

**Electrical Level 1 2022-2023
Course Syllabus**

WEEKS 1 – 12

Electrical Wiring Residential, 20th Edition (EWR)

Delmar’s Standard Textbook of Electricity, 7th Edition (DEL)

2020 National Electric Code (NEC) is referenced when a code article is used in EWR or DEL

WEEK	CONTENT	MATERIALS USED	ASSIGNMENT(S) <i>Numbers next to assignment title reflects the number of questions to be completed</i>
	Diversity/Harassment Awareness Training Orientation/Introduction of Program Apprenticeship Application (VDOL)	Canvas VDOL Outreach	CANVAS MODULE: DIVERSITY/HARASSMENT AWARENESS TRAINING CANVAS MODULE: 21-22 APPRENTICESHIP ORIENTATION
	Safety Overview	DEL (pages 2-28) OSHA 10 – Will be offered via online training; Certification is required PRIOR to graduation	
	Blue Prints Hand Tools	EWR (text provided prints)	
	General Information for Electrical Installations Atomic Structure Whole Numbers, Fractions	EWR (Chapter 1) DEL (Unit 1)	EWR CHAPTER 1: GENERAL INFORMATION FOR ELECTRICAL INSTALLATIONS (18) DEL UNIT 1: ATOMIC STRUCTURE (49)
	Specs, Electrical Symbols & Outlets Electrical Quantities & Ohm’s Law Decimal Fractions	EWR (Chapter 2) DEL (Unit 2)	EWR CHAPTER 2: SPECIFICATIONS, ELECTRICAL SYMBOLS (24) DEL UNIT 2: ELECTRICAL QUANTITIES AND OHM’S LAW (47)
	Lighting & Appliance Circuits Static Electricity Percent’s, Averages	EWR (Chapter 3) DEL (Unit 3)	EWR CHAPTER 3: DETERMINING THE REQUIRED NUMBER OF BRANCH CIRCUITS, LIGHTING OUTLETS, AND RECEPTACLE OUTLETS (23) DEL UNIT 3: STATIC ELECTRICITY (46)
	Conductors, Wiring, Using Wiring Tables & Determining Conductor Sizes, Powers, Roots	EWR (Chapter 4)	EWR CHAPTER 4: CONDUCTOR SIZES AND TYPES, WIRING METHODS, WIRE CONNECTIONS, VOLTAGE DROP, AND NEUTRAL CONDUCTOR SIZING (38)

	Switch Control, Bonding/Grounding, & Induction Heating Magnetism Measures	EWR (Chapter 5) DEL (Unit 4)	EWR CHAPTER 5: CONDUCTOR IDENTIFICATION, SWITCH CONTROL OF LIGHTING CIRCUITS, BONDING/GROUNDING OF WIRING DEVICES, AND INDUCTION HEATING (30) DEL UNIT 4: MAGNETISM (47)
	Ground Fault Protection Resistors Ratios, Proportions	EWR (Chapter 6) DEL (Unit 5)	EWR CHAPTER 6: GROUND-FAULT CIRCUIT INTERRUPTERS, ARC-FAULT CIRCUIT INTERRUPTERS, SURGE PROTECTIVE DEVICES, IMMERSION DETECTION CIRCUIT INTERRUPTERS, AND APPLIANCE LEAKAGE CURRENT INTERRUPTERS (23) DEL UNIT 5: RESISTORS (43)
	Luminaires (Fixtures) Ohm's Law – Series Circuits Formulas	EWR (Chapter 7) DEL (Unit 6)	EWR CHAPTER 7: LUMINAIRES, BALLASTS, AND LAMPS (33) DEL UNIT 6: SERIES CIRCUITS (43)
	Bedroom Lighting Parallel Circuits	EWR (Chapter 8 & 9) DEL (Unit 7)	EWR CHAPTER 8: LIGHTING BRANCH CIRCUIT FOR THE FRONT BEDROOM (21) EWR CHAPTER 9: LIGHTING BRANCH CIRCUIT FOR THE MATER BEDROOM (20) DEL UNIT 7: PARALLEL CIRCUITS (41)
	Lighting – Bathroom & Hallway Using Fractions in Current Dividers	EWR (Chapter 10)	EWR CHAPTER 10: LIGHTING BRANCH CIRCUIT – BATHROOMS, HALLWAY (20)
	Entryway Wiring Intro to Trigonometry/Basic Triangle	EWR (Chapter 11) *Math to prepare apprentices for level 2**	EWR CHAPTER 11: LIGHTIN GBRANCH CIRCUIT – FRONT ENTRY, PORCH, POST LIGHT, UNDERGROUND WIRING (13)
	Kitchen Circuits	EWR (Chapter 12)	EWR CHAPTER 12: LIGHTING BRANCH CIRCUIT AND SMALL APPLIANCE SMALL-APPLIANCE BRANCH CIRCUITS FOR THE KITCHEN (19)
	Midterm Exam Review	EWR (Chapters 1-12) DEL (Units 1-7)	REVIEW PREVIOUS ASSIGNMENTS
	Midterm Exam	Standardized Exam Reviewing Weeks 1-12 Material Covered	CANVAS EXAM (3.5 HOURS TO COMPLETE – 1 ATTEMPT)

WEEKS 13-24

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WEEK	CONTENT	MATERIALS USED	ASSIGNMENT(S)
	Combination Circuits Lighting – Living Room & Study Series/Parallel Circuits	EWR (Chapter 13 & 14) DEL (Unit 8)	EWR CHAPTER 13: LIGHTING BRANCH CIRCUIT FOR THE LIVING ROOM (15)

			EWR CHAPTER 14: LIGHTING BRANCH CIRCUIT FOR THE STUDY/BEDROOM (6) DEL UNIT 8: COMBINATION CIRCUITS (36)
	Combination Circuits Laundry Outlets/Circuits	EWR (Chapter 15) DEL (Unit 8)	EWR CHAPTER 15: DRYER OUTLET, LIGHTING, AND RECEPTACLE CIRCUITS FOR THE LAUNDRY, POWDER ROOM, REAR ENTRY HALL, AND ATTIC (19)
	Combination Circuits Garage Circuits	EWR (Chapter 16) DEL (Unit 8)	EWR CHAPTER 16: BRANCH CIRCUITS FOR THE GARAGE AND OUTDOORS (20)
	Combination Circuits Rec Room & Workshop	EWR (Chapter 17 & 18) DEL (Unit 8)	EWR CHAPTER 17: RECREATION ROOM (14) EWR CHAPTER 18: LIGHTING BRANCH CIRCUIT, RECEPTACLE CIRCUITS FOR WORKSHIP (21)
	Combination Circuits Water Pumps & Water Heaters	EWR (Chapter 19) DEL (Unit 8)	EWR CHAPTER 19: SPECIAL-PURPOSE-OUTLETS – WATER PUMP, WATER HEATER (21)
	Kitchen Outlets	EWR (Chapter 20 & 21)	EWR CHAPTER 20: SPECIAL-PURPOSE-OUTLETS FOR RANGES, COUNTER-MOUNTED COOKING UNIT, AND WALL-MOUNTED OVEN (24) EWR CHAPTER 21: SPECIAL-PURPOSE-OUTLETS – FOOD WASTE DISPOSER, DISHWASHER (16)
	Special Purpose Outlets	EWR (Chapter 22 & 23)	EWR CHAPTER 22: SPECIAL-PURPOSE OUTLETS FOR THE BATHROOM CEILING HEAT/VENT/LIGHTS, THE ATTIC FAN, AND THE HYDROMASSAGE TUB (18) EWR CHAPTER 23: SPECIAL-PURPOSE-OUTLETS – ELECTRIC HEATING, AIR CONDITIONING (20)
	Heating Systems	EWR (Chapter 24)	EWR CHAPTER 24: GAS AND OIL CENTRAL HEATING SYSTEMS (20)
	Television, Telephone, and Low Voltage Systems	EWR (Chapter 25)	EWR CHAPTER 25: TELEVISION, TELEPHONE, AND LOW-VOLTAGE SIGNAL SYSTEMS (20)
	Lamp Identification (Info ONLY) Low Voltage Lighting (Info ONLY)	Bulb Catalog Review	
	Fire/Smoke Alarms & Security Systems	EWR (Chapter 26)	EWR CHAPTER 26: SMOKE, HEAT, CARBON MONOXIDE ALARMS, AND SECURITY SYSTEMS (18)
	Intro to Conduit Bending	Ugly's Electrical References, 20 th Edition	
	Service Equipment & Overcurrent Protection	EWR (Chapter 27 & 28)	EWR CHAPTER 27: FEEDER AND SERVICE-ENTRANCE CALCULATIONS (13) EWR CHAPTER 28: INSTALLING FEEDERS AND SERVICE ENTRANCE EQUIPMENT – GROUNDING AND BONDING (18)

	Swimming Pools, Spas, & Hot Tubs	EWR (Chapter 30)	EWR CHAPTER 30: SWIMMING POOLS, SPAS, HOT TUBS, HYDROMASSAGE BATHS, AND ELECTRICALLY POWERED POOL LIFTS (20)
	Wiring for the Future: Home Automation Systems	EWR (Chapter 31)	EWR CHAPTER 31: WIRING FOR THE FUTURE – HOME AUTOMATION SYSTEMS (20)
	Standby Power Systems Residential Utility Interactive PV Systems	EWR (Chapter 32 & 33)	EWR CHAPTER 32: STANDBY POWER SYSTEMS (15) EWR CHAPTER 33: RESIDENTIAL UTILITY – INTERACTIVE PHOTOVOLTAIC SYSTEMS (20)
	Measuring Instruments	DEL (Unit 9)	DEL UNIT 9: MEASURING INSTRUMENTS (46)
	Batteries & Other Sources of Electricity	DEL (Unit 12)	DEL UNIT 12: BATTERIES AND OTHER SOURCES OF ELECTRICITY (43)
	Final Exam Review	EWR (Chapters 13-33) DEL (Units 8, 9, 12)	REVIEW PREVIOUS ASSIGNMENTS
	Final Exam	Standardized Exam Reviewing Weeks 13-24 Material Covered	CANVAS EXAM (3.5 HOURS TO COMPLETE – 1 ATTEMPT)