RLST : 11-12.2 WS : 11-12.2, 11-12.4 CTE Anchor: Communications: 2.4, 2.5 Career Planning and Management: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.9 Demonstration and Application: 11.5 CTE Pathway: D1.1
XII.	PERSONAL SKILLS RELATED TO EMPLOYMENT	CR	Lab/CC	Standards
	<ul style="list-style-type: none"> • Demonstrate promptness, attend class regularly, and follow absence notification procedures • Develop and maintain acceptable working relations • Demonstrate the ability to manage time wisely • Demonstrate a positive and cooperative attitude • Demonstrate values of honesty and integrity • Demonstrate respect for others • Demonstrate appropriate personal hygiene/grooming, and dress • Demonstrate responsibility by exerting a high level of effort and working 	3	0	Academic: LS: 11-12.6 CTE Anchor: Responsibility and Flexibility: 7.2, 7.3, 7.4, 7.5, 7.7 Ethics and Legal Responsibilities: 8.2, 8.3, 8.7

	toward a goal			CTE Pathway: D1.1
XIII.	INTERPERSONAL SKILLS AND GROUP DYNAMICS	CR	Lab/ CC	Standards
	<ul style="list-style-type: none"> Utilize problem-solving techniques Demonstrate the ability to work as a member of a team Identify proper procedures for handling harassment Demonstrate leadership skills by working independently, making appropriate decisions, working well with others, and accepting constructive criticism Demonstrate the ability to accept and work with individuals from various cultures 	3	0	Academic: LS: 11-12.6 RSIT : 11-12.7 RLST : 11-12.2 WS : 11-12.2 SEP: 1, 4, 6 CTE Anchor: Leadership and Teamwork: 9.2, 9.3 CTE Pathway: D1.1
XIV.	THINKING AND PROBLEM-SOLVING SKILLS	CR	Lab/ CC	Standards
	<ul style="list-style-type: none"> Describe problem-solving techniques Understand logical reasoning Demonstrate creative thinking Participate in decision-making Demonstrate the ability to interpret information correctly 	3	0	Academic: LS: 11-12.6 RLST : 11-12.2, 11-12.3 WS : 11-12.2 SEP: 1, 4, 6 CTE Anchor: Problem Solving and Critical Thinking: 5.1, 5.2, 5.3, 5.4 CTE Pathway: D1.1
XV.	COMMUNICATION SKILLS	CR	Lab/ CC	Standards
	<ul style="list-style-type: none"> Demonstrate effective verbal and written skills Read technical journals, and write technical reports using appropriate terminology Listen attentively, follow directions, and relay directions to others Demonstrate the ability to research and retrieve information 	3	0	Academic: LS: 11-12.6 RSIT : 11-12.2 RLST : 11-12.2 WS : 11-12.2 CTE Anchor: Communications: 2.4, 2.5 CTE Pathway: D1.1