

Unit 49: Mechanical and Electrical Services in Construction

Unit code: H/600/0229

OCF Level: 3

Credit value: 10

Guided learning hours: 60

Unit aim

This unit provides an understanding of mechanical and electrical building services, specifically for learners following a construction pathway. They will explore the provision of hot and cold water systems, electricity, gas and drainage to low-rise buildings.

Learning outcomes and assessment criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes	Assessment criteria
1 Understand the principles and practices associated with the provision of hot and cold water systems to buildings	1.1 Explain the distribution of cold water by direct and indirect systems
	1.2 Explain, with the use of clear and accurate diagrams, the provision and distribution of hot water by direct and indirect systems
2 Understand the principles and practices associated with the provision of above and below ground drainage systems to buildings	2.1 Explain the provision of above and below ground drainage systems
3 Understand the principles and practices associated with the provision of simple single-phase electrical systems to buildings	3.1 Explain the installation of single-phase electrical systems
4 Understand the principles and practices associated with the provision of gas supplies to buildings	4.1 Explain the installation of gas supply systems

Unit content

1 Understand the principles and practices associated with the provision of hot and cold water systems to buildings

Provision of cold water systems: distribution of cold water to and in homes; comparison of direct and indirect systems; layouts; specifications; dimensions; capacities; materials used

Provision of hot water systems: provision and distribution of hot water in homes; comparison of direct and indirect systems; layouts; specifications; dimensions; capacities; materials use

2 Understand the principles and practices associated with the provision of above and below ground drainage systems to buildings

Provision of above ground drainage: requirements of systems eg water seal, prevention of disruption of water seal by siphonage, need for ventilation; effect on design of systems; comparison of single-stack and two-pipe systems; layouts; dimensions; specifications; materials used

Provision of below ground drainage: requirements of systems eg capacity, fall, ventilation, support, access for maintenance and repair, shortest possible pipe runs; effect on design of systems; separate and combined systems for surface and foul water; layouts; dimensions; specifications; materials used

3 Understand the principles and practices associated with the provision of simple single-phase electrical systems to buildings

Electrical systems: requirements of systems (sufficient capacity, prevention of excessive current, protection from shock, prevention of fire, means of isolation); components of domestic systems eg main service fuse, meter, main switch, consumer control unit, residual current devices (RCD), miniature circuit breakers (MCB) or fuses, earth connection, outlet sockets, fuses in plugs and/or appliances; principles and layouts of ring main circuits to socket outlets, radial circuits for lighting, radial circuits for high-power appliances, electric cookers, showers and water heaters

4 Understand the principles and practices associated with the provision of gas supplies to buildings

Gas supplies: requirements of systems needed for adequate supply of ventilation air to support combustion; effective flue arrangements to dispose of combustion products; supply from gas main into building up to and including the gas meter