## Unit 9: Exploring Electrical Principles and Techniques

## HTCS

**BTEC Construction & The Built Environment** 

## <u>Leaning Aim B— Develop practical skills using safe techniques to un-</u> <u>dertake electrical operations</u>

	BTEC Construction and the Built Environment		Progress		
Торіс	Key ideas	R	A	G	
Exploring Electrical Principles and Tech- niques	Carry out a risk assessment				
	Comply with safe working practices (including using P.P.E.)				
	Measure and mark out cables and conduits to produce a test rig circuit within tolerance levels				
	Construct a test rig circuit consisting of a ring final circuit. Circuit to include: 2 sockets; fused spur; and single switch with lamp				
	Tolerance levels of circuit: Sockets level within 2 mm; neatly fixed; no exposed conductors; earth sleeving in position; correct colour coding.				
	Test rig must: pass tests for continuity; insulation resistance & polarity				

Lesson	Learning Focus	Assessment	Key Words	
1	Introduction to Unit 9: Learning Aim B. Risk assess- ment prior to completing practical activities—Hazard identification and risks associated	Live marking/P.P.E. Work sheet/Unit assessment task	Risk Assessment, Hazard, Identi- fication, Practical, Electricity	
2	Risk assessment prior to completing practical activi- ties—Identifying people at risk and control measures	Live marking/Unit assessment task	Risk Assessment, Health & Safe- ty, Control, Measures	
3&4	Risk assessment prior to completing practical activi- ties—Adoption of safe working practices and the importance of testing	Live marking/Risk Assessment Table/Unit assessment task	Risk Assessment, Working Prac- tices, Testing	
5	Marking out electrical runs and sockets—Industry expectations and standards	Live marking/Unit assessment task	Marking out, Electrical Runs, Sockets, Industry Standards	
6	Electrical installation methods and procedures— Industry expectations and standards	Live marking/Formative As- sessment & Deep Marking Grid/Unit assessment task	Installation Methods, Industry Standards	
7 Assessment task—H&S written statement (1 hour)	<ul> <li><u>Assessment task 1: (L1P/L2P)</u></li> <li>Written statement to show the heath &amp; safety considerations prior to practical work. Including:</li> <li>Hazard identification/Identification of people at risk/Control measures/Adoption of safe working practices/Importance of testing for continuity, insulation resistance and polarity</li> </ul>	Final Unit Assessment task 1 (L1P/L2P) Expectations: * Written statement covering all stated areas of a risk assessment * Written for a given electrical task and in preparation for practical element of the unit		
8-17 Practical Assess- ment task (10 hours)	<ul> <li><u>Assessment task 2: (L1P/L2P/L2M/L2D)</u></li> <li>Completion of a practical test rig to develop electrical operational skills. Including:</li> <li>Marking out (Interpret drawn information; Mark out lengths of cable; Cut cable; Mark out conduit required, cut to length and install</li> <li>Ring final circuit with: Two socket outlets; Fused Spur using surface mounted conduit</li> <li>Lighting circuit with: Batten holder using surfacemounted conduit</li> </ul>	<ul> <li>Final Unit Assessment task 2 (L1P/L2P/L2M/L2D)</li> <li>Expectations (Distinction level):</li> <li>Measure and mark out cables and conduit to: Given specification; Accurate to 1mm deviation from straight; No insulation damage by hammer or clips</li> <li>Construct a test rig circuit as specified to the following: All sock- ets level to within 1mm; Conduits neatly fixed; No exposed cop- per conductors; No exposed electrical conductors; All earth sleev- ing in position; Correct colour coding.</li> <li>Test Rig must: Pass test for continuity, insulation resistance and polarity</li> </ul>		